1928

K.N. Toosi University of Technology

2018

Faculty of Electrical Engineering

In the name of God

Faculty of Electrical Engineering, K.N. Toosi University of Technology.

This booklet provides a brief introuduction to the Faculty of Electrical Engineering, K.N. Toosi University of Technology, Tehran, Iran. By introducing the history of the University and the Faculty of E.E, it provides information on Undergratuate and post-graduate programs, research centers and laboratories, general resources and facilities, and a list of faculty members with their research interest and recent publications. This work has been designed and prepared by Miss Farzaneh Zarivar.

Prof. Karim Abbaszadeh

Dean for Research of Faculty of Electricial Engineering

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K.N. TOOSI UNIVERSITY OF TECHNOLOGY

Khajeh Nassir Toosi (**K. N. Toosi**) **University of Technology** is a public, higher educational institution in Tehran, Iran. The university was founded in 1928 and was named the "Institute of communication", and therefore, it is considered as the oldest higher education institution across the country. This institute was merged with eight other institutes in 1979 to form a university complex known as K. N. Toosi University of technology. With more than 350 full-time faculty members and 7200 students, K. N. Toosi is ranked one among other universities as of the highest instructor to student ratios in Iran. Moreover, the university is known for its excellent track record of research activities and industrial projects. There are currently eleven faculties within the university which are located in five different campuses spread across Tehran.

- Faculty of Electrical Engineering
- Faculty of Computer Engineering
- Faculty of Mechanical Engineering
- Faculty of Civil Engineering
- Faculty of Geodesy and Geomatic Engineering
- Faculty of Industrial Engineering
- Faculty of Aerospace Engineering
- Faculty of Material Science and Engineering
- Faculty of Mathematics
- Faculty of Physics
- Faculty of Chemistry

K.N. Toosi University of Technology, excels in combining knowledge and experience in training of present and future experts of the country in Bachelors, Masters, and PhD levels. The University is well represented both in academia and in the industry by the expertise and reputation of its faculty members, quality of its students, and solid scientific background and invaluable technical experience of its alumni.


وزارت علوم تحقیقات و فناوری
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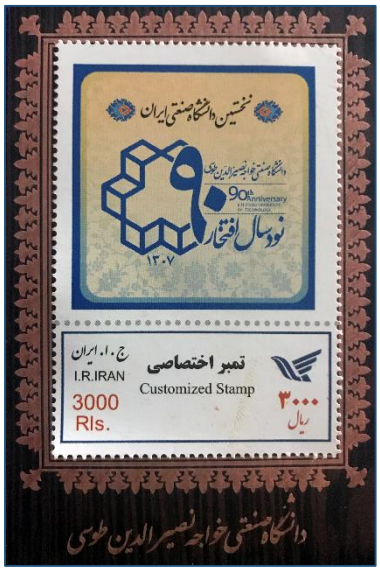
K.N.Toosi University of Technology
سازمان مرکزی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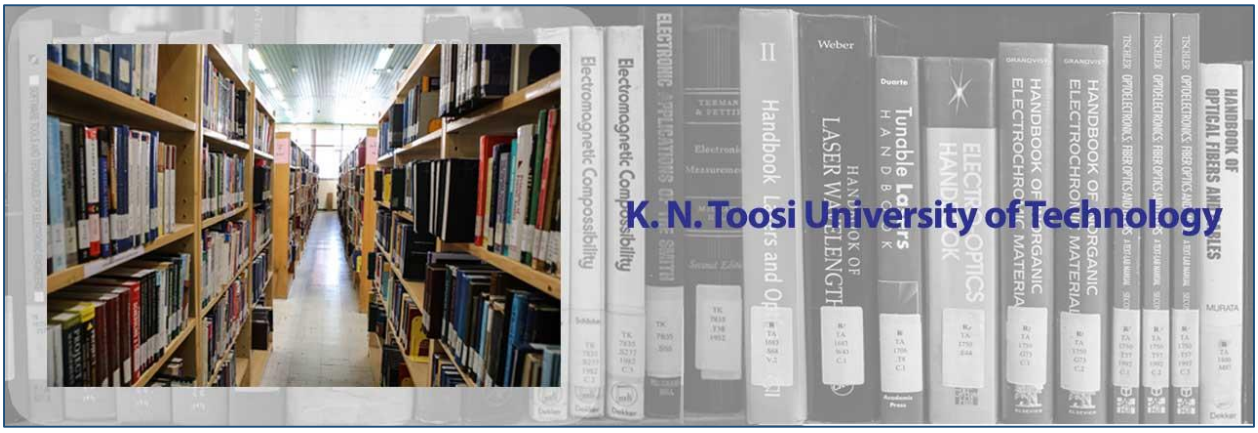

K. N. Toosi University of Technology

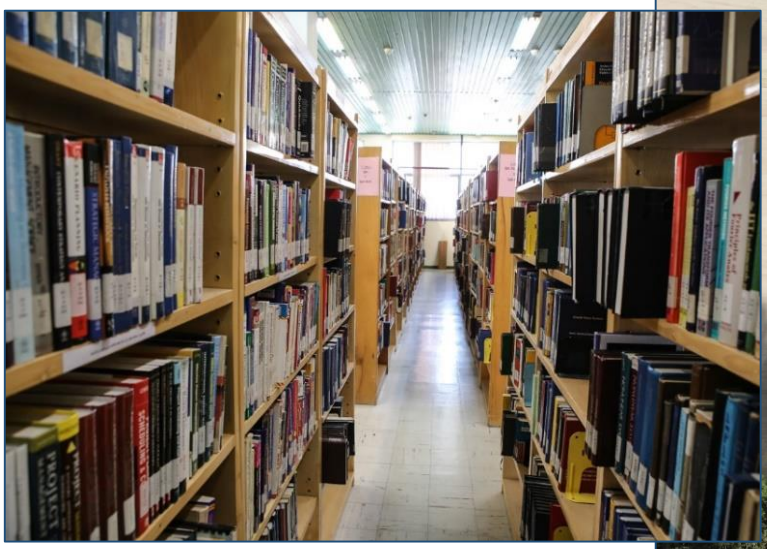
FACULTY OF ELECTRICAL ENGINEERING

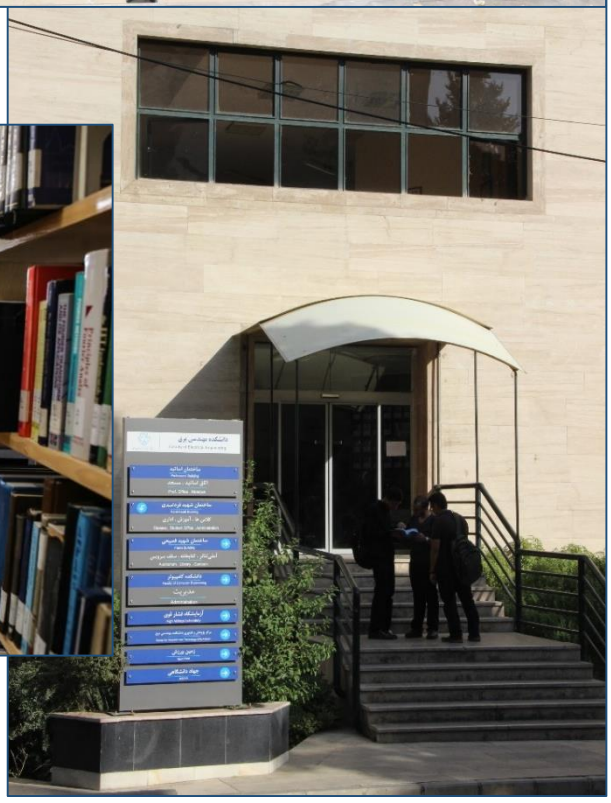
Faculty of Electrical Engineering is the first academic foundation of K.N. Toosi University of Technology, established in 1928. During its 90+ years of academic activity, the Faculty has had the glory of training many successful experts and executives for the industry, highly-reputed academic professionals, and highly-respected intellectuals of the country.

Faculty of Electrical Engineering comprises of the following six academic departments, and offers Bachelors, Masters, and Ph.D. degree programs.

- Department of Biomedical Engineering,
- Department of Communications,
- Department of Electrical Power Systems,
- Department of Electronics,
- Department of Mechatronics (administered jointly by the Faculty of Mechanical Eng.),
- Department of Systems and Control.

Faculty of Electrical Engineering of K.N. Toosi University of Technology is proud of the competence of its graduates in theoretical abilities as well as their hands-on-experiments. This has made the Faculty outstanding among the nationwide universities.





PART I: Departments

Department of Biomedical Engineering

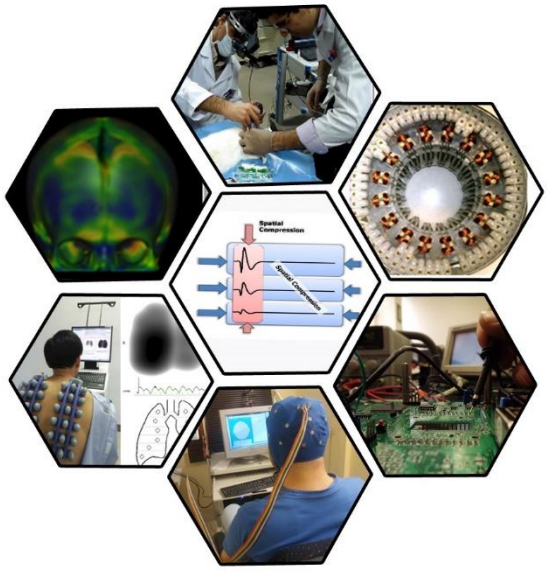
Admission of Master students in the field of Bioelectrics at the Department of Biomedical Engineering goes back to 2001. Later, in 2007 the first bioelectric Ph.D. student was admitted. Research activities at this department are inherently inter-disciplinary, necessitating collaboration between professionals in engineering, medicine, and biology. Moreover, international scientific and research collaborations are among the notable features of this department, an example of which is the joint Ph.D. and M.Sc. dual-degree program in collaboration with the Medical School of the University of Picardie Jules Verne, France.

Core Research Areas

- Biomedical Instrumentation
- Biological Data and Signal Analysis
- Biomedical Functional and Structural Image Processing
- Speech and Sound Processing in Medical and Psychological Assessment
- Brain-Computer Interfacing
- Neural and Cognitive Engineering
- Implantable Microsystems
- Computational Bioelectromagnetic Techniques
- Human Motor Control
- Electrical and Electromagnetic Safety in Medical Devices
- Artificial Intelligence in Biomedical Engineering

Research Laboratories

- Bioelectric Artificial Organs Laboratory
- Biomedical Measurement Laboratory
- Machine Vision and Medical Image Processing Laboratory (MVMIP)
- General Clinical Lab
- Speech and Sound Processing Lab



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Education:

Ph.D.: Biomedical Engineering, Universit de Technologie de Compigne (UTC), France, 1998.

DEA : Biomedical Engineering, UTC, France, 1994.

M.Sc.: Biomedical Engineering, Sharif University of Technology, Tehran, Iran, 1992.

B.Sc.: Electrical Engineering, AmirKabir University of Technology, Tehran, Iran, 1989.

Research Interest:

- Machine Vision
- Pattern Recognition
- Image Processing

Biography:

Hamid Abrishami Moghaddam was born in Iran 1964. He received the B.S. degree in electrical engineering from Amirkabir University of Technology, Tehran, Iran, in 1988, the M.S. degree in biomedical engineering from Sahrif University of Technology, Tehran, in 1991, and the Ph.D. degree in biomedical engineering from the Université de Technology de Compiègne, France, in 1998. Since 2004, he has been collaborating with the GRMFC loboratory, Université de Picardie Jules Verne, Amiens, France, as an Invited Researcher in Medical Image Processing. He is currently a Professor of biomedical engineering K.N. Toosi University of Technology, Tehran. His research interests include pattern recognition, image processing, and machine vision, of which he has published more than 150 articles in scientific journals and conferences. Pr. Abrishami Moghaddam chaired the Machine Vision and Image Processing (MVIP2003) conference in Iran, in 2003. He is a member of the editorial board of the Iranian Journal of Biomedical Engineering and Iranian Journal of Machine Vision and Image Processing. Ha was one of the founders of Iranian Society of Machine Vision and Image Processing and Iranian Society for Non-destructive Testing.

Selected journal papers:

1. F. Daneshvarfard, N. Maarefi, **H. Abrishami Moghaddam**, F. Wallois, “A survey on stimuli for visual cortical function assessment in infants”, Brain and Development, 2018.
2. S. Ghadimi, M. Mohtasebi, **H. Abrishami Moghaddam**, R. Grebe, M. Gity, F. Wallois, “A neonatal bimodal MR-CT Head Template”, PLOS ONE, 2017.
3. M. Manafifard, H. Ebadi, **H. Abrishami Moghaddam**, “A Survey on Player Tracking in Soccer Videos”, Computer Vision and Image Understanding, 2017.
4. M. Aghaei, **H. Abrishami Moghaddam**, “Grid star identification improvement using optimization approaches”, IEEE Transactions on Aerospace and Electronic Systems, 2016.
5. S. Ghadimi, **H. Abrishami Moghaddam**, R. Grebe, F. Wallois, “Skull segmentation and reconstruction from newborn CT images using coupled level sets”, IEEE Journal of Biomedical and Health Informatics, 2016.

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Education:

Ph.D.: Electrical and Computer Engineering, University of British Columbia (UBC), Vancouver, Canada, 2012.

M.Sc.: Electrical Engineering, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran, 2007.

B.Sc.: Biomedical Engineering, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran, 2007.

B.Sc.: Electrical Engineering, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran, 2005.

Research Interest:

- Biomedical signal and image processing
- Brain–computer interfaces
- Neural engineering
- Blind source separation
- Machine vision
- Pattern recognition

Biography:

Farhad Faradji received the B.Sc. degree in electrical engineering, the B.Sc. degree in biomedical engineering, and the M.Sc. degree in electrical engineering from the Amirkabir University of Technology, Iran, in 2005, 2007, and 2007, respectively, and the Ph.D. degree in electrical and computer engineering from The University of British Columbia, Vancouver, BC, Canada, in 2012. He is currently an Assistant Professor at the Department of Electrical Engineering, K. N. Toosi University of Technology, Iran. His research interests include biomedical signal and image processing, brain–computer interfaces, neural engineering, blind source separation, machine vision, and pattern recognition.

Selected journal papers:

1. Pejman Memar and **Farhad Faradji**, "A Novel Multi-Class EEG-Based Sleep Stage Classification System," IEEE Transactions on Neural Systems and Rehabilitation Engineering, January 2018.
2. **Farhad Faradji**, Rabab K. Ward, and Gary E. Birch, “Toward Development of a Two-State Brain-Computer Interface Based on Mental Tasks,” Journal of Neural Engineering, June 2011.
3. **Farhad Faradji**, Rabab K. Ward, and Gary E. Birch, “Plausibility Assessment of a 2-State Self-Paced Mental Task-Based BCI Using the No-Control Performance Analysis,” Journal of Neuroscience Methods, June 2009.

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Education:

Ph.D.: Electrical Engineering, University of Toronto, Toronto, Canada, 2002.

M.Sc.: Electrical Engineering, K. N. Toosi University of Technology, Tehran, Iran, 1994.

B.Sc.: Electrical Engineering, K. N. Toosi University of Technology, Tehran, Iran, 1989.

Research Interest:

- Bioinstrumentation
- Bioelectromagnetics
- Computational Electromagnetic Techniques
- Biomedical Optics
- Biomedical Signal Processing

Biography:

Reza Jafari received the B.Sc. and M.Sc. degrees in electrical engineering from the K.N. Toosi University of Technology, Tehran, Iran, and the Isfahan University of Technology, Isfahan, Iran, in 1989 and 1994, respectively, and the Ph.D. degree in electrical engineering from the University of Toronto, Toronto, Canada, in 2002. He was with the Advanced Technology Research and Development Center, Mitsubishi Electric Corporation, Amagasaki, Japan, from October 2002 to December 2002. He worked as a NSERC Post Doctorate in the area of optical MEMS in Photonics System Group, Department of Electrical and Computer Engineering, McGill University, Montreal, Quebec, Canada, from April 2003 to August 2004. From September 2004 to October 2005, he continued the Post-Doctoral study on the subject of optical coherence tomography at the Department of Medical Biophysics, University of Toronto. Since January 2006, he has been with the Department of Biomedical Engineering at the Faculty of Electrical Engineering, K.N. Toosi University of Technology. His current research interests include bioinstrumentation, bioelectromagnetics, computational electromagnetic techniques, and tomographic imaging techniques.

Selected journal paper:

1. Hadinia, M., **Jafari, R.,** Soleimani, M., “EIT image reconstruction based on a hybrid FE-EFG forward method and the complete-electrode model”, Physiological Measurement, 2016.
2. Hadinia, M., **Jafari, R.,** “An element-free Galerkin forward solver for the complete-electrode model in electrical impedance tomography”, Flow Measurement and Instrumentation, 2015.
3. Yousefi, M.R., **Jafari, R.,** Moghaddam, H.A., “Imposing boundary and interface conditions in multi-resolution wavelet Galerkin method for numerical solution of Helmholtz problems”, Computer Methods in Applied Mechanics and Engineering , 2014.
4. Yousefi, M.R., **Jafari, R.,** Moghaddam, H.A., “A combined wavelet-based mesh-free method for solving the forward problem in electrical impedance tomography”, IEEE Transactions on Instrumentation and Measurement , 2013.
5. Ghaderi Daneshmand, P., **Jafari, R.,** “ A 3D hybrid BE-FE solution to the forward problem of electrical impedance tomography”, Engineering Analysis with Boundary Elements, 2013.

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Education:

Ph.D.: Biomedical Engineering (Bioelectric), University of Tehran, Tehran, Iran, 2014.

M.Sc.: Biomedical Engineering (Bioelectric), University of Tehran, Tehran, Iran, 2008.

B.Sc.: Electrical Engineering (Control), University of Tehran, Tehran, Iran, 2005.

Research Interest:

- Functional imaging
- Functional brain mapping (fMRI, fNIRS, EEG/MEG, …)
- Computational neuroscience
- Applications of ultrasound in medicine

Biography:

Ali Khadem was born in Tehran, Iran, in 1982. He received the B.S. degree in electrical engineering (Control) from the University of Tehran, Tehran, Iran, in 2005, and the M.S. and Ph.D. degrees in biomedical engineering (Bioelectric) from the University of Tehran, Tehran, Iran, in 2008 and 2014, respectively. In September 2013, he joined the Department of Electrical Engineering, Imam Khomeini International University, Qazvin, Iran, as an invited lecturer, and from February 2015 until February 2016 he continued as an Assistant Professor. Since February 2016, he has been with the Department of Biomedical Engineering, Faculty of electrical engineering, K. N. Toosi University of Technology, Tehran, Iran, as an Assistant Professor. He is the leader of "Functional Imaging and Human Brain Mapping" research trust and a member of "Medical devices" research cluster in CRETECH research and innovation center, K. N. Toosi University of Technology. His current research interests include medical image and signal processing focused on Functional imaging, Functional brain mapping (fMRI, fNIRS, EEG/MEG, …), Computational neuroscience, and Applications of ultrasound in medicine.

Selected journal papers:

1. **A. Khadem**, G. A. Hossein-Zadeh, A. Khorrami, "Long-range reduced predictive information transfers of autistic youths in EEG sensor-space during face processing," Brain Topography, 2016.
2. **A. Khadem**, G. A. Hossein-Zadeh, "Estimation of direct nonlinear effective connectivity using information theory and multi layers perceptron," Journal of Neuroscience Methods, 2014.
3. **A. Khadem**, G. A. Hossein-Zadeh, "Quantification of the effects of volume conduction on the EEG/MEG connectivity estimates: an index of sensitivity to brain interactions," Physiological Measurement, 2014.

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Education:

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M.Sc.: Biomedical Engineering, Bioelectric, K. N. Toosi University of Technology, Tehran, Iran, 2007.

B.Sc.: Biomedical Engineering, Bioelectric, Shahed University, Tehran, Iran, 2003.

Research Interest:

- Biomedical signal processing
- Nonlinear analysis of ECG and HRV signals
- Modeling of cardiac activity
- Computational neuroscience

Biography:

Maryam Mohebbi was born in Tehran, Iran, in 1981. She received the Ph.D. degree in biomedical engineering, from Tarbiat Modares University, in 2011. Currently she is an Assistant Professor with the Department of Electrical Engineering, K. N. Toosi University of Technology. Her research interests include biomedical signal processing, nonlinear analysis of HRV and ECG signals, model-based ECG processing, as well as EEG signal analysis and computational neuroscience.

Selected journal papers:

1. H. danande Hesar, **M. Mohebbi**, "A Multi Rate Marginalized Particle Extended Kalman Filter for P and T Wave Segmentation in ECG Signals", IEEE Journal of Biomedical and Health Informatics, 2018.
2. F. Niknejad, **M. Mohebbi,** "Wide Complex Tachycardia Discrimination Using Dynamic Time Warping of ECG Beats", Computer Methods and Programs in Biomedicine journal, 2018.
3. H. danande Hesar, **M. Mohebbi,** "An Adaptive Particle Weighting Strategy for ECG Denoising Using Marginalized Particle Extended Kalman Filter: an Evaluation in Arrhythmia Contexts", IEEE Journal of Biomedical and Health Informatics, 2017.
4. H. danande Hesar, **M. Mohebbi,** "ECG Denoising Using Marginalized Particle Extended Kalman Filter with an Automatic Particle Weighting Strategy", IEEE Journal of Biomedical and Health Informatics, 2017.
5. R. Atri, **M. Mohebbi,** "Obstructive Sleep Apnea Detection Using Spectrum and Bispectrum Analysis of Single-Lead ECG Signal," Physiological Measurement, 2015.

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Education:

Ph.D.: Biomedical Engineering, Amirkabir University of Technology, Tehran, Iran, 2006.

M.Sc.: Electrical Engineering, Sharif University of Technology, Tehran, Iran, 2000.

B.Sc.: Electrical Engineering, Esfahan University of Technology, Isfahan, Iran, 1998.

Research Interest:

- Speech Processing
- Sound Processing in Medical Assessment
- Medical Data Processing
- Artificial Neural Networks

Biography:

Mansour Vali was born in 1973 in Esfahan, Iran. He received the B.Sc. degree in Electrical Engineering from the Isfahan University of Technology in 1997, the M.Sc. degree in Bioelectric Engineering from the Sharif University of Technology in 2000 and the Ph.D. degree in Biomedical Engineering from the Amirkabir University of Technology in 2006, Tehran, Iran. He then worked for one year at the University of Isfahan as a faculty member of Biomedical Engineering group. From 2007 to 2012, he was a faculty member of Biomedical Engineering group at Shahed University. On February 2013, he joined K.N. Toosi University of Technology. Now he is an Assistant Professor in Biomedical Engineering group of this university. His main research interests are focused on sound and speech processing in medical and psychological assessments whose results, are presented as a new course at Electrical Engineering department of K.N. Toosi University for supplementary students by Dr. Vali. Also since 2017, he's been working on Big Data processing in medical applications and he is trying to progress the advantages of it among physicians and hospital managers.

Selected journal papers:

1. Esmaili, I., Dabanloo, N.J., **Vali, M.,** "An Automatic Prolongation Detection Approach in Continuous Speech with Robustness Against Speaking Rate Variations" , Journal of Medical Signals and Sensors, 2017.
2. Esmaili, I., Dabanloo, N.J., **Vali, M.,** "Automatic classification of speech dysfluencies in continuous speech based on similarity measures and morphological image processing tools", Biomedical Signal Processing and Control, 2016.
3. Pourmohammadi, S., **Vali, M.,** Ghadyani, M., "Bandwidth extension of narrowband speech in log spectra domain using neural network", Turkish Journal of Electrical Engineering and Computer Sciences, 2015.
4. Akafi, E., **Vali, M.,** Moradi, N., Baghban, K., "Assessment of hypernasality for children with cleft palate based on cepstrum analysis", Journal of Medical Signals and Sensors, 2013.
5. Maftouni, N., Amininasab, M., **Vali, M.,** Ejtehadi, M., Kowsari, F., "A molecular dynamics simulation study of nanomechanical properties of asymmetric lipid bilayer", Journal of Membrane Biology, 2013.

Department of Communications

Department of Communications is the most precedent educational core of both Faculty of Electrical Engineering and K.N. Toosi University of Technology. This department is active in traditional communications, optical communications, and telecommunication circuits and systems.

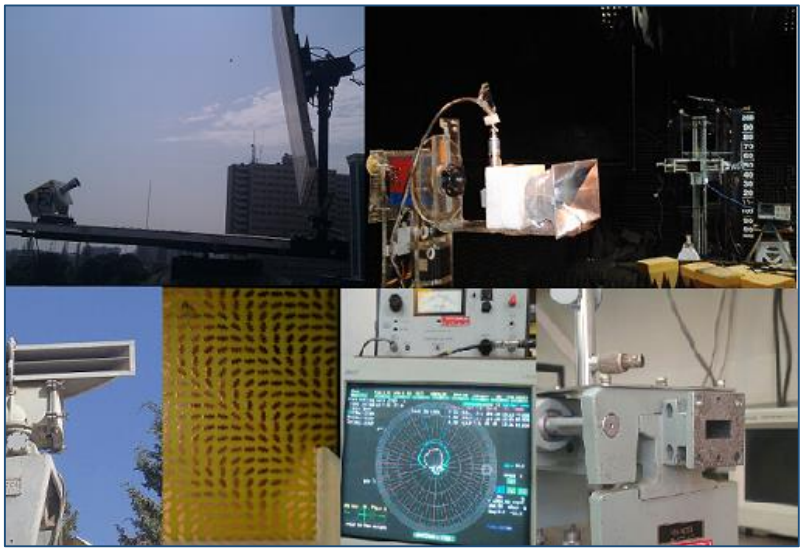
Undoubtedly, faculty members and alumni of the Department of Communications of K.N. Toosi University of Technology play a key role in the development of communications and telecommunications science and technology in Iran, national universities and higher education institutes as well as telecommunications industries.

Core Research Areas

- Electromagnetic Waves Analysis and Simulation
- Information Theory, Coding, and Secure Communications
- Wireless and Mobile Communications
- Optics and Plasmonics, Materials, Effects, and Devices
- Antennas and Microwave
- Digital Signal Processing
- RF and Microwave Circuits
- Radar Systems

Research Laboratories

- Broadband Wireless Communication and Signal Processing Laboratory
- Coding and Cryptography Laboratory
- Communication Systems Laboratory
- Optical Communications and Nano-optics Laboratory
- Radar Advanced Technologies Laboratory
- Electromagnetic Simulation Laboratory
- Wireless Terminals Quality Control Laboratory



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Education:

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MSc.: Northrop University, Inglewood-California, USA, 1978.

BSc.: High Institute of Telecommunication, Tehran, Iran, 1970.

Biography:

M. Sadegh Abrishamian received his B.S. degree from the High Institute of Telecommunication, Iran, and his M.S. from the Northrop University, Inglewood, CA, and Ph.D. degree from Bradford University, Bradford, UK, all in Electrical Engineering. Currently he is working as a Professor in the Department of Electrical Engineering, K.N. Toosi University of Technology (KNTU), Tehran, Iran. His research activities are about Mathematical Modeling of Wave Phenomena, Computational electromagnetics (CEM) especially FDTD Method, Scattering of EM Waves, Periodicity in electromagnetic (Photonic, Plasmonic, Frequency Selective Surface (FSS), Double Negative Materials (DNG)).

Selected journal papers:

1. Amir Setayesh, **Mohammad Sadegh Abrishamian**, "New Version of PaWaIC Helix-TWT Particle-Wave Interaction Code Based on Pseudo-Spectral Analytical Time-Domain Technique with Collocated Space and Time-Marching Scheme: PaWaIC-PSATD-CSaT," IEEE TRANSACTIONS ON ELECTRON DEVICES, Accepted for publication, 2018.
2. Hadiseh Nasari, **M.S. Abrishamian** "Numerical Study of Plasmonic Resonance Enhanced, Terahertz Second Harmonic Generation from Graphene in the Otto Configuration", IEEE Journal of Quantum Electronics, 2017.
3. Hamidreza Taghvaee, Faezeh Zarrinkhat, **Mohammad Sadegh Abrishamian**, "Terahertz Kerr nonlinearity analysis of microribbon graphene array using harmonic balance method", J. Phys. D: Appl. Phys, 2017.
4. Hadiseh Nasari**, M.S. Abrishamian** "Terahertz bistability and multistability in graphene/dielectric Fibonacci multilayer", Applied Optics, 2017.
5. Amir Setayesh, **Mohammad Sadegh Abrishamian**, "PaWaIC-PSAOFDTD: Particle-Wave Interaction Code with Pseudo-Spectral Arbitrary-Order Accurate Temporal and Spatial Derivatives FDTD Technique for HelixTWT," IEEE Transactions on Electron Devices, 2017.

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Education:

Ph.D.: Sharif University of Technology, Tehran, Iran, 2009.

M.Sc.: Sharif University of Technology, Tehran, Iran, 2003.

B.Sc.: K.N. Toosi University of Technology, Tehran, Iran, 2000.

Research Interest:

- Radio frequency circuits and systems
- Passive and active microwave circuits

Biography:

Arash Ahmadi received the B.Sc. degree in communication engineering from K. N. Toosi University of Technology, Tehran, Iran, in 2000, the M. Sc. degree in communication engineering from Sharif University of Technology in 2003, and received his Ph.D. degree in communication engineering from Sharif University of Technology, Tehran, Iran, in 2009. He is currently an assistant professor at K. N. Toosi University of Technology**.**

Selected journal papers:

1. T. Naeimi, **A. Ahmadi**, "Design and Analysis of a Broadband 4-Way High Power Combiner in the VHF/UHF Band," IET Science, Measurement & Technology, Accepted Paper, 2017.
2. M. Taherkhani, **A. Ahmadi**, "Broadband High Power Stripline Compact Multisection Coupled-Line Coupler for VHF and UHF Applications," Turkish Journal of Electrical Engineering & Computer Sciences, 2017.
3. **A. Ahmadi**, A. Banai, F. Farzaneh, "Phase Noise Degradation of Varactor and BJT Frequency Multipliers in Presence of Parametric Instability," IET-Microw. Antennas and Propagation, 2010.
4. A. Nuritabar, H. Shamsi, **A. Ahmadi**, "Design and Fabrication of a Compact Microstrip Low-Pass Filter with Sharp Transition Band and High Suppression Factor," Journal of Iranian Association of Electrical and Electronics Engineers, 2017.
5. A. Nooraei Yeganeh, **A. Ahmadi**, Voltage controlled oscillator base on substrate integrated waveguide resonator, Journal of Radar, 2017.

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Education:

Ph.D.: Digital Communication Systems, University of Manchester, Manchester, U.K., 1997.

M.Sc.: Electrical Engineering, University of Tehran, Iran, 1977.

Research Interest:

- Error control coding
- Secure communications
- Cryptography

Biography:

Mahmoud Ahmadian-Attaris is a Professor at the Department of Electrical Engineering, K. N. Toosi University of Technology, Iran. He received his M.Sc. degree in Electrical Engineering from the University of Tehran, Iran, in 1977 and the Ph.D. degree in Digital Communication Systems from the University of Manchester in 1997. His research interests include coding theory and cryptography.

Selected journal papers:

1. Mehrizi, S., Khosravi, S., **Ahmadian**, **M.**, "An Efficient Procedure for Bilayer-Expurgated LDPC Codes Design in Cooperative Relay Channels" , IEEE Communications Letters , 2017.
2. Salami, Z., **Ahmadian-Attari**, **M.**, Jannati, H., Aref, M.R., "A Location Privacy-Preserving Method for Spectrum Sharing in Database-Driven Cognitive Radio Networks ",Wireless Personal Communications, 2017.
3. Shooshtari, M.K., **Ahmadian-Attari**, **M.**, Aref, M.R., "Provably secure strong designated verifier signature scheme based on coding theory" , International Journal of Communication Systems , 2017.
4. Vahidian, S., Soleimani-Nasab, E., Aissa, S., **Ahmadian-Attari**, **M.**, "Bidirectional AF Relaying with Underlay Spectrum Sharing in Cognitive Radio Networks" , IEEE Transactions on Vehicular Technology, 2017.
5. Maleki Sadr, M.A., Mahboobi, B., Mehrizi, S., **Ahmadian Attari, M.,** Ardebilipour, M. , Stochastic Robust Collaborative Beamforming: Non-Regenerative Relay , IEEE Transactions on Communications , 2016.

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Education:

Ph.D.: Telecommunications, Electrical Engineering Department, Sharif University of Technology, Tehran, Iran, 2011.

M.Sc.: Telecommunications, Electrical Engineering Department, Sharif University of Technology, Tehran, Iran, 2005.

B.Sc.: Telecommunications, Electrical Engineering Department, Sharif University of Technology, Tehran, Iran, 2003.

Research Interest:

- Network Information Theory
- Information-theoretic security
- Secure Communications and cryptography
- Wireless Communications

Biography:

Bahareh Akhbari received the B.Sc. degree in 2003, the M.Sc. degree in 2005 and the Ph.D. degree in 2011 all in Electrical Engineering from Sharif University of Technology (SUT), Tehran, Iran. She was also a visiting Ph.D. student at the University of Minnesota for one year, starting in 2010. Since 2012, she is an assistant professor of the Faculty of Electrical Engineering, K. N. Toosi University of Technology (KNTU), Tehran, Iran. Her research interests include network information theory, information-theoretic security, communication theory and cryptography.

Selected journal papers:

1. H. Zivari, **B. Akhbari,** M. Ahmadian, M. R. Aref, "Imperfect and Perfect Secrecy in Compound Multiple Access Channel with Confidential Message," in IEEE Transactions on Information Forensics & Security, 2016.
2. H. Zivari, **B. Akhbari,** M. Ahmadian, M. R. Aref, "Multiple Access Channel with Common Message and Secrecy constraint," in IET Communications, 2016.
3. K. Baghery, B. Abdolmaleki, **B. Akhbari,** M. R. Aref, “Enhancing Privacy of Recent Authentication Schemes for Low-Cost RFID systems,” in the ISC International Journal of Information Security, 2015.
4. M. Mirmohseni, **B. Akhbari,** M. R. Aref, “On the Capacity of Interference Channel with Causal and Non-Causal Generalized Feedback at the Cognitive Transmitter,” IEEE Transactions on Information Theory, 2012.

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Education:

Ph.D.: Telecommunications from the Katholieke Universiteit Leuven (KU Leuven), 2013.

M.Sc.: Electrical and Telecommunication Engineering from University of Tehran, Tehran, Iran, 2005.

B.Sc.: Electrical and Telecommunication Engineering from University of Tehran, Tehran, Iran, 2002.

Research Interest:

- Applied Electromagnetics (Agriculture, Health, ...)
- Antennas Arrays, (Digital) Beam Forming, Beam Shaping
- Electrically Small Antennas, Satellite Antennas
- EMC, Shielding

Biography:

Hadi Aliakbarian is an Assistant Professor in K.N. Toosi University of Technology in Iran since 2013. He received his B.S and M.S degrees in Electrical and Telecommunication Engineering from the University of Tehran in 2002 and 2005 respectively, and the Ph.D. degree in Electrical Engineering from the Katholieke Universiteit Leuven (KU Leuven) in 2013. He worked for the microwave laboratory and the Center of Excellence on Applied Electromagnetics at the University of Tehran as an Associated Researcher from 2005 to 2007. He is an IEEE senior member since 2015.

Selected journal papers:

1. M. Fallahzadeh, **H. Aliakbarian,** A. Haddadi, S. Radiom, “Beam Shaping of X-Band SCRA Antenna for LEO-Satellite Applications," Accepted and to be published in IEEE Aerospace & Electronics Systems Magazine, Accepted in Jan 2017.
2. H. Zakerifard, **H. Aliakbarian,** A. Khaleghi, "A compact multiple-way double ring-cavity power divider." Microwave and Optical Technology Letters 59.8 (2017): 2006-2012.
3. Hantao Xu, **H. Aliakbarian,** G. A. E. Vandenbosch, “Off the Shelf Low Cost Target Tracking Architecture for Wireless Communications, IEEE Systems Journal, 2015.
4. Bo Liu, **H. Aliakbarian,** G. A. E. Vandenbosch, G. Gielen “An Efficient Method for Antenna Design Optimization Based on Evolutionary Computation and Machine Learning Techniques”, IEEE Trans. Antenna Propagation, 2014.
5. Hantao Xu, **H. Aliakbarian,** H., Van Der Westhuizen, E., Wolhuter, R., Vandenbosch, G.A.E., “An architectural scheme for real-time multiple users beam tracking systems “,IEEE Systems Journal , 2014 ,

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Education:

Ph.D.: Electrical Engineering, University of Surrey, Guildford, Surrey, UK, 2001.

M.Sc.: Electrical Engineering, University of Tarbiat Modares Tehran, Iran, 1988.

B.Sc.: Telecommunications, Faculty of Electrical Engineering K.N. Toosi University of Technology, Tehran, Iran, 1977.

Research Interest:

- Wireless Broadband communications
- Advanced communications
- Relay Networks
- Cognitive Radio
- Mobile Communications
- Spread Spectrum Communications

Biography:

Mehrdad Ardebilipour was born in Iran, Babol. He received BSC. And MSC Degrees in electrical engineering from K. N. Toosi University of technology, Tehran, Iran, in 1977 and Tarbiat Modarres University, Tehran, Iran in 1989, respectively. He has also been awarded the degree of Ph. D by the University of Surrey, Guilford, England, in 2001. Since 2001, he has been an academic board member at K. N. Toosi University of technology. Dr. Ardebilipour has co-authored more than 100 refereed journal or conference papers. He was director of Communication Engineering Department during 2006-2011 and head of Spread Spectrum and Wireless Communications research laboratory. His current research interests are 5G, Massive MIMO, Relay networks, Cognitive radio, wireless communications, advance communications and spread spectrum.

Selected journal papers:

1. Maleki Sadr, M.A., Mahboobi, B., Mehrizi, S., Ahmadian Attari, M., **Ardebilipour, M.,** "Stochastic Robust Collaborative Beamforming: Non-Regenerative Relay", IEEE Transactions on Communications, 2016.
2. E Soleimani-Nasab, M Matthaiou, **M Ardebilipour,** G Karagiannidis "Two-way AF relaying in the presence of co-channel interference",IEEE Transactions on Communications, 2013.
3. Mahboobi, B., Mehrizi, S., **Ardebilipour, M.,** "Multicast relay beamforming in CDMA networks: Nonregenerative approach" , IEEE Communications Letters, 2015.
4. Mahboobi, B., **Ardebilipour, M.,** Mohammadkarimi, M., "Optimal Detection of Faded Pilot Signal in MIMO Channels with Applications in Cognitive Radio Systems", Wireless Personal Communications, 2015.
5. E Soleimani-Nasab, M Matthaiou, **M Ardebilipour,** "Multi-relay MIMO Systems With OSTBC Over Nakagami-m Fading Channels", IEEE Transactions on Vehicular Technology, 2013.

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Education:

Ph.D.: Electrical Engineering- Communication Systems, Chalmers University of Technology, Sweden, 2013.

M.Sc.: Electrical Engineering- Communication Systems, University of Tehran, Iran, 2002.

B.Sc.: Electrical Engineering-Electronics, University of Tehran, Iran, 1999.

Research Interest:

- Optical networking
- Statistical signal processing
- Digital communications
- Channel modeling
- Coded modulation
- Optical communications

Biography:

Lotfollah Beygi received his Ph.D. degree from Chalmers University of Technology, Sweden, in 2013. He was with Qamcom Research & Technology AB as an experienced signal processing developer and with Ericsson AB as an R&D researcher from 2013-2015. He is currently with Communications Division of EE Dept. of K.N. Toosi University, as an assistant professor. His main research interests include optical networking, statistical signal processing, digital communications, channel modeling, coded modulation, and optical communications.

Selected journal papers:

1. **L. Beygi**, E. Agrell, J. M. Kahn, M. Karlsson, "Coded Modulation for Optical Com- munications", IEEE Signal Processing Magazine (special issue), 2014.
2. **L. Beygi**, E. Agrell, J. M. Kahn, M. Karlsson, "Rate-Adaptive Coded Modulation for Fiber-Optic Communications", IEEE/OSA Journal of Lightwave Technology, 2014.
3. **L. Beygi**, N. V. Irukulapati, E. Agrell, P. Johannisson, M. Karlsson, H. Wymeersch, P. Serena, A. Bononi, "On nonlinearly induced noise in optical links with digital backpropagation", Optics Express, 2013.
4. **L. Beygi**, E. Agrell, P. Johannisson, M. Karlsson, H. Wymeersch, "A Discrete-Time Model for Fiber-Optical Channels", IEEE Transactions on Communications, 2012.
5. **L. Beygi**, E. Agrell, M. Karlsson, P. Johannisson, "Signal Statistics in Fiber-Optical Channels with Polarization-Multiplexing and Self-Phase Modulation", IEEE/OSA Journal of Lightwave Technology, 2011.

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Ph.D.: Electrical Engineering, University of Tehran, Tehran, Iran, 2011.

M.Sc.: Electrical Engineering, Amir-Kabir University of Technology, Tehran, Iran, 2006.

B.Sc.: Electrical Engineering, Iran University of Science and Technology, Tehran, Iran, 2003.

Research Interest:

- Wireless Communications
- Cooperative Communications
- Cognitive Radio
- Multiple Input Multiple Output (MIMO) Systems and Space-Time Coding

Biography:

Ali H. Bastami received the B.S. degree in electrical engineering from the University of Science and Technology, Tehran, Iran, in 2003, the M.S. degree (Hons.) in electrical engineering from the Amirkabir University of Technology, Tehran, in 2006, and the Ph.D. degree in electrical engineering from the University of Tehran, Tehran, in 2011. Since 2012, he has been an Assistant Professor with the Department of Electrical and Computer Engineering, K. N. Toosi University of Technology, Tehran. His current research interests include cooperative communications, cognitive radio networks, and multiple-input multiple-output communication systems. He received the Best Thesis Award from the Department of Electrical and Computer Engineering, University of Tehran, in 2011.

Selected journal papers:

1. **Bastami, A.H.,** "Two-Way Incremental Relaying with Symbol-Based Network Coding: Performance Analysis and Optimal Thresholds", IEEE Transactions on Communications, 2017.
2. **Bastami, A.H.,** "SNR-based selective relaying schemes in network-coded two-way relay channels", IET Communications, 2016.
3. **Bastami, A.H.,** Olfat, A. , "Optimal incremental relaying in cooperative diversity systems "IET Communications, 2013.
4. **Bastami, A.H.,** Olfat, A., "BER-constrained incremental relaying with relay selection in cooperative wireless networks" , Wireless Personal Communications, 2013.
5. **Bastami, A.H.,** Olfat, A., "Selection relaying schemes for cooperative wireless networks with adaptive modulation" , IEEE Transactions on Vehicular Technology, 2011.

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Education:

Ph.D.: Electrical Engineering, University of Tehran, Iran, 2009.

M.Sc.: Electrical Engineering, University of Tehran, Iran, 2003.

B.Sc.: Electrical Engineering, University of Tehran, Iran, 2001.

Research Interest:

- Active Microwave Circuits
- Terahertz Systems and Nonlinear Frequency Conversion
- Terahertz and Millimeter-Wave Components
- Millimeter Wave Imaging/THz Imaging
- Photonic Crystals and Integrated Optics
- Nonlinear Optics

Biography:

Dr. Zahra Ghattan Kashani received the B.Sc., M.Sc. and the Ph.D. Degrees from the University of Tehran, Iran, all in electrical engineering in 2001, 2003, and 2009 respectively. From 2011 to 2013, she was with Iran Telecommunication Research Center, Tehran, Iran working on high frequency circuits. Since 2014, she has been an Assistant Professor with the Electrical Engineering Department, K. N. Toosi University of Technology (KNTU), Tehran, Iran. Her primary research interests include computational electromagnetics for mm-wave/THz engineering and photonics.

Selected journal papers:

1. Mokari, N., Hajipour, P., Mohammadi, L., Sardrood, P.S., **Ghattan, Z.,** "Resource allocation for non-delay-sensitive satellite services using adaptive coding and modulation-multiple-input and multiple-output-orthogonal frequency division multiplexing" , IET Communications , 2016.
2. Hatefi, H. , **Ghattan, Z.,** Keramat, M., Rashed-Mohassel, J.," Fourier Transform Analysis of Graphene-based Multilayer Structures," IET Microwaves, Antennas & Propagation, 2013.
3. **Ghattan, Z.,** Izadi, S.A., Shahabadi, M., "Analysis of terahertz-induced optical phase modulation in a nonlinear dielectric slab" , Progress In Electromagnetics Research M, 2010.
4. **Ghattan, Z.,** Hasek, T., Wilk, R., Shahabadi, M., Koch, M., "Sub-terahertz on-off switch based on a two-dimensional photonic crystal infiltrated by liquid crystals" , Optics Communications, 2008.
5. **Ghattan, Z.,** Hasek, T., Shahabadi, M., Koch, M., "Coupling of free space sub-terahertz waves into dielectric slabs using PC waveguides", Optics Express, 2008.

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Education:

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M.Sc.: Telecommunications, School of radio and Television, Tehran, Iran, 1980.

B.Sc.: Telecommunications, Faculty of Electrical Engineering, K. N. Toosi University of Technology, Tehran, Iran, 1975.

Research Interest:

- Optical Communications
- Photonics
- Optical and Photonic Devices, Effects, and Materials

Biography:

Nosrat Granpayeh has received his BSc, MSc, and PhD degrees in Telecommunication Engineering from Telecommunication College, Radio and Television College, Tehran, Iran, and University of NSW, Sydney Australia, in 1975, 1980, and 1996, respectively. In 1975, as an honor graduate of the Faculty of Electrical and Computer Engineering of K.N. Toosi University of Technology (formerly, Telecommunication College), Tehran, Iran, he was employed as an instructor, where he was later promoted to lecturer, assistant professor, associate professor, and professor in 1980, 1996, 2007, and 2016 respectively. His research interests are in optical devices, equipment, and materials, optical fibers, and optical fiber effects. He is the author and co-author of 80 peer reviewed journal and 80 conference papers. Professor Granpayeh is a senior member of IEEE, member of OSA (Optical Society of America), OPSI (Optics and Photonics Society of Iran), ISEE (Iran Society of Engineering Education), and the Chair of the Professional Activities Committee of IEEE Iran Section.

Selected Journal Papers:

1. Mohammad Danaeifar, **Nosrat Granpayeh**, "Analysis and Synthesis of Bianisotropic Metasurfaces by Using Analytical Approach," Journal of Applied Physics, 2018.
2. Fatemeh Davoodi, **Nosrat Granpayeh**, "Near-Infrared Absorbers Based on the Heterostructures of Two-Dimensional Materials," Applied Optics, 2018.
3. Alireza Dolatabady and **Nosrat Granpayeh**, "Plasmonic Magnetic Sensor Based on Graphene Mounted on a Magneto-Optic Grating," IEEE Transactions on Magnetics, 2018.
4. Somayyeh Asgari and **Nosrat Granpayeh**, "Tunable Plasmonically Induced Reflection in Graphene-Coupled Side Resonators and its Application," Journal of Nanophotonics, 2017.
5. Elnaz Shokati, **Nosrat Granpayeh**, and Mohammad Danaeifar, "Wideband and Multi-Frequency Infrared Cloaking of Spherical Objects by Using the Graphene-Based Metasurface," Applied Optics, 2017.

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Education:

Ph.D.: Electrical Engineering, Wave Communication, K.N. Toosi University of Technology, Tehran, Iran, 2011.

M.Sc.: Electrical Engineering, Wave Communication, K.N. Toosi University of Technology, Tehran, Iran, 2006.

B.Sc.: Electrical Engineering, Communication, Sharif University of Technology, Tehran, Iran, 2004**.**

Research Interest:

- UWB Radar
- UWB Microwave Imaging
- Real Time Locating System
- Time Domain Electromagnetics
- Body Area Network Communication
- Ultra-wideband Antennas
- Array Antennas

Biography:

Somayyeh Chamaani received the B.S. degree in electrical engineering from the Sharif University of Technology in 2004, and the M.S. and the Ph.D. degrees in electrical engineering from the K. N. Toosi University of Technology in 2006 and 2011, respectively. She joined the K. N. Toosi University of Technology in 2011 as an Assistant Professor of Electrical Engineering. Her research group focuses on UWB Radar, UWB Imaging, UWB localization, and UWB antennas. Her second area of interest is body area applications, including localized hyperthermia using phased array antennas, in-body to off-body channel modeling and communications, and wearable antennas.

Selected journal papers:

1. F. Fereidoony, **S. Chamaani,** S. A. Mirtaheri, M. A. Sebt, "Continuous basis compressive time-delay estimation in overlapped echoes," IET Signal Processing, 2017.
2. A. Akbarpour, **S. Chamaani,** "Dual-band electrically coupled loop antenna for implant applications," IET Microwaves, Antennas & Propagation, 2017.
3. F. Fereidoony, S. A. Mirtaheri, **S. Chamaani,** " High-resolution range estimation using time delays in ultra-wideband M-sequence radar," IET Microwaves, Antennas and Propagation, 2017.
4. M. Mahmoodi, **S. Chamaani,** "Broadband, low-cost and low cross-polarisation dual linearly polarised reflect array antenna," IET Microwaves, Antennas Propag, 2016.
5. **S. Chamaani,** S. A. Mirtaheri, M. S. Abrishamian, "Improvement of time and frequency domain performance of antipodal Vivaldi antenna using multi-objective particle swarm optimization," IEEE Transactions on Antennas and Propagation, 2011.

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Education:

Ph.D.: Telecommunication, Tokyo Institue of Technology, Tokyo, 1991.

M.Sc.: Electrical Engineering, UCLA, USA, 1978.

B.Sc.: Communication, Telecom College, Tehran, Iran, 1971.

Research Interest:

- EMC and Electromagnetic Wave Absorber
- UWB Antennas
- Filters
- Time domain Electromagnetics antennas

Biography:

Seyed Abdullah Mirtaheri was born in Tehran, Iran, in 1949. He received the B.Sc. degree in communication engineering from the Telecom College, Tehran, in 1971, the M.Sc. degree in electrical engineering from UCLA in 1978, and the Ph.D. degree from the Tokyo Institute of Technology in 1991. After receiving his master's degree, he joined the Department of Electrical Engineering, K. N. Toosi University of Technology, Tehran. He started his research in EM wave absorbers in 1988 at the Tokyo Institute of Technology. His current research interests include time domain electromagnetics, antennas, and EMC especially with broadband and thin EM wave absorbers.

Selected journal papers:

1. Fereidoony, F., **Mirtaheri, S.A.,** Chamaani, S., "High-resolution range estimation using time delays in ultra-wideband M-sequence radar" , IET Microwaves, Antennas and Propagation, 2017.
2. Fereidoony, F., **Mirtaheri, S.A.,** Chamaani, S., "M-Sequence Sensor and Continuous Basis Estimator for Wall Parameter Estimation Utilizing Through the Wall Sensing", IEEE Sensors Journal , 2017.
3. Mousavi, S.M., **Mirtaheri, S.A.,** "Adjusting aperture illumination on dual reflect array antennas for maximum aperture efficiency", AEU - International Journal of Electronics and Communications, 2016.
4. Fereidoony, F., Sebt, M.A., Chamaani, S., **Mirtaheri, S.A,** ".Model-based super-resolution time-delay estimation with sample rate consideration", IET Signal Processing , 2016.
5. Kaboli, M., **Mirtaheri, S.A.,** Abrishamian, M.S, "High-isolation X-Polar antenna, IEEE Antennas and Wireless Propagation Letters, 2010.

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Education:

Ph.D.: Electrical Engineering, University of Manchester, Manchester, U.K., 1996.

M.Sc.: Electrical Engineering, University of Tarbiat Modares, Tehran, Iran, 1987.

B.Sc.: Electrical Engineering, Telecommunication College (PTT), 1979.

Research Interest:

- Radar systems
- Wireless and mobile communications
- Information technology

Biography:

Kamal Mohamed-pour received his B.Sc. in electrical engineering at Telecommunication College (PTT) in 1979. He received the M.Sc. Degree in electrical engineering and Communication systems from the University of Tarbiat Modares in 1987, and pursued his study towards Ph.D. level in the same field in U.K. He received the Ph.D. Degree from the University of Manchester, 1996. He is now, a full professor in telecommunication, the Department of Electrical Engineering at K. N. Toosi University of Technology, Tehran, Iran. His main research interests are broadband wireless and mobile communication, Radar systems, MIMO and OFDM, and digital signal processing.

Selected journal papers:

1. M.J. Azizipoor, **K. Mohamed-pour, "**Clipping Noise Estimation in OFDM System: A Greedy Approach", Elsevier AEU, 2017.
2. M.H. Moghadam, **K. Mohamed-pour,** S.M.H. Andargoli, "Weighted Sum Throughput Maximaion for Cooperative Relay-Aided Multi-cell OFDMA Cellular Networks Considering Partial Fairness", IET-COM, 2016.
3. S.M.H. Andargoli, **K. Mohamed-pour,** "Cooperative Resource Allocation Algorithms in Cellular OFDMA Systems for Target SINR Provision", IET-COM, 2014.
4. M. Ahmadi, **K. Mohamed-pour,** "MIMO Space Time Adaptive Processing with Uncertainty in the Knowledge of Target Parameters, Journal of Remote Sensing Technology", JRST, 2014.
5. M. Ahmadi, **K. Mohamed-pour,** "Space Time Adaptive Processing for Phased-MIMO Radar in the Non homogeneous Clutter Environment", IET Radar, Sonar and Navigation, 2014.

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Education:

Post-Doctorate: Applied-physics (Bionano photonics) Chalmers University of Technology, Gothenburg, Sweden, 2009.

Ph.D.: Electrical Eng. (Telecomm.), K.N. Toosi University of Technology, Tehran, Iran. Visiting: Chalmers University of Technology, Gothenburg, Sweden, 2006.

M.Sc.: Electrical Eng. (Telecomm.) Iran University of Science and Technology, Tehran, Iran, 2001.

B.Sc.: Electrical Engineering, Telecommunication college (PTT), 1991.

Research Interest:

- Complex electrodynamics and optical Media
- Radio and optical telecomm, photonic networks
- Nano-optics, photonics, nanoplasmonics
- Microwave and optical components
- Nano-antennas

Biography:

Tavakol Pakizeh was born in Iran, 1977. He received the Ph.D. degree in electrical engineering-telecommunication (fields and waves) from the K.N. Toosi University of Technology (KNTU), Tehran, Iran, in 2006. He is an A Professor in electrical engineering-telecommunications at the KNTU. He was with the Nanobiophotonics Division, Department of Applied Physics, Chalmers University of Technology, Gothenburg, Sweden, as a visiting Ph.D. student and Postdoctoral associate researcher from 2005 to 2009. His current research interests include electrodynamics of complex media, plasmonics, optical activity, nanooptics, and nanoantennas.

Selected journal papers:

1. Najafabadi, A.F., **Pakizeh, T.,** "Analytical chiroptics of 2D and 3D nanoantennas", ACS Photonics, 2017.
2. Abedi, S., **Pakizeh, T.,** "Packed Uagi-Uda nano-antennas using unidirectional feed at visible wavelengths", Optics Letters, 2017.
3. **Pakizeh, T.,** Käll, M., "Unidirectional ultracompact optical nanoantennas", Nano Letters, 2009.
4. Najafabadi, A.F., **Pakizeh, T.,** "Optical absorbing origin of chiroptical activity in planar plasmonic metasurfaces", Scientific Reports, 2017.
5. Lodewijks, K., Maccaf., N., **Pakizeh, T.,** (...), Vavassori, P., Dmitriev, A., "Magnetoplasmonic design rules for active magneto-optics", Nano Letters, 2014.

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Education:

Ph.D.: University of Bradford, UK, 1990.

M.Sc.: Digital Communications Engineering from the University of Bradford and UMIST (University of Manchester Institute of Science and Technology) UK as a joint program, 1987.

B.Sc.: Telecommunications Engineering from the K.N. Toosi, University of Technology, Tehran, Iran, 1984.

Research Interest:

- Antennas & Propagation
- Computational Electromagnetic
- Radio Links
- Radar

Biography:

Professor R.A. Sadegh-zadeh is a full professor of communications Engineering at the faculty of Electrical Engineering of the K.N. Toosi University of Technology. He received his B.Sc. in 1984 in Telecommunications Engineering from the K.N. Toosi University of Technology in Tehran, Iran, and M.Sc. in digital Communications Engineering from the University of Bradford and UMIST (University of Manchester Institute of Science and Technology), UK as a joint program in 1987. He received his Ph.D. in electromagnetic and antenna from the University of Bradford, UK in 1990. He worked as a Post-Doctoral Research assistant in the field of propagation, electromagnetic, antenna, Bio-Medical, and Wireless communications from 1990 till 1997. From 1984 to 1985 he was with Telecommunication Company of Iran (TCI) working on Networking. Since 1997, he is with the K.N. Toosi University of Technology working with Telecommunications Dept. at the faculty of Electrical Engineering. He has published more than 200 referable papers in international journals and conferences and 10 Technical & Textbooks. Professor Sadegh-zadeh current interests are numerical techniques in electromagnetic, antenna, propagation, radio networks, wireless communications, nano-antennas and radar systems.

Selected journal papers:

1. Hosseini, S.M., **Sadeghzadeh, R.A.,** Virdee, B.S., "DOA estimation using multiple measurement vector model with sparse solutions in linear array scenarios", Eurasip Journal on Wireless Communications and Networking, 2017.
2. Khajeh Mohammad Lou, R., Naser-Moghadasi, M., **Sadeghzadeh, R.A.,** "Compact Multi-Band Circularly Polarized CPW Fed Antenna Based on Metamaterial Resonator", Wireless Personal Communications, 2017.
3. Jalali, M., Naser-Moghadasi, M., **Sadeghzadeh, R.A.,** "Dual circularly polarized multilayer MIMO antenna array with an enhanced SR-feeding network for C-band application", International Journal of Microwave and Wireless Technologies, 2017.
4. Faridani, M., **Sadeghzadeh, R.A.,** Khatir, M., "Terahertz dual-band dipole antenna with novel small flat quartz-copper reflector", Optik , 2017.
5. Farahani, H.S., **Sadeghzadeh, R.A.,** Gharanfeli, N., Kishk, A.A., " Novel design of microwave diplexers using gap waveguide technology", Microwave and Optical Technology Letters, 2017.

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Education:

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M.Sc.: Electrical Engineering - Communication Systems, Sharif University of Tech., Tehran, Iran, 2007.

B.Sc.: Electrical Engineering - Communication Systems, Sharif University of Tech., Tehran, Iran, 2005.

Research Interest:

- Statistical Signal Processing
- Radar signal Processing
- Seismic Data Analysis
- SAR

Biography:

Mohammad Ali Sebt was born in Iran. He received the B.S., M.S. and Ph.D. degrees all in electrical engineering from Sharif University of Technology, Tehran, Iran, in 2005, 2007, and 2011, respectively. He has been a Faculty Member with the Department of Electrical Engineering, K. N. Toosi University of Technology, Tehran, Iran, since 2011. His main research interests are radar signal processing, detection and estimation theory, and array signal processing.

Selected journal papers:

1. Oveis, A.H., **Sebt, M.A.,** "Dictionary-Based Principal Component Analysis for Ground Moving Target Indication by Synthetic Aperture Radar", IEEE Geoscience and Remote Sensing Letters, 2017.
2. Noroozi, A., Oveis, A.H., **Sebt, M.A.,** "Iterative Target Localization in Distributed MIMO Radar from Bistatic Range Measurements", IEEE Signal Processing Letters, 2017.
3. Noroozi, A., **Sebt, M.A.,** "Target Localization in Multistatic Passive Radar Using SVD Approach for Eliminating the Nuisance Parameters", IEEE Transactions on Aerospace and Electronic Systems, 2017.
4. Hosseini, S.M.R., **Sebt, M.A.,** "Array interpolation using covariance matrix completion of minimum-size virtual array" , IEEE Signal Processing Letters , 2017.
5. Fereidoony, F., Chamaani, S., Mirtaheri, S.A., **Sebt, M.A.,** "Continuous basis compressive time-delay estimation in overlapped echoes", IET Signal Processing, 2017.

Department of Electrical Power Systems

Advanced, safe, and stable electric industry is one of the key requirements of industrial development of a country. Department of Electrical Power Systems of the Faculty of Electrical Engineering has a reputed history in teaching and research in various branches of electric power generation, transmission, dispatching, and also electric machinery. Reputation of the faculty members, students, and alumni of the Department of Electrical Power Systems of K.N. Toosi University of Technology stems from their quality academic research as well as their efforts in solving practical challenges in electrical industries of the country.

Professional activities of the Department of Electrical Power Systems are conducted in two major areas: power systems and electrical machinery and power electronics.

Core Research Areas

- Power Systems Dynamics
- High Voltage and Insulation
- Power Electronics and Electrical Drives
- Power Quality and Flexible Power Systems
- Advanced Power System Operation and Control
- Analysis and Design of Electrical Machines
- Electrical Power Distribution Systems
- Hybrid and Electrical Vehicles
- Smart Grids

Research Laboratories

- Electrical Machines and vehicles laboratory
- Management of Electric Energy and Distribution Systems Laboratory
- Electric Power Quality and Power Control Laboratory
- Advanced Motion Control & Power Electronic Research Laboratory
- High Voltage Laboratory

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Education:

Ph.D.: Electronic Engineering, AmirKabir University of Technology, Tehran, Iran, 2003.

M.Sc.: Electronic Engineering, AmirKabir University of Technology, Tehran, Iran, 1997.

B.Sc.: Computer Engineering, K. N Toosi University of Technology, Tehran, Iran, 1994.

Research Interest:

- Power Electronics including Dc-Dc, Ac-Ac, Dc-Ac and resonant Converter
- Electric and Hybrid Electric Vehicles traction motor drives
- Power converters for electric machines including inverters
- Novel electric machines for different applications
- Condition monitoring and fault diagnosis of electric machinery
- Auxiliary power generators
- Sensorless electric motor drive

Biography:

Karim Abbas-zadeh received the B.S. degree in communication engineering from the K.N. Toosi university of Technology, Tehran, in 1991, and the M.S. And Ph.D. degrees in electrical engineering from the AmirKabir University of Technology, Tehran, Iran, in 1997 and 2000 respectively. From 2001 to 2003, He was a Research Assistant in the Electrical Engineering Department, Texas A&M University, College Station. He is currently Professor in Electrical Engineering Department, K. N. Toosi University of Technology. His research interests include power electronic and Dc-Dc & Dc-Ac converter, electric machinery, variable-speed drives, and propulsion applications. He is the author of more than 50 published journal papers. He is actively involved in presenting short courses and consulting in his area of expertise to various industries.

Selected journal papers:

1. Saadat, P., **Abbaszadeh, K.,** “A Single-Switch High Step-Up DC-DC Converter Based on Quadratic Boost”, IEEE Transactions on Industrial Electronics, 2016.
2. Naderi, A., **Abbaszadeh, K.,** “High step-up DC-DC converter with input current ripple cancellation”, IET Power Electronics, 2016.
3. Ajily, E., Ardebili, M., **Abbaszadeh, K.,** “Magnet Defect and Rotor Eccentricity Modeling in Axial-Flux Permanent-Magnet Machines via 3-D Field Reconstruction Method” , IEEE Transactions on Energy Conversion, 2016.
4. Alam, F.R., **Abbaszadeh, K.,** “Magnetic field analysis in eccentric surface-mounted permanent-magnet motors using an improved conformal mapping method”, IEEE Transactions on Energy Conversion, 2016.
5. **Abbaszadeh, K.,** Alam, F.R., “On-Load Field Component Separation in Surface-Mounted Permanent-Magnet Motors Using an Improved Conformal Mapping Method”, IEEE Transactions on Magnetics, 2016.

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Education:

Ph.D.: Electrical Engineering, Tarbiat Modarres University, Tehran, Iran, 1998.

M.Sc.: Electrical Engineering, Amirkabir University of Technology, Tehran, Iran, 1991.

B.Sc.: Electrical Engineering, Tehran University, Tehran, Iran, 1988.

Research Interest:

- High Voltage
- Electrical Insulation and dielectrics
- Monitoring and Diagnostic of high voltage apparatus
- Partial Discharges
- Modeling and computer application in power systems

Biography:

Asghar Akbari was born in 1962 in Iran. He received his BSc degree in 1988 from Tehran University, his MSc degree in 1991 from Amirkabir University, and PhD degree in 1998 from Tarbiat Modarres University, Tehran, Iran, all in electrical engineering. Since 1998 he has worked as a lecturer and a member of the academic staff of K. N. Toosi University of Technology, Tehran, Iran. From April 2000 to February 2002, he worked as a guest scientist (postdoctoral fellow of the Alexander von Humboldt Foundation of Germany) for the Schering Institute of High Voltage Techniques and Engineering at the Leibniz University of Hanover, Germany. His main research interests are monitoring and diagnostics of high-voltage apparatus, partial discharges, modeling, and computer applications in power systems. While he is an associate professor for high-voltage engineering and power systems at K. N. Toosi University of Technology, Tehran, Iran, presently he is a guest scientist at the Leibniz Universität Hannover, Germany.

Selected journal papers:

1. Mahdipour, M., **Akbari, A.,** Werle, P., " Charge concept in partial discharge in power cables", IEEE Transactions on Dielectrics and Electrical Insulation, 2017.
2. Rezvani, M., Bathaee, S.M.T., **Akbari, A.,** "Investigating field emission current in vacuum interrupters to estimate vacuum pressure level using PIC simulation", International Transactions on Electrical Energy Systems, 2016.
3. **Akbari, A.,** Werle, P., Azirani, M.A., Mirzaei, H.R., "Challenges in calibration of the measurement of partial discharges at ultrahigh frequencies in power transformers", IEEE Electrical Insulation Magazine, 2016.
4. Jahangir, H., Hajipour, E., Vakilian, M., **Akbari, A.,** Blackburn, T., Phung, B.T., "A method to capture and de-noise partial discharge pulses using discrete wavelet transform and ANFIS", nternational Transactions on Electrical Energy Systems, 2015.
5. Shemshadi, A., Salavati, A., **Akbari, A.,** Taghi Bathaee, S.M., "Dielectric recovery process in vacuum interrupters regarding to contact materials during post arc interval", IEEE Transactions on Dielectrics and Electrical Insulation, 2015.

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Education:

Ph.D.: Sharif University of Technology, Iran-Grenoble INP University, France, 2009.

M.Sc.: Sharif University of Technology, Tehran, Iran, 2004.

B.Sc.: Shahid Beheshti University, Tehran, Iran, 2002.

Research Interests:

- Smart Grids: (Wide Area Control and Protection, Micro Grids)
- Power System Dynamic: Stability and Control
- Estimation, Identification and Fault Diagnosis
- Power System Operation and Planning

Biography:

Turaj Amraee received his Ph.D. degree in power system engineering from Sharif University of Technology, Tehran, Iran, and Grenoble Institute of Technology, Grenoble, France, in 2011. Currently, he is an Associate Professor in the Electrical Engineering Department, K. N. Toosi University of Technology, Tehran, Iran. Dr. Amraee is a Senior member of IEEE since 2016. Dr Amraee is the director of Power System Security Laboratory in school of Electrical Engineering, K. N. Toosi University of Technology. He has conducted some projects on Iranian national grid in K.N. Toosi University of Technology with the Ministry of Energy. His research interests are smart grids, power system dynamics, operation and planning.

Selected journal papers:

1. F. Teymouri, **T. Amraee,** H. Saberi, F. Capitanescu, "Towards Controlled Islanding for Enhancing Power Grid Resilience Considering Frequency Stability Constraints," IEEE Transactions on Smart Grid, 2017.
2. H. Saberi, **T. Amraee,** "Coordination of Directional Over-Current Relays in Active Distribution Networks Using Generalized Benders Decomposition," IET Generation, Transmission, and Distribution, 2017.
3. H. Saberi, H. Monsef, **T. Amraee,** "Probabilistic Congestion Driven Network Expansion Planning Using Point Estimate Technique," IET Generation, Transmission, and Distribution, 2017.
4. M. Ghaderi, **T. Amraee,** "A stabilizing remedial action scheme against power system cascading failures," IET Generation, Transmission, and Distribution.
5. Kaffashan, **T. Amraee,** "Probabilistic Under voltage Load Shedding Using Point Estimate Method," IET Generation Transmission & Distribution, 2015.

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Education:

Ph.D.: Electrical machines, University of Cardiff, UK, 1990.

M.Sc.: Electrical engineering, University of Tabriz, Iran, 1975.

B.Sc.: Electrical engineering, University of Tabriz, Iran,

Research Interest:

- Design, modeling and Manufacturing of Electrical Machines
- Design and Simulation of PMSM for Low-speed Direct Drive Application
- Design and simulation of Axial Flux PM-Generators for Direct Drive coupled wind Turbine
- Magnetic Materials

Biography:

Mohammad Ardebili received the M.S. degree from the University of Tabriz, Iran, in 1976, and the Ph.D. degree from the University of Wales, Cardiff, U.K., in 1991, both in electrical engineering. He is currently an Associate Professor and the Head of the Electrical Machines and Drives Laboratory with the Electrical Engineering Department, K. N. Toosi University of Technology, Tehran, Iran. His research interests include electrical machines and drives, magnetic materials, design and modeling of PM machines, and wind generators.

Selected journal papers:

1. Fard, J.R., **Ardebili, M.,** "Dynamic performance of the novel axial flux-switching permanent magnet motor", COMPEL - The International Journal for Computation and Mathematics in Electrical and Electronic Engineering, 2017.
2. Jamali Arand, S., **Ardebili, M.,** "Cogging torque reduction in axial-flux permanent magnet wind generators with yokeless and segmented armature by radially segmented and peripherally shifted magnet pieces", Renewable Energy, 2016.
3. Arand, S.J., **Ardebili, M.,** "Multi-objective design and prototyping of a low cogging torque axial-flux PM generator with segmented stator for small-scale direct-drive wind turbines", IET Electric Power Applications, 2016.
4. Ajily, E., **Ardebili, M.,** Abbaszadeh, K., "Magnet Defect and Rotor Eccentricity Modeling in Axial-Flux Permanent-Magnet Machines via 3-D Field Reconstruction Method", IEEE Transactions on Energy Conversion, 2016.
5. Naeini, V., **Ardebili, M.,** " Axial flux PM less synchronous machine with effective field-weakening capability", Journal of Electrical Engineering, 2016.

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Education:

Ph.D.: Power Engineering, Amirkabir University of Technology (Tehran Polytechnic), Tehran, Iran, 1995.

M.Sc.: Power Engineering, George Washington University, Washington D.C, USA, 1979.

M.Sc.: Power Engineering, K. N. Toosi University of Technology, Tehran, Iran, 1977.

B.Sc.: Computer Engineering, Tehran University, Tehran, Iran, 1977.

Research Interest:

- Power system studies: Steady, Transient and Dynamic states.
- Power system Operation and Control
- Hybrid Electrical Vehicles (HEV)
- Micro grids and Smart Grids
- Renewable Energy Resources
- Cogeneration and Combined Heat & Power (CHP)
- Design of Power Transmission Line
- Distributed Control System (DCS) in Power Plant, Substation, and Building

Biography:

Seyed Mohammad Taghi Bathaee was born in Iran, in July 1950. He received the B.Sc., M.Sc. and Ph.D. degrees in mathematics and electrical engineering from K.N. Toosi University (Tehran, Iran), Tehran University (Tehran, Iran), George Washington University (USA) and Amirkabir University (Tehran, Iran), respectively. He has worked as professor and a member of the academic staff of K. N. Toosi University of Technology, Tehran, Iran. His research interest is in power system analysis and control.

Selected Recent Journal Papers:

1. Amrollahi, M.H., **Bathaee, S.M.T.,** "Techno-economic optimization of hybrid photovoltaic/wind generation together with energy storage system in a stand-alone micro-grid subjected to demand response", Applied Energy, 2017.
2. Rezvani, M., **Bathaee, S.M.T.,** Akbari, A., "Investigating field emission current in vacuum interrupters to estimate vacuum pressure level using PIC simulation",International Transactions on Electrical Energy Systems, 2016.
3. Hosseina, M., **Bathaee, S.M.T.,** "Optimal scheduling for distribution network with redox flow battery storage", Energy Conversion and Management, 2016.
4. Rajabzadeh, M., **Bathaee, S.M.T.,** Golkar, M.A., "Advanced DC-link voltage regulation of fuel-cell electric vehicle", COMPEL - The International Journal for Computation and Mathematics in Electrical and Electronic Engineering, 2016.
5. Rajabzadeh, M., **Bathaee, S.M.T.,** Aliakbar Golkar, M.,"Dynamic modeling and nonlinear control of fuel cell vehicles with different hybrid power sources", International Journal of Hydrogen Energy, 2016.

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Education:

Ph.D.: Imperial College of Science, Technology , and Medicine ,University of London , UK, 1986.

M.Sc.: Electrical Engineering(Power Systems), Oklahoma State University, USA, 1979.

B.Sc.: Electrical Engineering, Sharif University of Technology ,Teheran, Iran, 1977.

Research Interest:

- Smart Grid Studies
- Distributed Generation (Deregulation)
- Distribution System Design, Optimization & Automation
- Renewable Energy Systems
- Electricity Market
- Voltage Collapse Studies in Power Systems
- Shunt Capacitors Placement on Radial Distribution Feeder
- Electric and Hybrid Electric Vehicles studies

Biography:

Masoud Aliakbar Golkar was born in Tehran, Iran, in 1954. He received the B.Sc. degree from the Sharif University of Technology, Tehran, Iran, in 1977; the M.Sc. degree from the Oklahoma State University, Stillwater, OK, USA, in 1979, and the Ph.D. degree from the Imperial College of Science, Technology, and Medicine, The University of London, London, U.K., in 1986, respectively, all in electrical engineering (power systems). Since 1979, he has been teaching and doing research at the K. N. Toosi University of Technology, Tehran, Iran, where he is currently a Professor. He is the Advisor of many electricity boards and has successfully conducted many projects for different electricity utilities in Iran. He has lead several research groups in electrical distribution systems and reactive power studies with the Electric Power Research Center (EPRC) for more than 15 years. From January 2002 to July 2005, he served as a Senior Lecturer with the Curtin University of Technology, Miri, Malaysia. He is the author of several books and has published more than 300 papers in national and international journals and conferences. His main research interests include smart grid, distributed generation, Renewable Energy Systems, modern electric distribution systems, reactive power studies, voltage collapse studies, and load and energy management.

Selected journal papers:

1. Sedghi M., Ahmadian A., **Aliakbar Golkar M.,**" Optimal Storage Planning in Active Distribution Network Considering Uncertainty of Wind Power Distributed Generation", IEEE Transaction on Power Systems, 2015.
2. Valizadeh Haghi A., Tavakoli Bina M., **Aliakbar Golkar M.,**" Non-Linear Modeling of Temporal Wind Power Variations", IEEE Transactions on Sustainable Energy, Digital Object Identifier, 2013.
3. Ahmadi D., Tavakoli Bina M., **Aliakbar. Golkar M.,** "A Critical Cross-Examination on Load Balancing Transformers for Distribution Systems ", IEEE Transaction on Power Delivery, 2010.
4. Hajizadeh A., **Aliakbar Golkar M.,** "Voltage Control and Active Power management of Hybrid Fuel Cell/ Energy Storage Power Conversion System under Unbalanced Voltage Sag Condition", IEEE Transactions on Energy Conversion, 2010.
5. Hajizadeh A., **Aliakbar Golkar M.,** "Intelligent Power Management Strategy of Hybrid Distributed Generation System", International Journal of Electrical Power and Energy Systems., 2007.

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Education:

Ph.D.: Electrical and Computer Engineering from University of Tehran, Tehran, Iran, 2009.

M.Sc.: Electrical Engineering from University of Tehran, Tehran, Iran, 1997.

B.Sc.: Electrical Engineering from Iran University of Science and Technology (IUST), Tehran, Iran, 1994.

Research Interest:

- **Power Engineering:** Smart Grid, Power Distribution Systems Engineering (Operation, Automation, Design, and Planning), Power Systems Reliability, Asset Management, Artificial Intelligence and Signal Processing in Power Systems, IT in Power Systems, Deregulation and Market in Energy Retail
- **Systems Engineering:** Multi-Disciplinary Systems Architectural Design and Management, Complex Systems, Decision Making and Decision Support, Human-Automation Interaction, Adaptive Autonomy, IT Infrastructures

Biography:

Alireza Fereidunian received the Ph.D. and M.Sc. degrees from the University of Tehran, Tehran, Iran, in 2009 and 1997 respectively. He is an Assistant Professor with K. N. Toosi University of Technology, Tehran and a Post-Doctoral Research Associate with University of Tehran. His research interests include smart grid, high-reliability distribution systems, and application of IT and AI in power systems. Moreover, he works in complex systems, systems reliability, and human–automation interactions areas. Dr. Fereidunian is a Member of IEEE and INCOSE.

Selected journal papers:

1. **A. Fereidunian,** M.M. Hosseini, M.A. Talabari, “Toward self-financed distribution automation development: Time allocation of automatic switches installation in electricity distribution systems”, IET Generation, Transmission & Distribution, 2017.
2. H. Mirsaeedi, **A. Fereidunian,** S.M. Mohammadi-Hosseininejad, H. Lesani “Electricity Distribution System Maintenance Budgeting: A Reliability-Centered Approach”, IEEE Transactions on Power Delivery, 2017.
3. S.M. Mohammadi-Hosseininejad, **A. Fereidunian,** H. Lesani, “Reliability Improvement Considering PHEVs Parking Lots Ancillary Services: A Stochastic Multi-Criteria Approach”, IET Generation, Transmission & Distribution, 2017.
4. H. Mirsaeedi, **A. Fereidunian,** S.M. Mohammadi-Hosseininejad, P. Dehghanian, H. Lesani, “Long-Term Maintenance Scheduling and Budgeting in Electricity Distribution Systems Equipped with Automatic Switches”, IEEE Transactions on Industrial Informatics, 2017.
5. S. M. Mohammadi-Hosseininejad, **A. Fereidunian,** A. Shahsavari, H. Lesani “A Healer Reinforcement Approach to Self-Healing in Smart Grid by PHEVs Parking Lot Allocation”, IEEE Transactions on Industrial Informatics, 2016.

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Education:

Ph.D.: Electrical engineering -Power System, Sharif University of Technology, Tehran, Iran, 2013.

M.Sc.: Electrical engineering -Power System, Tehran University, Tehran, Iran, 2010.

B.Sc.: Electrical engineering, K.N. Toosi University of Technology, Tehran, Iran, 2008.

Research Interest:

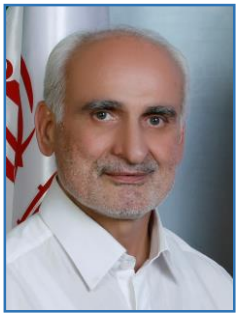
- Circuit Breakers On-Line Monitoring
- High Power Technology
- Pulsed Power Technology
- Reliability Centered-Maintenance
- Condition-based Maintenance
- Asset Management
- Transients in Power System
- Insulation Coordination

Biography:

Ali A. Razi-Kazemi received the PhD degree in Electrical Engineering from the Sharif University of Technology, Iran and Research Attachment at Aalto University, Espoo, Finland, in 2013. Dr. Razi-Kazemi is the Assistant Professor in the Department of Electrical Engineering at K.N. Toosi University of Technology. His research interests includes high power technology, reliability- and condition-based mainteneance, asset management and insulation coordination.

Selected journal papers:

1. Bagherpoor, A., Rahimi-Pordanjani, S., **Razi-Kazemi, A.A.,** Niayesh, K., "Online condition assessment of interruption chamber of gas circuit breakers using arc voltage measurement", IEEE Transactions on Power Delivery, 2017.
2. Ariannik, M., **Razi-Kazemi, A.A.,** Lehtonen, M., "Effect of cumulative moisture content on degradation of transformer paper insulation", IEEE Transactions on Dielectrics and Electrical Insulation, 2017.
3. **Razi-Kazemi, A.A.,** "Circuit breaker condition assessment through a fuzzy-probabilistic analysis of actuating coil's current" , , IET Generation, Transmission and Distribution, 2016.
4. **Razi-Kazemi, A.A.,** "Applicability of auxiliary contacts in circuit breaker online condition assessment" , Electric Power Systems Research, 2015.
5. **Razi-Kazemi, A.A.,** Vakilian, M., Niayesh, K., Lehtonen, M., "Data mining of online diagnosed waveforms for probabilistic condition assessment of SF6 circuit breakers", IEEE Transactions on Power Delivery, 2015.



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Education:

Ph.D.: Power Engineering, Bath University, UK, 1987.

M.Sc.: Electrical Engineering, University of Tabriz, Iran, 1977.

B.Sc.: Electrical Engineering, University of Tabriz, Iran, 1975.

Research Interest:

- Modeling of Electric Machines and Transformers
- Design of Electrical Machine and Transformer
- Analysis of Special Machines
- Fault diagnostics in electrical machines
- Linear Electrical Machine: (LDCM, LIM, LSM)
- PMSM (SPMSM, IPMSM)
- Micro machines: Design and Manufacturing
- Micro machine: Dynamics and control

Biography:

Electrical Engineering Faculty, K. N. Toosi University of Technology, Tehran, Iran. Shokrolah Shokri Kojori received the B.Sc. and M.Sc. degrees from the Tabriz University, Tabriz, Iran, in 1975 and 1977, respectively, and the Ph.D. degree from Bath University, U.K., in 1988. He is currently an Associate Professor in the Department of Electrical Engineering, K. N. Toosi University of Technology, Tehran, Iran. His current research interests include electrical machine analysis, modeling of electric machines and transformers, and power systems dynamic and control.

Selected journal papers:

1. H.R Izadfar, **S. shokri,** M. Ardebili, "Air Gap length evaluation in interior permanent magnet synchronous motor", EJSR, 2008.
2. H.R Izadfar, **S. shokri,** M. Ardebili" Evaluation of stator parameters effects on magnetic flux harmonic distribution of interior permanent magnet synchronous motor (IPMSM)", I.R.E mos,2008.
3. M. Alizade, **S. Shokri,** S. Ganjfar "A Modular Neural Block to Enhance Power System Stability", IEEE 2013.
4. Siroos Hemmati, **Shokrolla Shokri,** Seydamin Saied. Thomas A Lipo," Modeling and Experimental Validation of Internal Short Circuit Fault in Salient Pole Synchronous Machines Using Numerical Gap Function Including Stator and Rotor Core Saturation ", IET, 2012.
5. M. Alizade, **S. Shokri,** "Augmenting Effectiveness of Control Loops of a PMSG based Wind Energy Conversion System by a Virtually Adaptive PI controller", ELSEVIER, Energy Conversion, 2015.

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Education:

Ph.D.: Power Electronics, University of Surrey, UK, 2001.

M.Sc.: Electrical Engineering, University of Tehran, Tehran, Iran, 1990.

B.Sc.: Electrical Engineering (power), University of Tehran, Tehran, Iran, 1987.

Research Interest:

- Power Electronics Converters Modeling and Design
- Advanced Modulation Techniques
- FACTS & Utility Network Control
- Power Systems Analysis and Control
- EMI/EMC in Power Electronics
- Power Quality
- Protection of Power Converters

Biography:

Mohammad Tavakoli Bina is a Full Professor in the area of Power Electronics at K. N. Toosi University of Technology. He is a Senior Member of the IEEE, holding the position of Associate Editor of IEEE Transactions on Power Electronics. He has got his PhD from University of Surry, UK, 2001. He is the author of more than 150 journal and conference papers.

Selected journal papers:

1. A. N. Babadi, O. Salari, M. J. Mojibian, **M. T. Bina,** "Modified Multilevel Inverters with Reduced Structures Based on Packed U-Cell," in IEEE Journal of Emerging and Selected Topics in Power Electronics, 2017.
2. Alavi, O., Hooshmand Viki, A., **Tavakoli Bina, M.,** Akbari, M., " Reliability assessment of a stand-alone wind-hydrogen energy conversion system based on thermal analysis ", International Journal of Hydrogen Energy, 2017.
3. T. Akbari, **M. T. Bina,** "Approximated MILP model for AC transmission expansion planning: global solutions versus local solutions," in IET Generation, Transmission & Distribution, 2016.
4. **M.T. Bina,** D. Ahmadi, "Stochastic modeling for the next day domestic demand response applications" IEEE Transactions on Power Systems, 2015.
5. H.P. Mohammadi, **M.T. Bina,** "A transformerless medium-voltage STATCOM topology based on extended modular multilevel converters" IEEE Transactions on Power Electronics, 2011.

Department of Electronics

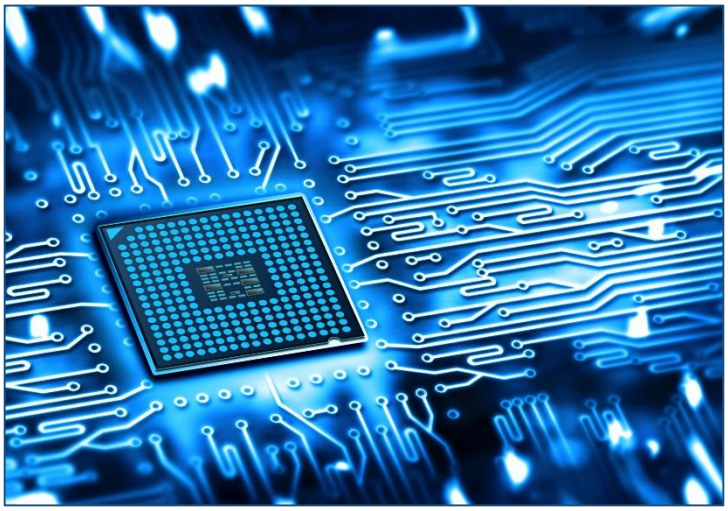
Department of Electronics is one of the first educational cores of the Faculty of Electrical Engineering. Academic activities of this department are conducted in two major areas: Semiconductor Physics and Technology and Electronic Circuits and Systems. Department of Electronics has placed K. N. Toosi University of Technology among the country's highly-reputed universities in education and research in Electronics.

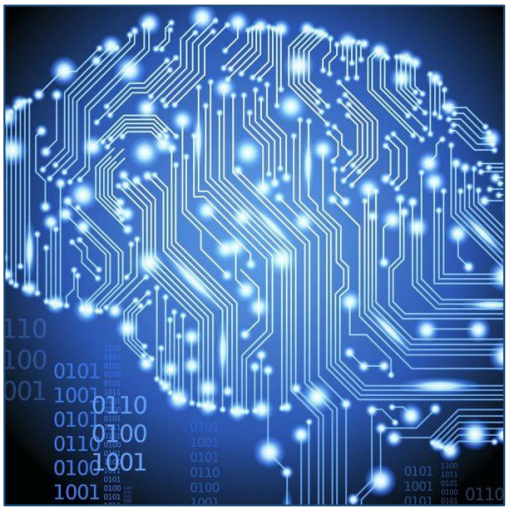
Core Research Areas

- Microtechnology and Sensors
- Solid-State Physics and Devices
- Nanotechnology and Nanoelectronics
- Quantum Electronics
- Analog and RF Circuits and Systems
- Digital and VLSI Systems
- Computer Systems and Networks
- Sensor Networks

Research Laboratories

- Electronic Materials Laboratory (EML)
- Semiconductor Devices Laboratory
- Organic Electronics Laboratory
- Virtual-Hardware Description Language (VHDL)
- Research Laboratory for Integrated Circuits and Systems (ICAS)
- Microelectronic Circuits Laboratory
- Electronic Signals and Systems Laboratory
- High Frequency Circuits and Systems Laboratory (HFCAS)





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Education:

Post Doctorate: Nano-Organic, Electronics Sheffield University, UK, 2005.

Ph.D.: Solid State Electronics, King's College, University of London, UK, 2000.

M.Sc.: Integrated Electronics, Indian Institute of Technology, New Delhi, India, 1992.

B.Sc.: Electronics Engineering, Mashhad University, Mashhad, Iran, 1988.

Research Interest:

- Nano-Electronics and Nano-Technology
- Organic Electronics
- Solid State Electronics
- Opto-Electronics

Biography:

Farhad A. Boroumand received the B.E. degree in electronics from the Ferdowsi University of Mashhad, Iran, in 1988, the M.Tech. degree from the Indian Institute of Technology Delhi, New Delhi, India, in 1992, and the Ph.D. degree in integrated electronics from King's College London, U.K., in 2000, with focus on interactions between isolated GaAs-based MESFET's. In 2000 and 2006, he worked on four post-doctoral research projects at Sheffield University and Surrey University, U.K., concerning nano and organic electronics and photonic devices. He is currently an Assistant Professor with the K. N. Toosi University of Technology, Tehran, Iran, teaching courses, such as nanotechnology, organic electronics, semiconductor devices, and modern physics. He has published over 90 journal and conference papers.

Selected journal papers:

1. Rezaie, M.N., Manavizadeh, N., Nadimi, E., **Boroumand, F.A.,** "Quality enhancement of AZO thin films at various thicknesses by introducing ITO buffer layer", Journal of Materials Science: Materials in Electronics, 2017.
2. Rezaie, M.N., Manavizadeh, N., Abadi, E.M.N., Nadimi, E., **Boroumand, F.A.,** "Comparison study of transparent RF-sputtered ITO/AZO and ITO/ZnO bilayers for near UV-OLED applications", Applied Surface Science, 2017.
3. Hakimi, M., Salehi, A., **Boroumand, F.A.,** "Fabrication and Characterization of an Ammonia Gas Sensor Based on PEDOT-PSS with N-Doped Graphene Quantum Dots Dopant", IEEE Sensors Journal, 2016.
4. Shabani, P., Qarehbaqi, A., **Boroumand, F.A.,** "Selective enhancement of intra-chain charge transport to improve ammonia sensing performance in polyaniline layers", Electronic Materials Letters, 2016.
5. Mohsennia, M., Bidgoli, M.M., Khoddami, M.H., Salehi, A., **Boroumand, F.A.,** "Bulk-heterojunction polymer solar cells with polyaniline-silica nanocomposites as an efficient hole-collecting layer", Journal of Nanophotonics, 2016.

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Education:

Ph.D.: Electronics Engineering, SUPELEC, Gif- Sur-Yvette, France, in 2007.

M.Sc.: Electronics and bioelectric Engineering, Sharif University of Technology, Tehran, Iran, 1998.

B.Sc.: Electronics and bioelectric Engineering, Sharif University of Technology, Tehran, Iran, in 1996.

Research Interest:

- Mixed-Signal Integrated Circuits
- VLSL Circuits
- Biological System Modeling
- Signall and Image Processing

Biography:

D. Asemani received the B.Sc. and M. Sc. degrees in electronics and bioelectric engineering from Sharif University of Technology, Tehran, Iran, in 1996 and 1998, respectively, and the Ph.D. degree in electronics engineering from SUPELEC, Gif- Sur-Yvette, France, in 2007. He is now with the Department of Electrical Engineering, K.N. Toosi University of technology, Tehran, Iran. His research interests include the VLSI implementation of advanced signal processing techniques such as blind signal processing, particularly applied to electronics systems as well as analog and digital electronic circuits design.

Selected journal papers:

1. ARABAMERI, A., **ASEMANI, D.**, HAJATI, J., “Mathematical Modeling Of In-Vivo Tumor-Immune Interactions For The Cancer Immunotherapy Using Matured Dendritic Cells”, Journal of Biological Systems, 2018.
2. **Asemani, D.**, Haemmerich, D., ”A Unified Mathematical Model for Nano-Liposomal Drug Delivery to Solid Tumors, A Unified Mathematical Model for Nano-Liposomal Drug Delivery to Solid Tumors”, 2018.
3. Roberts, D.R., Albrecht, M.H., Collins, H.R., **Asemani, D.**, (...), Chimowitz, M.I., Antonucci, M.U., “Effects of spaceflight on astronaut brain structure as indicated on MRI”, New England Journal of Medicine, 2017.
4. Rezaei Borjlu, S., **Asemani, D.**, Dousti, M., “A highly efficient concurrent dual-band GaN class-AB power amplifier at 1.84 GHz and 3.5 GHz”, International Journal of RF and Microwave Computer-Aided Engineering, 2017.
5. **Asemani, D.**, Morsheddost, H., Shalchy, M.A., “Effects of ageing and Alzheimer disease on haemodynamic response function: A challenge for event-related fMRI”, Healthcare Technology Letters, 2017.

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Education:

Ph.D.: Computer Networking from the University of Adelaide, Adelaide, Australia, 2004.

M.Sc.: Digital Electronics from Sharif University, Tehran Iran, 1991.

B.Sc.: Electronics from the Science and Technology University, Tehran, Iran, 1987.

Research Interest:

- Computer Networks
- Wireless Networks
- Voice Over Internet Protocol (VOIP)
- Microcontrollers and Microprocessors

Biography:

Yousef Darmani received his B.Sc. In Electronics from the Science and Technology University, Tehran, Iran in 1987 and his M.Sc. in Digital Electronics from Sharif University, Tehran Iran in 1991. Then he joined the Electrical Engineering Department of K.N. Toosi University of Technology. He received his Ph.D. in Computer Networking from the University of Adelaide, Adelaide, Australia in 2004. Currently he works as an assistant professor in K. N. Toosi University of Technology. His research interests are VOIP, real time communication over the Internet, Wireless and Ad-hoc networks and their protocols and computer hardware.

Selected journal papers:

1. Mollaei, M., **Darmani, Y.,** "A novel statistical and distributed CAC algorithm for IEEE 802.11 based single and multi-hop wireless ad hoc networks", Wireless Networks, 2018.
2. Rahimi, P., **Darmani, Y.,** Ghasemi, A., "Developing a gradient-based clustering algorithm for energy-efficient routing in wireless sensor networks", Iranian Journal of Science and Technology - Transactions of Electrical Engineering, 2017.
3. M. Mollaei, **Y. Darmani,** "A Novel Statistical and Distributed CAC Algorithm for IEEE 802.11 based Single and Multi-hop Wireless Ad hoc Networks," Journal of Wireless Networks, 2016.
4. M. Mollaei, S. Zokaei, **Y. Darmani,** "Statistical Analysis of Different Traffic Types Effect on QoS of Wireless Ah Hoc Networks," Journal of Information Systems and Telecommunication (JIST), 2015.
5. A. Vaezi, **Y. Darmani,** "QoS Improvement in IEEE802.11e using Smart Nodes," Eighth International Symposium on Telecommunication (IST 2016), ITRC, Tehran, Iran, 2016.

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Education:

Ph.D.: Electrical Engineering, the University of Montreal, Quebec, Canada, 1998.

M.Sc.: Electrical Engineering, Sharif University of Tech., Tehran, Iran, 1988.

B.Sc.: Electrical Engineering, Sharif University of Tech., Tehran, Iran, 1986.

Research Interest:

- Analog Integrated Circuit
- RF Integrated Circuit
- A/D, Frequency synthesizer
- Data recovery
- Mixed signal circuit
- Wireless system

Biography:

Mehdi Ehsanian received his M.S and B.S. degrees in electronic engineering from Sharif University of Technology, Tehran-Iran in 1986 and 1988 respectively. He continued his education and received his PhD in electrical Engineering from University of Montreal, Quebec, Canada, in 1998. He has been working as design engineer in INTEL, USA for 10 years (1999 to 2009). He started working as Assistant professor in Electrical and Computer Engineering Departments of K. N. Toosi University of Technology, Tehran, Iran, since 2009. His research interest includes Analog and RF Integrated circuit, Data converters, frequency synthesizer and data recovery, and BIST.

Selected journal papers:

1. M. Moradi, **M. Ehsanian,** "Design of an FPGA Based DPLL with Fuzzy Logic Controllable Loop Filters with Application Customization Capability," International Journal of Electronics and Communications, 2018.
2. H. Esmaeili Taheri, **M. Ehsanian,** "A new adaptive bandwidth, adaptive jitter frequency synthesizer using programmable charge pump circuit," Analog Integrated Circuits and Signal Processing, Springer Nature, 2018.
3. Khanlari, M., **Ehsanian, M.,** "An Improved KFCM Clustering Method Used for Multiple Fault Diagnosis of Analog Circuits", Circuits, Systems, and Signal Processing, 2017.
4. Karami, M., Mousavinia, A., **Ehsanian, M.,** "A general solution for iso-disparity layers and correspondence field model for stereo systems", IEEE Sensors Journal, 2017.
5. Hadi Hayati, **Mehdi Ehsanian,** "A 5-Gbps CMOS burst-mode CDR circuit with an analog phase interpolator for PONs", Informacije Midem-Journal Of Microelectronics Electronic Components And Materials, 2015.

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Education:

Ph.D.: Electrical Engineering, Imperial College, London, UK, 1978.

DIC: Materials Science, Imperial College, London, UK, 1976.

M.Sc.: Materials Science, Imperial College, London, UK, 1975.

B.Sc.: Electronic Engineering, AmirKabir University of Technology, Tehran, Iran, 1971.

Research Interests:

- Artificial olfaction
- Polycrystalline semiconductors
- Metal oxide electronics
- Microfluidics
- High temperature technology
- Electric heating

Biography:

Received the B.Sc. degree in electronic engineering from AmirKabir University of Technology (Tehran Polytechnic), Iran, in 1971, and the M.Sc. degree in materials science and the Ph.D. in electrical engineering from the Imperial College, London, UK, in 1975 and 1978, respectively. He is Head of the Electronic Materials Laboratory (EML) and Professor of Electronic Materials at the Electrical Engineering Department, K. N. Toosi University of Technology, Tehran, Iran (since 1980), and has been Adjunct Professor at Materials Science and Engineering Department, University of British Columbia, Vancouver, Canada from 2002-2007. He has founded a number of hi-tech spin-off companies mostly active in the field of high temperature materials and technology. His present research interests include electric heating, electroceramics, polycrystalline semiconductors, microfluidics, gas and humidity sensors, and artificial olfaction. Prof. Hossein-Babaei received the Khwarizmi International Award for his outstanding R and D work on high temperature systems in 2006.

Selected journal papers:

1. **Hossein-Babaei, F.,** Gharesi, M., Moalaghi, M., “Diffusion Bonding of Metal Wires Directly to the Functional Metal Oxide Semiconductors for Forming Reliable Electrical Contacts”, ACS Applied Materials and Interfaces, 2017.
2. **Hossein-Babaei, F.,** Akbari-Saatlu, M., “Growth of ZnO Nanorods on the Surface and Edges of a Multilayer Graphene Sheet”, Scripta Materialia, 2017.
3. **Hossein-Babaei, F.,** Hooshyar Zare, A., “The Selective Flow of Volatile Organic Compounds in Conductive Polymer-Coated Microchannels”, Scientific Reports, 2017.
4. **Hossein-Babaei, F.,** Alaei-Sheini, N., “Electronic Conduction in Ti/Poly-TiO2/Ti Structures” Scientific Reports, 2016.
5. **Hossein-Babaei, F.,** Hooshyar Zare, A., Ghafarinia, V., “Transient Molecular Diffusion in Microfluidic Channels: Modeling and Experimental Verification of the Results”, Sensors and Actuators B: Chemical, 2016.

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Education:

Ph.D.: Electrical Engineering, Tarbiat Modares University, Tehran, Iran, 2013.

M.Sc.: Electrical Engineering, K.N. Toosi University of Technology, Tehran, Iran, 2001.

B.Sc.: Electrical Engineering, Noshirvani University of Technology, Babol, Iran, 1999.

Research Interest:

- Neural Signal Processing
- VLSI Digital Signal Processing Systems
- FPGA/ASIC Design of Digital Systems
- CPU Design
- Asynchronous Digital Design

Biography:

Hossein Hosseini-Nejad received the B.S. degree from Noshiravani University of Technology, Babol, Iran, the M.S. degree from K. N. Toosi University of Technology, Tehran, Iran, and the Ph.D. degree from Tarbiat Modares University, Tehran, Iran, in 1999, 2001, and 2013, respectively, all in electrical engineering. He joined the Faculty of Electrical Engineering at K. N. Toosi University of Technology as a Lecturer in 2001, where he is currently an Assistant Professor of Electrical and Computer Engineering and Director of the FPGA Laboratory. He was with the ASIC Design group at the University of Lund, Sweden, as a Visiting Ph.D. Researcher from April-September 2013. His research interests include the design and development of digital systems, and ASIC/FPGA implementation of signal processing algorithms.

Selected journal papers:

1. **Hossein Hosseini-Nejad**, Aboumoslem Jannesari, Amir M. Sodagar, “Data Reduction in Brain Machine/Computer Interfaces Based on Walsh-Hadamard Transform”, IEEE Transactions on Biomedical Circuit & Systems (TBioCAS), 2013.
2. **Hossein Hosseini-Nejad**, Aboumoslem Jannesari, Amir M. Sodagar, "A 128-Channel Discrete Cosine Transform-Based Neural Signal Processor for Implantable Neural Recording Microsystems," International Journal of Circuits Theory and applications, Wiley Online Library, 2013.

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Education:

Ph.D.: Solid state Electronics, Electrical Engineering, K. N. Toosi University of Technology, Tehran, Iran, 2012.

M.Sc.: Solid State Physics, K. N. Toosi University of Technology, Tehran, Iran, 2006.

B.Sc.: Physics, K. N. Toosi University of Technology, Tehran, Iran, 2003.

Research Interest:

- Micro- and Nano-electronics (Simulation and Fabrication of Semiconductor devices)
- Nano-structured Solar Cells
- Growth and Synthesis of TCO Nanostructures
- Organic Electronics (*e.g.*, Organic Solar Cells, OLED, OFET)
- Self-Cleaning Materials and Surfaces: A Nanotechnology Approach (in Power Applications: Insulators, Cables, Lightening Systems, etc.)

Biography:

Negin Manavizadeh was born in Tehran, Iran, in 1980. She received the B.S. and M.S. degree in solid-state physics and the Ph.D. degree in electrical engineering from the K. N. Toosi University of Technology (KNTU), Tehran, in 2003, 2006, and 2012, respectively. She is currently a Full-Time Assistant Professor with the Department of Electrical Engineering, KNTU.

Selected journal papers:

1. Mahdiyar Nouri Rezaie, **Negin Manavizadeh,** Ebrahim Nadimi, Farhad Akbari Boroumand, “Quality Enhancement of AZO Thin Films at Various Thicknesses by Introducing ITO Buffer Layer,” J Mater Sci: Mater Electron, 2017.
2. Mahdiyar Nouri Rezaie, **Negin Manavizadeh,** Ehsan Mohammadi Nasr Abadi, Ebrahim Nadimi, Farhad Akbari Boroumand, “Comparison study of transparent RF-sputtered ITO/AZO and ITO/ZnO bilayers for near UV-OLED applications,” Applied Surface Science, 2017.
3. Behnam Jafari Touchaee, **N. Manavizadeh,** “Design and Simulation of Low-power Logic Gates based on Nanoscale Side-contacted FED,” IEEE TRANSACTIONS ON ELECTRON DEVICES, 2017.
4. Behnam Jafari Touchaee, **N. Manavizadeh,** “An Inverter Gate Design Based on Nanoscale S-FED as a Function of Reservoir Thickness,” IEEE TRANSACTIONS ON ELECTRON DEVICES, 2015.
5. **N. Manavizadeh,** F. Raissi, E. Asl Soleimani, M. Pourfath, S. Selberherr, “Performance Assessment of Nanoscale Field Effect Diodes,” IEEE Transaction on Electron Devices, 2011.

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Education:

Postdoctorate: Research fellow, GWT-TU Dresden, Germany, 2012.

Ph.D.: Chemnitz University of Technology, Chemnitz, Germany, 2008.

M.Sc.: Electrical Engineering Dept., University of Tehran, Tehran, Iran, 1999.

B.Sc.: Electrical Engineering Dept., University of Tehran, Tehran, Iran, 1995.

Research Interest:

- Frist principles modeling of material properties and devices
- Solid state and semiconductor physics
- Nanoelectronics
- Quantum transport
- High-k gate dielectrics of nano-MOSFETs
- 1D and 2D materials such as carbon nanotubes, graphene and h-BN
- Solid state gas sensors and biosensors

Biography:

Ebrahim Nadimi is currently assistant professor at the Faculty of Electrical Engineering of K. N. Toosi University of Technology. He received his B.Sc. and M.Sc. in 1995 and 1999 from University of Tehran, respectively. He received his Ph.D. in 2008 from Technische Universität Chemnitz in Germany. From 2008 to 2012 he worked a research fellow at AQ Computer and GWT-TU Dresden on joint projects with AMD and Global foundries. His research interests span both solid state physics and nano electronics. He applied first principles ab initio computational methods to the investigation of new emerging materials and devices in realm of nano electronics. Nano-transistors, 1D and 2D materials, solid states gas sensors and biosensors are the subjects of his recent researches.

Selected journal papers:

1. M. Sadeghian Lemraski, **E. Nadimi,** "Acetone gas sensing mechanism on zinc oxide surfaces: A first principles calculation," Surface Science, 2017.
2. **E. Nadimi,** G. Roll, S. Kupke, R. Öttking, P. Plänitz, C. Radehaus, M. Schreiber, R. Agaiby, M. Trentzsch, S. Knebel, S. Slesazeck, T. Mikolajick, T., "The Degradation Process of High-k SiO2/HfO2 Gate Stacks: A Combined Experimental and First Principles Investigation," IEEE Trans. on Electron Devices, 2014.
3. **E. Nadimi,** M. Schreiber, R. Öttking, P. Plänitz, C. Radehaus, M. Trentzsch, T. Kelwing, R. Carter, "Interaction of oxygen vacancies and lanthanum in Hf-based high-k dielectrics: an ab initio investigation," Journal of Phys.: Condens. Matter, 2011.
4. **E. Nadimi,** P. Plänitz, R. Öttking, M. Schreiber, C. Radehaus, "Single and multiple oxygen vacancies in ultrathin SiO_2 gate dielectric and their influence on the leakage current: an ab initio investigation," IEEE Electron Device Letters, 2010.
5. E. Nakhmedov, **E. Nadimi,** M Bouhassoune, C. Radehaus, K. Wieczorek "First-Principle calculation of the band gap of $Hf_xSi_{1-x}O_2$ and $Zr_xSi_{1-x}O_2$ alloys, "Phys.Rev.B, 2007.

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Education:

Ph.D.: University of Wisconsin, Madison, WI, USA, 1995.

M.Sc.: University of Wisconsin, Madison WI, USA, 1992.

B.Sc.: Electrical engineering from Louisiana State University, Baton Rouge, LO, USA, in 1988.

Research Interest:

- Solid state electronics
- Nanoelecronics
- Superconductivity
- Sensors and actuators

Biography:

After Ph. D. Farshid joined K. N. Toosi university of technology where he is teaching to do research. He is the cofounder and chairman of board of directors of Y. N. Saleh Co., which manufactures industrial vacuum deposition systems. He has published two books a Sci-Fi novel called "Faster than light" and a book called "God's Grand Design" in response to S. Hawking's book of "Grand Design". Both books are published in Farsi. He won Khwarazmi scientific award for excellence in superconducting electronic research in 2014.

Selected journal papers:

1. **Raissi, F.,** "Electronic device for detection of viruses, bacteria and pathogens." United States Patent Application 20170115252, 2017.
2. Sheikhian, I., **Raissi, F.,** "Nanoscale CMOS transistor with intrinsic bulk." European patent, 2009.
3. **Raissi, F.,** Sheikhian, I, "Nano-scale transistor device with large current handling capability." European patent, 2008.
4. **Raissi, F.,** Hassani, F., "Flux-flow behavior in high Tc superconductors." Applied Physics Letters, 2014.
5. Amirmazlaghani, m., **Raissi, F.,** "Graphene-Si schottky IR detector**",** IEEE J. Quantum Elec**,** 49(7), 2013.

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Education:

Ph.D.: Microelectronics, University of Wales, College of Cardiff, UK, 1995.

M.Sc.: Electronics Engineering, University of Bremen, Germany, 1992.

B.Sc.: Electrical Engineering, FH Kiel, Germany, 1986.

Research Interests:

- design and fabrication of semiconductor devices
- porous Si- and III-V semiconductor devices
- transparent conductors as opto-electronic devices
- organic materials for solar cell and gas sensor applications

Biography:

Alireza Salehi received his MSc degree from Kiel University of Applied Sciences, Germany, the MSc degree from the University of Bremen, Germany, and the Ph.D. degree from Cardiff University, UK, all in electronics. He joined the Faculty of Electrical Engineering, K. N. Toosi University of Technology as an Assistant Professor in 1996, where he has been elevated as Professor in Nanoelectronics since 2006. His research and teaching interests are fabrication and analysis of optoelectronic devices using semiconductor and organic materials. His research presently focuses on gas sensors and solar cells based on several semiconductors and organic materials.

Selected journal papers:

1. A. Hasani, J. N. Gavgani, R. Mohammadi Pashaki, S. Baseghi, **A. Salehi**, D. Heo, S. Young Kim, M. Mahyari, "Poly (3,4 ethylenedioxythiophene): Poly(styrenesulfonate)/Iron(III) Porphyrin Supported on S and N Co-Doped Graphene Quantum Dots as a Hole Transport Layer in Polymer Solar Cells" Science of Advanced Materials, 2018.
2. M.A. Eslamian**, A. Salehi,** Z. Miripour, "Comparing different ITO-metal thin film structures for ethanol and carbon dioxide sensing application", sensor review, 2017.
3. M. J. Kiani, **A. Salehi,** "Deposition of thin film gas sensors based on ZnO layer", Journal of Iranian Association of Electrical and Electronics Engineers, 2016.
4. M. Hakimi, **A. Salehi**, F.A. boroumand, "Fabrication and characterization of an ammonia gas sensor based on PEDOT-PSS with N-doped grapheme quantum dots dopant" IEEE sensors journal, 2016.
5. M. Hakimi, **A. Salehi**, F.A. Boroumand, "Experimental study on PEDOT: PSS conductive polymer and N-doped grapheme quantum dots for H_2O_2 sensing", Bulletin de la societe royale des sciences de liege, 2016.

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Education:

Ph.D.: Electrical Engineering-Electronics, University of Tehran, Tehran, Iran, 2007.

M.Sc.: Electrical Engineering-Electronics, University of Tehran, Tehran, Iran, 2002.

B.Sc.: Electrical Engineering-Electronics, University of Tehran, Tehran, Iran, 2000.

Research Interests:

- Data Converters
- Delta-Sigma Modulators
- Analog and Mixed-Mode MOS IC Design
- RFIC
- Microwave Amplifiers
- RFID

Biography:

Hossein Shamsi received the B.Sc., M.Sc. and Ph.D. degrees in Electronics Engineering from the University of Tehran in 2000, 2002 and 2007 respectively. He has been working as assistant professor with the Faculty of Electrical Engineering, K. N. Toosi University of Technology since 2007. His current research activities include Integrated Circuits, Data Converters, RFIC, and RFID systems.

Selected journal papers:

1. Shahi, H., **Shamsi, H.,** "Compact wideband Gysel power dividers with harmonic suppression and arbitrary power division ratios", AEU - International Journal of Electronics and Communications, 2017.
2. Mirzaie, N., **Shamsi, H.**, Byun, G.-S., "Yield-aware sizing of pipeline ADC using a multiple-objective evolutionary algorithm", International Journal of Circuit Theory and Applications, 2017.
3. Nafar, F., **Shamsi, H. ,** " On the Design of a User Interface for an RFID-Based Vehicle Tracking System" , International Journal of Wireless Information Networks, 2017.
4. Shahi Gharehaghaji, H., **Shamsi, H.,** "Design of Unequal Dual Band Gysel Power Divider with Isolation Bandwidth Improvement", IEEE Microwave and Wireless Components Letters, 2017.
5. Mirzaie, N., **Shamsi, H.,** Byun, G.-S., "Automatic design and yield enhancement of data converters",Journal of Circuits, Systems and Computers, 2017.

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Education:

Ph.D.: Iran University of Science and Technology, Tehran, Iran, 2000**.**

M.Sc.: Iran University of Science and Technology, Tehran, Iran, 1995.

B.Sc.: K.N. Toosi University of Technology (KNTU), Tehran, Iran, 1992.

Research Interests:

- Neural Interfacing
- Visual Prosthesis
- Wireless Interfacing
- Neural Signal Processing
- Analog & Mixed-Signal Integrated Circuits

Biography:

Amir M. Sodagar received the B.S. degree from K.N. Toosi University of Technology (KNTU), Tehran, Iran, in 1992, and the M.S. and Ph.D. degrees from Iran University of Science and Technology, Tehran, Iran, in 1995 and 2000, respectively, all in Electrical Engineering. From 2001 to 2009 he was with the NSF ERC for Wireless Integrated Micro Systems (WIMS), The University of Michigan, Ann Arbor, as a Post-Doctoral Research Fellow, Research Scientist, and subsequently as Technical Director for Biomedical Microsystems. He is currently with KNTU as an Associate Professor of Electronics and Biomedical Engineering and the Founding Director of the Research Laboratory for Integrated Circuits and Systems (ICAS), and with Poly technique Montreal, Montreal, Quebec, Canada, as an Adjunct Professor. Dr. Sodagar is the author of five books, including the textbook: Analysis of Bipolar and CMOS Amplifiers (CRC Press, Boca Raton, FL, 2007), co-author of four book chapters, and author/co-author of numerous journal articles and conference papers. He has served as a member of scientific/technical committee for several national and international conferences and as an Editorial Board member for the Journal of Medical Devices and the Journal of Basic and Clinical Neuroscience. Research interests of Dr. Sodagar include implantable microsystems, biomedical circuits and systems, neural signal processing, and analog and mixed-signal integrated circuits.

Selected journal papers:

1. Erfani, R., Marefat, F., **Sodagar, A.M.,** Mohseni, P., “Modeling and Experimental Validation of a Capacitive Link for Wireless Power Transfer to Biomedical Implants,” IEEE Transactions on Circuits and Systems-II: Express Briefs , 2017.
2. Maghami, M.H., **Sodagar, A.M.**, Sawan, M., “Versatile stimulation back-end with programmable exponential current pulse shapes for a retinal visual prosthesis,” IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2016.
3. Shaeri, M.A., **Sodagar, A.M.,** “A method for compression of intra-cortically-recorded neural signals dedicated to implantable brain-machine interfaces,” IEEE Transactions on Neural Systems and Rehabilitation Engineering, 2015.
4. Judy, M., **Sodagar, A.M.,** Lotfi, R., Sawan, M., “Nonlinear Signal-Specific ADC for Efficient Neural Recording in Brain-Machine Interfaces,” IEEE Transactions on Biomedical Circuits and Systems, 2014.
5. Hosseini-Nejad, H., Jannesari, A., and **Sodagar, A.M.,** “Data Compression in Brain-Machine/Computer Interfaces Based on the Walsh–Hadamard Transform,” IEEE Transactions on Biomedical Circuits and Systems, 2014.

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Education:

Ph.D.: Sharif University of Technology, Tehran, Iran, 2012.

M.Sc.: Sharif University of Technology, Tehran, Iran, 2007.

B.Sc.: Sharif University of Technology, Tehran, Iran, 2005.

Research Interest:

- THz range devices and systems
- MEMS and NEMS devices
- Quantum electronic and quantum optic devices
- Quantum computation and information
- Superconductor devices
- Semiconductor fabrication

Biography:

Hesam Zandi was born in Tehran, Iran, in 1982. He received the B.Sc., M.Sc. and PhD degrees all in electrical engineering from Sharif University of Technology, in 2005, 2007, and 2012 respectively. He conducted research in development of quantum bit device and circuits which lead to design and development of double entangled qubits having high fidelity reading process. He got a post-doc research fellowship also in SUT, in which he was developing rapid single flux quantum logic devices for ultra-high speed digital circuits, while he still has collaborations with national and international labs working in this area. In 2016, he joined K. N. Toosi University of Technology, Tehran, Iran, where he is currently an assistant professor in electrical engineering, Electronics department. His research interest has mainly focused on the design, modeling, and fabrication of THz range devices and systems and also, MEMS and NEMS devices.

Selected journal papers:

1. T. Jabbari, **H. Zandi**, M. Fardmanesh, “Frequency Limitation due to Switching Transition of the Bias Current in Bi-Directional RSFQ Logic,” Journal of Superconductor and Novel Magnetism, 2017.
2. Ahmad Sadeghi, **Hesam Zandi**, Sina Khorasani, “Crosstalk suppression and high-fidelity measurement in 2D tunneling of coupled Josephson junctions,” IEEE Trans. on Appl. Superconductivity, 2012.
3. **Hesam Zandi**, Shabnam Safaei, Sina Khorasani, Mehdi Fardmanesh, “Study of Junction and Bias Parameters in Readout of Phase Qubits,” Physica C: Superconductivity and its applications, 2012.
4. Farrokh Sarreshtedari, Mehdi Hosseini, Hamid Reza Chalabi, Ali Moftakharzadeh, **Hesam Zandi**, Sina Khorasani, Member, IEEE, Mehdi Fardmanesh, “A Superconductor THz Modulator Based on Vortex Flux Flow,”, IEEE Trans. on Appl. Superconductivity, 2009.
5. **Hesam Zandi**, Meysam Bavafa, Maysamreza Chamanzar, Sina Khorasani, “Harmonic Content and Relaxation Resonant Frequency of a Modulated Laser Diode,” Scientia Iranica, 2009.

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Education:

Ph.D.: Electrical Engineering, Department of Communication and Information Technology, University of Tokyo, Tokyo, Japan, 1994.

M.Sc.: University of Tehran, Tehran, Iran,

Research Interest:

- Security
- Wireless Networks
- Next-Generation Networks

Biography:

Saadan Zokaei received the Master's degree in Electrical Engineering from the University of Tehran, Tehran, Iran, and the Ph.D. degree in Electrical Engineering from the Department of Communication and Information Technology, University of Tokyo, Tokyo, Japan, in 1994. He is currently an Associate Professor with the Department of Electrical and Computer Engineering, K. N. Toosi University of Technology, Tehran. His research interests include information security, wireless networks, and next-generation networks.

Selected journal papers:

1. Gharehajlu, M.M., **Zokaei, S.,** Darmani, Y., "Statistical analysis of different traffic types effect on QoS of wireless ad hoc networks", Journal of Information Systems and Telecommunication, 2015.
2. Mobini, Z., **Zokaei, S.,** Mohammadi, M., "Joint power allocation and relay selection strategies for wireless multi-unicast network-coded systems", Ad Hoc Networks, 2015.
3. Gharehajlu, M.M., Darmani, Y., **Zokaei, S.,** "Delay Analysis of IEEE 802.11 Based Ad-Hoc Network Under Unsaturated Condition" , Wireless Personal Communications, 2014.
4. Ghahnaviehei, S.A., **Zokaei, S.,** Vafaei, A., "Performance analysis of probabilistic routing algorithms in mobile ad hoc networks using a new smart algorithm", International Review on Computers and Software, 2013.
5. Bayramnejad, A., Asemani, D., **Zokaei, S.,** "A tunable multiband cmos lna for mobile wimax with high linearity", Journal of Circuits, Systems and Computers, 2013.

Department of Mechatronics

K.N. Toosi University of Technology was the first among the country's public universities that has established department of Mechatronics. It was in 2003 that Faculties of Electrical and Mechanical Engineering jointly established the Department of Mechatronics through admission of M.Sc. students. The mission of this department is to create the right infrastructure for collaborations between the two faculties in order to induce synergy in the design and implementation of mechatronic products dedicated to industry.

Core Research Areas (within the Faculty of Electrical Engineering)

- Biomechatronics
- Fault Diagnosis
- Intelligent Systems
- Robotic Systems

Research Laboratories

- Fault Detection and Identification Laboratory

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Education:

Ph.D.: Control System Design, K. N. Toosi University of Technology, Tehran, Iran, 2008.

M.Sc.: Control System Design, K. N. Toosi University of Technology, Tehran, Iran, 2003.

B.Sc.: Electrical Engineering, K. N. Toosi University of Technology, Tehran, Iran, 2001.

Research Interest:

- Fault Diagnosis
- System Identification
- Optimization - Fuzzy and Neural Networks

Biography:

Mahdi Aliyari Shoorehdeli received the B.Sc. degree in electronics engineering, the M.Eng. degree and Ph.D. degree in control engineering from K. N. Toosi University of Technology, in 2001, 2003 and 2008, respectively. He is currently an Assistant Professor with the Department of Mechatronics Engineering, K. N. Toosi University of Technology, Tehran. He is the author of more than 100 papers in international journals and conference proceedings. His research interests include Fault Detection and Isolation, System Identification and Optimization.

Selected journal papers:

1. Ziyabari, S.H.S., **Aliyari Shoorehdeli, M.,** "Robust fault diagnosis scheme in a class of nonlinear system based on UIO and fuzzy residual", International Journal of Control, Automation and Systems, 2017.
2. Farivar, F., **Aliyari Shoorehdeli, M.,** "Stability analysis of particle dynamics in gravitational search optimization algorithm" Information Sciences, 2016.
3. Mahmoodi, L., **Aliyari Shoorehdeli, M.,** "Comments on ''A Novel Fault Diagnosis and Prediction Scheme Using a Nonlinear Observer With Artificial Immune System as an Online Approximator'', IEEE Transactions on Control Systems Technology, 2017.
4. Ziyabari, S.H.S., **Aliyari Shoorehdeli, M.,** "Fuzzy robust fault estimation scheme for a class of nonlinear systems based on an unknown input sliding mode observer", Journal of Vibration and Control, 2016.

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Education:

Post doctorate: Clinical Research Fellow, Lawson Health Research Institute, London, ON, Canada, 2016.

Post doctorate: Industrial Research Fellow, The University of Western Ontario, London, ON, Canada, 2012.

Ph.D.: Control Systems and Robotics, The University of Western Ontario, London, ON, Canada, 2010.

M.Sc.: Electrical Engineering, K. N. Toosi University of Technology, Tehran, Iran, 2003.

B.Sc.: Electrical Engineering, Shiraz University, Shiraz, Iran, 1999.

Research Interest:

- Biomechatronic Systems
- Assistive Robotics
- Wearable Technologies
- Augmented Reality
- Neuro modulation Optimization

Biography:

Mehdi Delrobaei received the B.Sc. degree from Shiraz University, Iran, in 2000, the M.Sc. degree from the K. N. Toosi University of Technology, Iran, in 2003, and the Ph.D. degree from Western University, Canada, in 2010, all in electrical engineering. He completed post-doctoral training with Western University and Lawson Health Research Institute, Canada from 2011 to 2016. He is currently an Assistant Professor of Mechatronics and Biomedical Engineering, and the leader of the Research Thrust on Assistive Robotic and Biomechatronic Systems with the Center for Research and Technology (CREATECH), Faculty of Electrical Engineering, K. N. Toosi University of Technology. His research work is currently focused on biomechatronics systems and wearable technologies.

Selected journal papers:

1. **M. Delrobaei,** S. Memar, M. Pieterman, T. W. Stratton, K. McIsaac, M. Jog, "Towards Remote Monitoring of Parkinson's Disease Tremor using Wearable Motion Capture Systems," J. Neurological Sciences, 2018.
2. **M. Delrobaei,** N. Baktash, G. Gilmore, K. McIsaac, M. Jog, "Using Wearable Technology to Generate Objective Parkinson's Disease Dyskinesia Severity Score: Possibilities for Home Monitoring," IEEE Trans. Neural Systems and Rehab. Eng., 2017.
3. S. Memar, **M. Delrobaei,** G. Gilmore, K. McIsaac, M. Jog, "Segmentation and Detection of Physical Activities during a Sitting Task in Parkinson's Disease Participants using Multiple Inertial Sensors," J. Applied Biomed, 2017.
4. **M. Delrobaei,** S. Tran, G. Gilmore, K. McIsaac, M. Jog, "Characterization of Multi-joint Upper Limb Movements in a Single Task to Assess Bradykinesia," J. Neurological Sciences, 2016.
5. **M. Delrobaei,** F. Rahimi, M. E. Jackman, S. F. Atashzar, M. Shahbazi, R. V. Patel, M. Jog, "Kinetic and Kinematic Assessment of Upper Limb Movements in Patients with Writer's Cramp," Journal of Neuro-Engineering and Rehabilitation, 2016.

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Education:

Ph.D.: Applied Mechanics, Sharif University of Technology, Tehran, Iran, 2016.

M.Sc.: Mechatronics, K. N. Toosi University of Technology, Tehran, Iran, 2011.

B.Sc.: Control Engineering, K. N. Toosi University of Technology, Tehran, Iran, 2009.

Research Interest:

- Modeling, System Identification and Control of Micro/Bio Mechatronics systems
- BioMEMS Sensors/Actuators Design, Fabrication and Control
- Magnetic Nano Particle Application [Application of Bio-Sensing, Treatment, Epilepsy Detection]
- Nanoparticle drug delivery to the brain and Magnetically study of the brain activities

Biography:

Maysam Zamani Pedram has received his B.Sc. and M.Sc. degree in Electrical Engineering and Mechatronics Engineering from K.N. Toosi University of Technology, Tehran, Iran, in 2009 and 2011, respectively and his Ph.D. in Mechanical engineering in 2016, from Sharif University of Technology, Tehran, Iran. He is currently an Assistant Professor of the Faculty of Electrical Engineering, a Leader Trust of CreaTech in the field of biosensor/actuator and the Director of the Micro Sensor Processor Group (MSP) at K.N. Toosi University of Technology, Tehran, Iran. His research studies focused on Microfluidic based biosensor/actuator design, fabrication and control, Application of magnetic nanoparticle in brain disease detection, nanoparticle drug delivery to the brain and Magnetically study of brain activities.His ongoing projects are Noninvasive magnetic nanoparticles drug delivery to the brain, Magnetic nanoparticle (MNPs) aggregation in the application of epilepsy detection, magnetic CNT based Nano carrier design in the application of drug delivery to the cell.

Selected journal papers:

1. **M. Z. Pedram,** A. Shamloo, E. Ghafar-Zadeh and A. Alasty, “Dynamic analysis of magnetic nanoparticles crossing cell membrane”, Journal of Magnetism and Magnetic Materials, 2016.
2. **M. Z. Pedram,** A. Shamloo, A. Alasty and E. Ghafar-Zadeh, “Optimal magnetic field for crossing super- paramagnetic nanoparticles through the brain blood barrier: A molecular dynamics approach”, Bio Sensors, 2016.
3. A. Shamloo, **M. Z. Pedram,** H. Heidari and A. Alasty, “Computing the blood brain barrier (BBB) diffusion coefficient: A molecular dynamics approach.”, Journal of Magnetism and Magnetic Materials, 2016.
4. **M. Z. Pedram,** A. Shamloo, A. Alasty and E. Ghafar-Zadeh, “Toward Epileptic Brain Region Detection Based on Magnetic Nano-Particle Patterning”, SENSORS, 2015.
5. M. Fazlyab, **M. Z. Pedram,** H. Salarieh, A. Alasty, “Parameter Estimation and Interval Type-2 Fuzzy Sliding Mode Control of a Z-Axis MEMS Gyroscope”, ISA Transactions, 2013.

Department of Systems and Control

Department of Systems and Control at the Faculty of Electrical Engineering is proud of its significant role in training expert individuals, who are involved in a wide variety of professional activities in both academia and the industry. Taking into consideration theoretical and practical advancements of different fields of “systems and control”, research activities of the Department’s faculty members involve a wide variety of subjects ranging from fundamental studies on the theory to application-oriented issues in practical environment.

Core Research Areas

- Adaptive and Nonlinear Control
- Bio Mechatronics
- Decision and Cognition
- Fractional Order Systems and Controllers
- Hybrid Systems
- Industrial Systems Control
- Intelligent Control
- Modeling and Systems Identification
- Model Predictive and Optimal Control
- Multivariable Control
- Networked Control Systems
- Robotics

Research Laboratories

- Industrial Control Laboratory
- Smart Systems Laboratory
- Advanced Automation Laboratory
- Advanced Control Systems Laboratory
- Robotics Laboratory
- System Identification and Modeling Laboratory
- Systems Engineering and Cognition Studies Laboratory
- Computer Control Laboratory
- Instrumentation Laboratory

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Education:

Ph.D.: Electrical Engineering - Control Systems, Tohoku University, Sendai, Japan, March 2001.

M.Sc.: Electrical Engineering - Control Systems, Tehran University, Tehran, Iran, January 1995.

B.Sc.: Electrical Engineering - Electronics, Isfahan University of Technology, Isfahan, Iran, September 1990.

Research Interest:

- Intelligent Control Systems
- Process Control
- Condition Monitoring
- Soft Sensor
- Fault Detection
- Performance Monitoring
- Non-monotonic Lyapunov
- Multiple Modeling and Control
- System Identification
- Industrial Automation
- Advanced Driver Assistance Systems

Biography:

Alireza Fatehi received the B.Sc. degree from Isfahan University of Technology, in 1990, the M.Sc. degree from Tehran University, Tehran, Iran, in 1995, and Ph.D. degree from Tohoku University, Sendai, Japan, in 2001, all in electrical engineering. Fatehi is currently an associate professor of electrical engineering at K.N. Toosi University of Technology (KNTU), Tehran, Iran. He is director of Advance Process Automation & Control (APAC) research group, founding director of the Petroleum Industry Productivity Research Center (PIPRC) and a member of the Industrial Control Center of Excellence in KNTU.

Selected journal papers:

1. **Alireza Fatehi,** Biao Huang, "State estimation and fusion in the presence of integrated measurement ", IEEE Transaction on Instrumentation and Measurement, 2017.
2. Yujia Zhao, **Alireza Fatehi,** Biao Huang, "A Data-Driven Hybrid ARX and Markov-Chain Modeling Approach to Process Identification with Time Varying Time Delays", IEEE Transaction on Industrial Electronics, 2017.
3. Zahra Gharaee, **Alireza Fatehi,** Mariam Mirian, Majid Nili-Ahmadabadi, "Attention control learning in the decision space using state estimation" International Journal of Systems Science, 2016.
4. Siamak Afsar-Khamseh, Ali Kaki-Sedigh, Behzad Moshiri, **Alireza Fatehi,** "Control performance assessment based on sensor fusion techniques", Control Engineering Practice, 2016.
5. Siavash Fakhimi Derakhshan, **Alireza Fatehi,** Mehrad Ghasem Sharabiany, "Non-Monotonic Observer-Based Fuzzy Controller Designs for Discrete Time T-S Fuzzy Systems via LMI", IEEE Transaction of Systems, Man & Cybernetics, 2014.

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Education:

Ph.D.: Control Systems Engineering, Tarbiat Modares University, Tehran, Iran, 2000.

M.Sc.: Control Systems Engineering, Technical University of Delft, Netherland, 1994.

B.Sc.: Control Systems Engineering, Sharif University of Technology, Tehran, Iran, 1990.

Research Interest:

- Navigation
- Digital and Nonlinear Control
- Flight and Guidance Control

Biography:

After obtaining a BS in electrical engineering from Sharif University of Technology in 1990, he graduated from TUDelft and then graduated from PhD in electrical engineering in the trend of control at Tarbiat Modares University in 2000. He was acting as a faculty member in the Department of Systems and Control, Faculty of Electrical Engineering of K. N. Toosi University of Technology. His research interest includes navigation, flight and guidance control and digital and nonlinear control.

Selected journal papers:

1. Seyyed Javad Talebian, **Jafar Heyrani Nobari**, "Spherical Trigonometry a Bridge from Trajectory Waypoints to Guidance Algorithm", The Modares Journal of Electrical Engineering, 2016.
2. Mahdieh Hossein gholizadeh Alashti, **Jafar Heyrani Nobari**, Abdolhamid Bahjat Panah, "New Approach to Determine 6DOF Position and Orientation of a Non-Orthogonal Coordinate System on the Object Using its Image", The Modares Journal of Electrical Engineering, 2014.
3. Amir Moghtadaei Rad, **Jafar Heyrani Nobari**, Amir Ali Nikkhah, "Optimal Attitude and Position Determination by Integration of INS, Star Tracker, and Horizon Sensor", IEEE AEROSPACE AND ELECTRONIC SYSTEMS MAGAZINE, 2014.
4. M. Yadegar, M.A. Dehghani and **J.H. Nobari**, "Designing a Compensator Based on Extended Kalman Filter for Elimination of Noise and Delay Effect in Tracking Loop", Nonlinear Dynamics and Systems Theory, 2014.
5. Zahra Parsanezhad, **Jafar Heyrani Nobari**, Saeed Ebadollahi, Analysis and Design of Optimum Time Delay in Warhead Detonation, Journal of Control, 2013.

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Education:

Ph.D.: Control Engineering, University of Salford, England, 1988.

M.Sc.: Control System, UMIST, England, 1985.

B.Sc.: Single Honors Mathematics, University of Newcastle Upon Tyne, England, 1983.

Research Interest:

- Robust multivariable and Adaptive Control Theory
- Intelligent Control (Genetic Design and Neural Networks)
- Industrial applications
- Predictability and prediction of system's behavior
- History of Control

Biography:

Ali Khaki-Sedigh received his B.Sc. degree in Mathematics from University of Newcastle Upon Tyne, England in 1983, his M. Eng in Control System, UMIST, England, in 1985 and his Ph.D. in Control Engineering, University of Salford, England in 1988. He is currently a Professor with the Electrical Engineering Department at K.N. Toosi University of Technology, Tehran, Iran. His publications include ten books, and more than 200 papers in international Journals and conference proceeding, and his research interest are Robust Multivariable and Adaptive Control, Theory Intelligent Control (Genetic Design and Neural Networks), Predictability and prediction of systems behavior.

Selected journal papers:

1. Edalati, L., **Khaki Sedigh, A.,** Aliyari Shooredeli, M., Moarefianpour, A, "Adaptive fuzzy dynamic surface control of nonlinear systems with input saturation and time-varying output constraints", Mechanical Systems and Signal Processing, 2018.
2. Agand, P., Shoorehdeli, M.A., **Khaki-Sedigh, A.,** " Adaptive recurrent neural network with Lyapunov stability learning rules for robot dynamic terms identification", Engineering Applications of Artificial Intelligence, 2017.
3. Nouri Manzar, M., Battistelli, G., **Khaki Sedigh, A.,** "Input-constrained multi-model unfalsified switching control", Automatica, 2017.
4. Hashemipour, S.H., Vasegh, N., **Sedigh, A.K.,** "Decentralized MRAC for Large-Scale Interconnected Systems with State and Input Delays by Integrators Inclusion", Journal of Dynamic Systems, Measurement and Control, Transactions of the ASME, 2017.
5. Hashemipour, S.H., Vasegh, N., **Sedigh, A.K.,** " Decentralized model reference adaptive control for interconnected time delay systems with delay in state and compensation of long delay in input by nested prediction", International Journal of Control, Automation and Systems, 2017.

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Education:

Ph.D.: Control Engineering, Tarbiat Modares University, Tehran, Iran, 1998.

M.Sc.: Control Engineering, K.N. Toosi University of Technology, Tehran, Iran, 1993.

B.Sc.: Control Engineering, Sharif University of Technology, Tehran, Iran, 1990.

Research Interest:

- System Identification
- Stochastic Estimation and Control
- Optimal Control
- Adaptive Control
- Chaos Synchronization
- Time Series Analysis

Biography:

Hamid Khaloozadeh received the B.Sc. degree in control engineering from the Sharif University of Technology, Tehran, Iran, in 1990, the M.Sc. degree in control engineering from the K.N. Toosi University of Technology, Tehran, in 1993, and the Ph.D. degree in control engineering from Tarbiat Modares University, Tehran, in 1998. He is currently a Professor with the Department of Systems and Control, Faculty of Electrical Engineering, K.N. Toosi University of Technology, where he is the Director of the Industrial Control Center of Excellence. His current research interests include stochastic estimation and control, system identification, optimal control, and time series analysis.

Selected journal papers:

1. A. Keshavarz-Mohammadiyan, **H. Khaloozadeh**, “Consensus-based distributed unscented target tracking in wireless sensor networks with state-dependent noise,” Elsevier, Signal Processing, 2017.
2. A. Keshavarz-Mohammadiyan, **H. Khaloozadeh**, “PIAPF for manoeuvring target tracking in the presence of multiplicative noise,” IET Radar, Sonar and Navigation, 2017.
3. Z. Beheshtipour, **H. Khaloozadeh**, R. Amjadifard, “On the Solvability of Feedback Complete Linearization of Nonlinear Stochastic Systems,” IEEE Transactions on Systems, Man, and Cybernetics: Systems, 2017.
4. A. Keshavarz-Mohammadiyan, **H. Khaloozadeh**, “Adaptive consensus-based distributed state estimator for non-linear systems in the presence of multiplicative noise,” IET Signal Processing, 2017.
5. Y. Batmani, **H. Khaloozadeh**, “On the design of suboptimal sliding manifold for a class of nonlinear uncertain time-delay systems,” International Journal of Systems Science 47 (11), 2543-2552, 2016.

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Education:

Ph.D.: Control Systems Engineering, K. N. Toosi University of Technology, 2007.

M.Sc.: Control Systems Engineering, K. N. Toosi University of Technology, 2002.

B.Sc.: Control Systems Engineering, Isfahan University of Technology, 2000.

Research Interest:

- Multivariable and Large-Scale Control systems
- Control Configuration Selection
- Estimation Theory
- Fault Diagnosis and Fault Tolerant Control Systems

Biography:

Bijan Moaveni received his B.Sc. degree in control systems engineering form the Isfahan University of Technology in 2000 and his M.Sc. and Ph.D. degrees in control systems engineering from K. N. Toosi University of Technology, in 2002 and 2007, respectively. From 2009-2018, he was with Control and Signaling department of School of Railway Engineering in Iran University of Science and Technology, Tehran, Iran. He is currently with control engineering group in Faculty of Electrical Engineering of K. N. Toosi University of Technology, Tehran, Iran. From 2016, he has started a collaboration with control engineering group of Lulea University of Technology, Sweden. He also has done many projects for companies and industries. He is the author and co-author of about 50 journal papers, 60 technical conference papers, and he has published 2 books in Springer and John Wiley & Sons. His research interests are multivariable and large-scale control systems, control configuration selection, estimation theory and fault diagnosis and fault tolerant control systems.

Selected journal papers:

1. **Moaveni, Bijan**, Zahra Masoumi. "Modifying the ERA and fast ERA to improve operational performance for structural system identification." Mechanical Systems and Signal Processing, 2019.
2. **Moaveni, Bijan**, Sima Najafi. "Metro Traffic Modeling and Regulation in Loop Lines Using a Robust Model Predictive Controller to Improve Passenger Satisfaction." IEEE Transactions on Control Systems Technology, 2018.
3. Najafi Birgani, Soleiman, **Bijan Moaveni**, Ali Khaki-Sedigh. "Infinite horizon linear quadratic tracking problem: A discounted cost function approach." Optimal Control Applications and Methods, 2018.
4. **Moaveni, Bijan**, Pegah Barkhordari, "Modeling, identification, and controller design for hydraulic anti-slip braking system." Proceedings of the Institution of Mechanical Engineers, Part D: Journal of Automobile Engineering, 2018.
5. Beidaghi, Sahereh, Ali Akbar Jalali, Ali Khaki Sedigh, **Bijan Moaveni**. "Robust H∞ filtering for uncertain discrete-time descriptor systems." International Journal of Control, Automation and Systems, 2017.

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Education:

Ph.D.: University of Leeds, UK, 1997.

M.Sc.: University of Tehran, Tehran, Iran, 1976.

B.Sc.: University of Tehran, Tehran, Iran.

Research Interest:

- Linear Systems
- Optimization
- Fractional Order Systems

Biography:

Mohammad Ali Nekoui received his M.Sc. in Electrical Engineering from University of Tehran in 1976, Diplome d'Especialisation in Instrumentation & Metrologie from Ecole Superieure d'Electricite (Supelec), France, and his Ph.D. at School of Electrical and Electronic Engineering in Computer and Control Department from University of Leeds, U.K. in 1997. Since 1980, he has been with the K.N.T. University of Technology. At present he is Associate Professor at the Faculty of Electrical and Computer Engineering of this university. His interest includes linear and nonlinear optimization, linear systems, optimal control, and different aspects of mathematics in control.

Selected journal papers:

1. Orouskhani, M., Teshnehlab, M., **Nekoui, M.A.**, "Integration of Cat Swarm Optimization and Borda Ranking Method for Solving Dynamic Multi-Objective Problems", International Journal of Computational Intelligence and Applications, 2016.
2. Farahani, S.S.S., Jahed-Motlagh, M.R., **Nekoui, M.A.**, "Novel congestion control algorithms for a class of delayed networks" , Turkish Journal of Electrical Engineering and Computer Sciences, 2015.
3. Pakzad, M.A., Pakzad, S., **Nekoui, M.A.**, "Exact method for the stability analysis of time delayed linear-time invariant fractional-order systems", IET Control Theory and Applications, 2015.
4. Razavi, S.E., **Nekoui, M.A.**, Jahed-Motlagh, M.R., "A novel approach to control the temperature of Nano particles' targeted site", Journal of Computational and Theoretical Nanoscience, 2015.
5. Pakzad, M.A., Pakzad, S., **Nekoui, M.A.**, "On the stability of fractional-order systems of neutral type", Journal of Computational and Nonlinear Dynamics, 2015.

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Education:

Ph.D.: Electrical Engineering (Control systems) Department of Engineering Cybernetics Norwegian University of Science and Technology (NTNU), Tehran, Iran, 2016.

M.Sc.: Electrical Engineering (Control systems), University of Tehran, Tehran, Iran, 2011.

B.Sc.: Electrical Engineering (Control systems), University of Tehran, Tehran, Iran, 2008.

Research interests:

- Nonlinear state estimation and system identification
- Model Predictive Control, Adaptive Control, and Optimization
- Automatic solutions for Oil and Gas industry
- Drilling, Production, Reservoir management
- Game theory
- Soft computing, such as fuzzy logic, neural networks, and evolutionary algorithms

Biography:

Amir Hossein Nikoofard was born in 1986. He received the B.Sc. and M.Sc. degrees in electrical and computer engineering from the University of Tehran, Tehran, Iran, in 2008 and 2011, respectively, and the Ph.D. degree in electrical and computer engineering from the Norwegian University of Science and Technology, Trondheim, Norway, in 2016. He is currently an Assistant Professor of Electrical Engineering with K. N. Toosi University of Technology, Tehran.

Selected journal papers:

1. **A. Nikoofard,** H. Hajimirsadeghi, A. Rahimi -Kian, C. Lucas, ”Multi-objective Invasive Weed Optimizati on: Analysis of Pareto Improvement Models in Electricity Markets”, Applied soft computing, 2012.
2. **A. Nikoofard,** U. J. Flø Aarsnes, T. A. Johansen, G.-O. Kaasa, “States and Parameter Estimation of a Drift -Flux Model for Under-Balanced Drilling Operations”, IEEE Transaction on Control Systems Technology, 2017.
3. **A. Nikoofard,** T.A. Johansen, H. Mahdianfar, A. Pavlov, ”Design and Comparison of constrained MPC with PID controller for heave disturbance attenuation in offshore managed pressure drilling systems”, Marine Technology Society Journal, 2014.
4. **Nikoofard, A.,** Johansen, T. A., & Kaasa, G. O, ” Reservoir characterization in under-balanced drilling using low-order lumped model”, Journal of Process Control, 2018.
5. **Nikoofard, A.,** Johansen, T. A., & Kaasa, G. O., ”Evaluation of lyapunov-based adaptive observer using low-order lumped model for estimation of production index in under-balanced drilling”, IFAC-Papers OnLine, 2015.

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Education:

Ph.D.: Systems Engineering and Design from Manufacturing Engineering and Operation Management School, University of Nottingham, UK,2003.

M.Sc.: Engineering Management from the Industrial Engineering Dept., AmirKabir University of Technology, Tehran , Iran, 1991.

B.Sc.: Applied Physics from Isfahan University, Iran, 1986.

Research Interests:

- Distributed decision making within micro-grid patterns of power generation
- Coverage control modeling for cost-effective monitoring of seas' oil pollution
- Cognitive model in management of energy market
- Analyzing and modeling the dynamics of systems for control of air pollution
- Systems optimization within multi-agents and complex systems
- Network architecture and design for Highway Automated Systems (AHS)

Biography:

Dr Tahsiri is currently a senior faculty member of the Systems and Control Engineering Department at KNT University of Technology, Tehran, Iran. He is also the senior consultant to the University chancellor for strategic developments. He has so far founded a number of interdisciplinary programs at the University, the latest one is the Systems Engineering program at KNTU. He is a specialist in Systems Engineering and Design and is now working with academic staff with a Control Engineering background to delineate a new vision of systems modeling for problem solving approaches within large and complex systems in dynamic, changeable, and diverse environments. He has proposed a number of novel theories and practices within the current context of manufacturing systems analysis and design, namely: 'Quantum Manufacturing Systems' (QMS); the 'Market- Process- Product Model' (MPPM) which is a pragmatic model of the 21st century manufacturing platform; and the 'Dynamic Strategic Design' (DSD) methodology which is a third generation of systems optimization methods.Dr Tahsiri's area of interests comprise of cognitive decision making in energy sector, manufacturing strategy development and risk evaluation; system dynamics methodology for pollution modeling and control, traffic modeling and control, trend study upon the future behavioral of businesses and industries, system architecture for optimal development within higher education, requirements engineering.

Selected journal papers:

1. Mohammad Hossein Noranian, **Ahmad Reza Tahsiri**, "Developing a Model of Heterogeneity in Driver's Behavior" International Journal of Transportation Engineering, 2017.
2. Mohammad Hossein Noranian, **Ahmad Reza Tahsiri**, "Developing architecture of a traveler information system for dynamic equilibrium in traffic networks", Journal of Modern Transportation, 2017.
3. **Tahsiri Ahmad Reza**, Kheiri Najme "A Problem Solving Algorithm for Organizing Agent Post-Studio Fashion of Filmmaking Projects", International Journalof Industrial Engineering & Production Management, 2013.
4. **Ahmad Reza Tahsiri**, Ali Rahbari, "An Optimum Design for the Control of Production Systems within the Multi-Stage Single-Point Manufacturing Environment", International Journal of Industrial Engineering & Production Management, 2011.
5. **Ahmad Reza Tahsiri,** Ali Rahbari, "An AHP Model for Classification of the Professional Competencies of Iranian Industrial Engineers" International Journal of Industrial Engineering & Production Management, 2009.

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Education:

Ph.D.: Electrical Engineering, McGill University, Montreal, 1997.

M.Sc.: Mechanical Engineering, McGill University, Montreal, 1993.

B.Sc.: Mechanical Engineering, Sharif University of Technology, Tehran, Iran, 1989.

Research Interest:

- Autonomous Robotics
- Surgical Robotics
- Parallel and Cable Robotics
- Dynamical Systems Analysis and Control
- Visual Robotics
- Industrial Robotics and Automation

Biography:

Hamid D. Taghirad has received his B.Sc. degree in mechanical engineering from Sharif University of Technology, Tehran, Iran, in 1989, his M.Sc. in mechanical engineering in 1993, and his Ph.D. in electrical engineering in 1997, both from McGill University, Montreal, Canada. He is currently a Professor and the university Vice-Chancellor for global strategies and international affairs, and the Director of the Advanced Robotics and Automated System (ARAS) at K.N. Toosi University of Technology, Tehran, Iran. He is a senior member of IEEE, the chairman of IEEE control system chapter in Iran section, member of the board of Industrial Control Center of Excellence (ICCE), at K.N. Toosi University of Technology, editor in chief of Mechatronics Magazine, and Editorial board of International Journal of Robotics: Theory and Application, and International Journal of Advanced Robotic Systems. His research interest is robust and nonlinear control applied to robotic systems. His publications include five books, and more than 200 papers in international Journals and conference proceedings.

Selected journal papers:

1. Ali Noormohammadi-Asl, **H.D. Taghirad,** "Multi-goal motion planning using traveling salesman problem in belief space, Information Sciences", Information Science, 2018.
2. A. Rahimabadi**, H.D. Taghirad,** Comment on: "Centers of quasi-homogeneous polynomial planar systems", Nonlinear Analysis: Real World Applications, 2017.
3. Reza Babaghasabha, Mohammad A. Khosravi, **H.D. Taghirad, "**Adaptive robust control of fully constrained cable robots: singular perturbation approach", Nonlinear Dynamics, 2016.
4. M Parsapour, S. RayatDoost, **H.D. Taghirad, "**A 3D sliding mode control approach for position based visual servoing system", Scientia Iranica, 2015.
5. Alireza Norouzzadeh Ravari, **H.D. Taghirad**, "Loop Closure Detection by Algorithmic Information Theory: Implemented on Range and Camera Image Data", IEEE Transactions on Cybernetics, 2014.

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Education:

Ph.D.: Electrical Engineering (Control), Sharif University of Technology, Tehran, Iran, 2011.

M.Sc.: Electrical Engineering (Control), Ferdowsi University, Mashhad, Iran, 2007.

B.Sc.: Electrical Engineering (Electronics), Ferdowsi University, Mashhad, Iran, 2004.

Research Interest:

- Robust Control Systems
- Fractional Order Systems and Controllers
- Model Order Reduction
- Control of Time Delay Systems

Biography:

Mahsan Tavakoli-Kakhaki received her BSc and MSc degrees from Ferdowsi University, Mashhad, Iran, in 2004 and 2007, respectively, and the Ph.D. degree from Sharif University of Technology, Tehran, Iran, in 2011, all in electrical engineering. Currently, she is an assistant professor with the Faculty of Electrical Engineering, K. N. Toosi University of Technology, Tehran, Iran. Her research interests are design and analysis of robust control systems, fractional order control, applications of fractional calculus in engineering, model reduction of integer and fractional order systems, and control of time delay systems.

Selected journal papers:

1. P. Jafari, M. Teshnehlab, **M. Tavakoli-Kakhki**, "Adaptive Type-2 Fuzzy System for Synchronization and Stabilization of Chaotic Nonlinear Fractional Order Systems," IET Control Theory and Applications, 2017.
2. P. Jafari, M. Teshnelab, and **M. Tavakoli-Kakhki**, "Synchronization and Stabilization of Fractional Order Nonlinear Systems with Adaptive Fuzzy Controller and Compensation Signal," Nonlinear Dynamics, 2017.
3. **M. Tavakoli-Kakhki**, "Implementation of Fractional-order Transfer Functions in the Viewpoint of the Required Fractional-order Capacitors," International Journal of Systems Science, 2017.
4. R. Azarmi, **M. Tavakoli-Kakhki**, A. Khaki Sedigh and A. Fatehi, "Analytical Design of Fractional Order PID Controllers Based on the Fractional Set-point Weighted Structure: Case Study in Twin Rotor Helicopter," Mechatronics, 2015.
5. **M. Tavakoli-Kakhki**, M. S. Tavazoei, "Proportional Stabilization and Closed-loop Identification of an Unstable Fractional Order Process," Journal of Process Control, 2014.

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Education:

Ph.D.: Electrical Engineering - Control Systems, University of Tehran, Iran, 2009.

M.Sc.: Electrical Engineering - Control Systems, University of Tehran, Iran, 2001.

B.Sc.: Electrical Engineering - Electronics, University of Tehran, Iran, 1998.

Research Interest:

- Hybrid Systems
- Networked Control Systems
- Industrial Automation
- Constrained Model Predictive Control
- Control of Cyber-Physical Systems

Biography:

Babak Tavassoli received his B.S. in Electronics Engineering in 1998 from the University of Tehran. He received his M.S. and Ph.D. degrees, in Control Engineering from the same university in 2001 and 2009 respectively. He has been involved in developing fieldbus systems for industrial automation at Farineh Fannavar Co. since 2003. From 2009 to 2010 he was with the Research Institute of Petroleum Industry in Iran. He joined the Faculty of Electrical and Computer Engineering, K. N. Toosi University of Technology in 2010 where he is currently an Assistant Professor. He has published several papers. Currently, his research is mainly focused on Networked Interconnected Systems, Hybrid Systems, and Industrial Automation.

Selected journal papers:

1. Azadegan, M., Beheshti, M.T.H., **Tavassoli, B.**, "Using AQM for performance improvement of networked control systems", International Journal of Control, Automation and Systems, 2015.
2. Azadegan, M., Beheshti, M.T.H., **Tavassoli, B.**, "Design of proportional-derivative-type state feedback controllers for congestion control of transmission control protocol networks", International Journal of Systems Science, 2015.
3. **Tavassoli, B.**, Jabehdar-Maralani, P., "A stochastic Lyapunov theorem with application to stability analysis of networked control systems", Journal of Information Systems and Telecommunication, 2014.
4. **Tavassoli, B.**, "Stability of nonlinear networked control systems over multiple communication links with asynchronous sampling" , IEEE Transactions on Automatic Control, 2014.
5. **Tavassoli, B.**, Jabehdar-Maralani, P., Rezaee, N., "Tuning of Control Systems over CSMA Networks", IEEE Transactions on Industrial Electronics, 2009.

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Education:

Ph.D.: Doctor of Philosophy, Saga University, Japan, 1993.

M.Sc.: Electrical Engineering, Oita University, Japan, 1991.

B.Sc.: Electrical Engineering, Stony Brook University, NY, USA, 1981.

Research Interest:

- Introduction of Artificial Intelligence
- Advanced Artificial Neural Networks
- Fuzzy Control Systems
- Neuro-Controller
- Evolutionary Algorithms
- Interval Soft Computing

Biography:

Dr. Mohammad Teshnehlab is a faculty member of Electrical Eng. Department of K. N. Toosi University of Technology. His main research interests focus on Intelligent Systems and Control.

He is a member of Industrial Control Center of Excellence and founder of Intelligent Systems Laboratory (ISLab.). He also was head and Co-founder of Intelligent Systems Scientific Society of Iran (ISSSI) and member of editorial board of International Journal of Information & Communication Technology Research

Selected journal papers:

1. Rasti, R., **Teshnehlab, M.**, Phung, S.L., “Breast cancer diagnosis in DCE-MRI using mixture ensemble of convolutional neural networks” , Pattern Recognition, 2017.
2. Jafari, P., **Teshnehlab, M.**, Tavakoli-Kakhki, M., “Synchronization and stabilization of fractional order nonlinear systems with adaptive fuzzy controller and compensation signal”, Nonlinear Dynamics, 2017.
3. Mohtashami, H., Movaghar, A., **Teshnehlab, M.**, “Multi-objective Node Placement Considering Non-uniform Event Pattern” , Wireless Personal Communications, 2017.
4. Ahmadi, G., **Teshnehlab, M.**, “Designing and implementation of stable sinusoidal rough-neural identifier”, IEEE Transactions on Neural Networks and Learning Systems, 2017.
5. Sharafi, Y., Khanesar, M.A., **Teshnehlab, M.**, “COOA: Competitive optimization algorithmSwarm and Evolutionary Computation”, 2016.

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Education:

M.Sc.: Control Engineering, K.N. Toosi University of Technology, Tehran, Iran, 2001.

B.Sc.: Control Engineering, University of Tehran, Iran, 1998.

Research Interest:

- Time Series
- Modeling and Forecasting
- Computer Systems
- Internet Engineering

Biography:

He received his BSc and MSc degrees, both in Control Engineering, from the University of Tehran and K.N. Toosi University of Technology respectively. After graduation, He has joined the Systems and Control department of K.N. Toosi University of Technology in 2001 where He has been teaching different courses, supervising BSc theses, managing the academic labs and cooperating in research projects.

Selected journal papers:

1. V.Nazarzehi, A.Fatehi, **M.Zamanian**, Investigation of the Performance of Multiple Modeling and Control Approach Using a Laboratory Helicopter, International Journal of Computer and Electrical Engineering, Vol. 2, No. 6, 2010.

Part II: Research Centers

CENTER OF EXCELLENCE IN COMPUTATION AND CHARACTERIZATION OF ELECTROMAGNETIC DEVICES AND SUBSYSTEMS

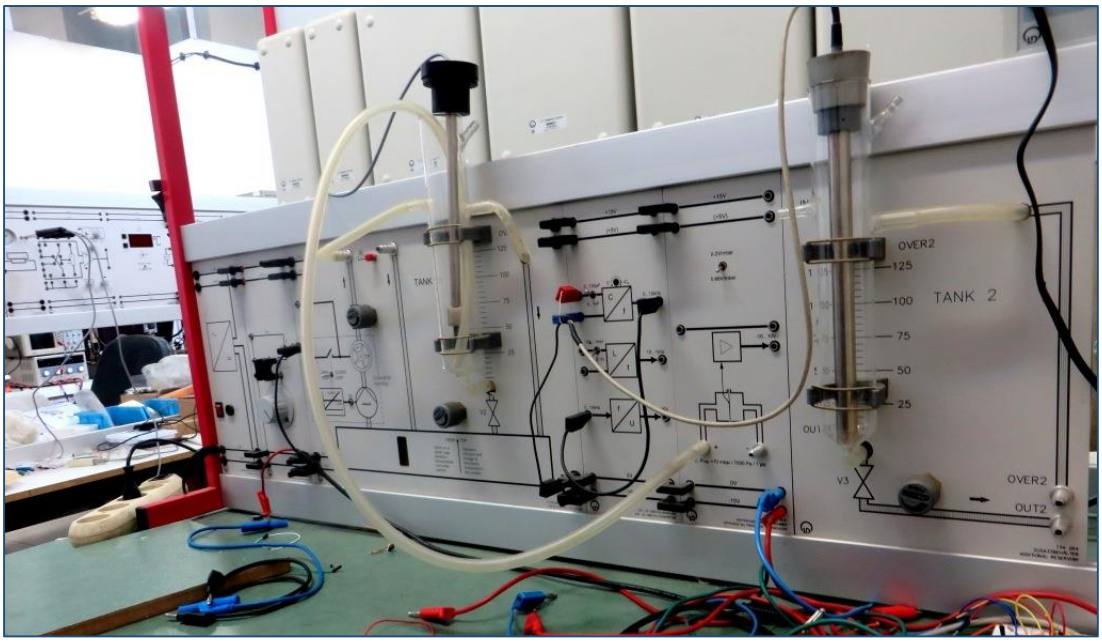
The Center of Excellence in Computation and Characterization of Electromagnetic Devices and Subsystems at K. N. Toosi University of Technology was established in 2011. Mission of the Center includes (but is not limited to):

- Development and conduction of applied academic research in electromagnetic computation and characterization,
- Bridging between the forefront of academic research and the industry in order to transfer emerging electromagnetic computation and characterization techniques from theory to practice,
- Providing professional consultance as well as technical services in electromagnetic computation and characterization to the industry,
- Employment and development of parallel processing techniques for fast computations dedicated to electromagnetic fields, and
- Providing technical services in non-destructive tests to petroleum, gas, and biomedical engineering industries.
- Antenna measurement and characterization in the frequency range up to 20GHz.

Industrial Control Center of Excellence(ICCE)

The Industrial Control Center of Excellence (ICCE) at K. N. Toosi University of Technology was established in 2011. Some of the main missions of ICCE are as follows:

- Domestration of advanced industrial control for implementation in Iran's industries,
- Development, analysis, and control system design with application in industries,
- Production and development of standard protocols for industrial controllers,
- Product-based industrial research projects,
- Providing scientific and technical services to the industry,
- Publication and documentation of research results,
- Publication monograph in industrial control fields, and
- Development of international relations for the benefit of our people and our university.

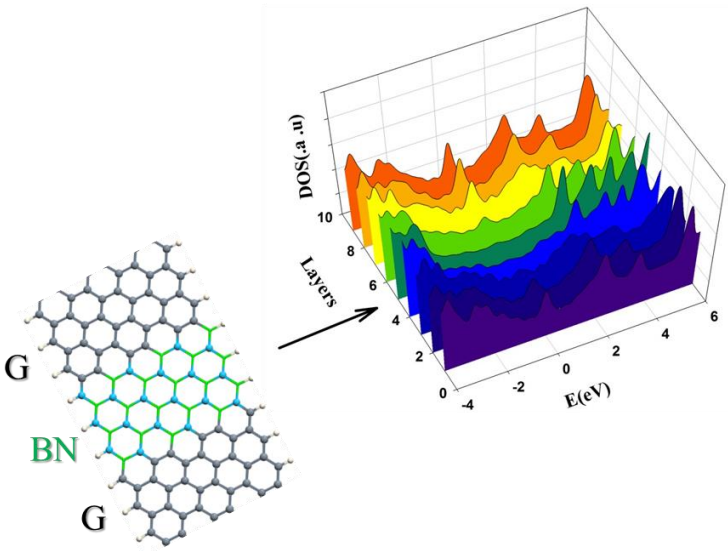


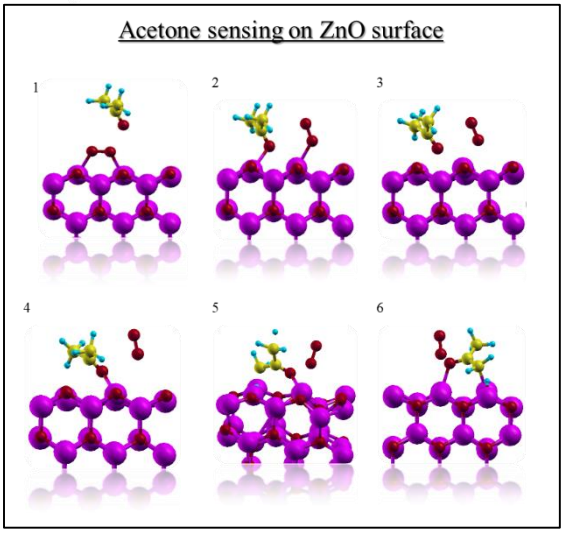
Center for Micro- and Nano-Electronics Computation

The Center for Micro- and Nanoelectronics Computation at K.N. Toosi University of Technology was established in 2012. The center accommodates a Linux cluster, which facilitates high performance parallel computations. Some of the main missions of the center are as follow:

- Microscopic and atomic scale modeling to calculate properties of standard or emerging materials in nanoelectronics.
- Device modeling in the field of micro- and nanoelectronics such as transistors, sensors, solar cells, optical detectors, spintronic devices and nanobiomedical devices.
- Expanding the capability of existing open source codes or even generating homemade codes for special problems.
- Modeling and simulation at circuit level for different applications such as analog, digital, high frequency and biomedical circuits and systems.

Graphene-BNNT heterostructure





Center for Research and Technology (CReaTech)

The Center of Research and Technology is a place for cutting edge inter-disciplinary and multi-disciplinary scientific, technical, and technological activities and projects. The Center comprises of 21 research thrusts from different disciplines within the Faculty of Electrical Engineering. It provides three separate office halls with the capacity of up to 45 seats for researchers, a lab space for the conduction of practical projects and experiments as well as technology development, a multi-purpose demo/expo hall, and a meeting room.

Advanced Robotics and Automated Systems (ARAS) Research Group

ARAS Research group originated in 1997 and is proud of its 20+ years of brilliant background, and its contributions to the advancement of academic education and research in the field of Robotics. ***ARAS*** outcomes are well represented by the industrial engineers, researchers, and scientific figures graduated from this group faculty, and numerous industrial and R&D projects being conducted in this group.

Today, the scientific research developed in ***ARAS*** is well observed and followed by our national and international partners. The main asset of the research group is its human resources devoted all their time and effort to the advancement of science and technology. This includes the internationally-recognized faculty members, staff, and talented and motivated students enrolled at different undergraduate and graduate levels. Benefiting from this asset in addition to well-equipped laboratories, workshops, and educational facilities in a dynamic and pleasant environment, provides the required means to accomplish research at the leading edge of science and technology. One of our main objectives is to use these potentials to extend our educational and industrial collaborations at both national and international levels. In order to accomplish that, our mission is to enhance the breadth and enrich the quality of our education and research in a dynamic environment. The current industrial and R&D projects are as follows:

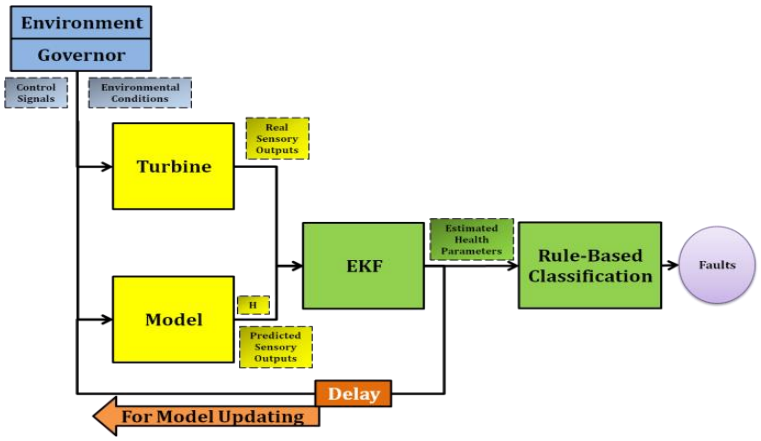
- **Autonomous Robotics (AR):** Study of the perception, planning and control of autonomous robots is followed in this group. Different types of UGV's and Aerial Robots are designed and impleneted in this group.
- **Surgical Robotics (SR):** The surgical robotics group aims at developing new robotics-based technologies for robot-assisted surgery and surgery training applications. These robotic systems will enhance the safety and efficiency of medical surgeries which leads to more satisfaction in all of the people dealing with the healthcare systems specially the patients, the surgeons, and the residents. This group has enjoyed the collaboration and consultation of several national and international partners in the fields of engineering and medical science.
- **Parallel and Cable Robotics (PCR):** Parallel manipulators can generally perform better than serial manipulators in terms of stringent stiffness and acceleration requirements. In this group, challenging issues in the optimal kinematics structure, dynamics formulation, and control of such structure are studied, and different parallel and cable driven parallel robots are developed for a variety of applications.
- **Dynamic System Analysis and Control (DSAC):** Two principal aims confront this group. Firstly, to study dynamical systems theory, including methods for analyzing differential equations and iterated mappings, which draws on analysis, geometry, and topology. Secondly, to apply the developed theories to practical systems. Some of the practical systems which we have recently been dealing with are brain-machine interface systems.
- **Electric Vehicles (EV):** This group aims at developing new technologies for optimization and control of electrical vehicles. Currently an industrial project on the development of dual drive electric motorcycle is being followed.
- **Visual Robotics (VR):** Using kernel-based visual servoing schemes to control industrial manipulators and to track unmarked industrial objects has been followed and implemented in this group.
- **Industrial Projects (IndP):** Many industrially funded contracts to design and implement robotics and automated products are being accomplished in this group. These products include: Casting robot and machine, welding robot, Automatic quality control machine for piston pins, robotic cells and SPC software. Currently we are acting as the supervisor of Iranian national intelligent PIG project, to provide three types of intelligent PIG namely High Resolution **MFL**, High Resolution **TFI** and the **Calliper**.

Advanced Process Automation and Control (APAC) Research Group

The APAC research group was established in 2007 with the vision of conducting researches on theory and application of advanced control and automation systems. APAC team succeeded on opening up new horizons on control theories as well as conducting several industrial projects. Some of these projects are as follows:

- Advanced process control (APC): Universal Control System (UCS); APC for Tokamak Machine
- Condition monitoring: Fault detection in gas turbine engine and cement rotary kiln; Soft sensor in oil industry; Performance monitoring
- Mechatronics systems: Aerodynamic Load Simulator; Electrostatic and Electrohydraulic Actuators
- Robot Design: Rescue robot; Two-wheel robot, (Segwat), Autonomous mobile robot, Advanced driver assistance systems (ADAS)
- Researches on control theories: Adaptive control, Predictive control, Intelligent control, Actuator allocation,

APAC Lab Complex. The lab complex includes: Advanced Control Lab., Advanced Automation Lab., Fault detection and Identification Lab., Mechatronics Lab., and Process Control Lab.



PART III: International Academic Collaborations

International Academic Collaborations

Among the superior electrical engineering schools all around the country, Faculty of Electrical Engineering of K. N. Toosi University of Technology benefits from its extensive international academic collaborations. The Faculty experienced joint Masters degree programs in Power Engineering with the Leibnitz University of Hannover (Germany), and Biomedical Engineering with Picardie University Jules Verne (France).

In the context of joint research at both Masters and Ph.D. levels, the Faculty has a long list of international collaborators namely: the University of Michigan, INRIA Research Institute (France), University of Picardie Jules Verne (France), École Poly technique de Montréal (Canada), University of Laval (Canada), ETS (Canada), University of Dublin (Ireland), Fraunhofer Research Institute (Germany), University of Bremen (Germany), and ETH-Zurich, (Switzerland).

2018

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