

Mohammad Reza Rezaei

CONTACT INFORMATION

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EDUCATION

Isfahan University of Technology, 2016 - Now

- **M.Sc., Department of Electrical and Computer Engineering**

Area of study: Communication Systems

Project: A deep neural network to position and velocity estimation of a rat using spiking activity of neural population

Supervisor: Dr. Saeed Sadri, Behzad Nazari,

Advisor: Dr. Ali Yousefi

Related Courses: Machine Learning, Neural Networks, Digital Image Processing, Statistical Pattern Recognition, Biomedical Signal Processing, Medical Imaging Systems, Estimation Theory, Stochastic Processes.

Isfahan University of Technology, 2012-2016

- **B.Sc., Department of Electrical and Computer Engineering**

Area of study: Electronics (GPA: 16/20)

Project: Design and implementation an wideband frequency synthesizer (Grade: 19/20)

Supervisor: Dr. Abolghasem Zeidaabadi Nezhad

Related Course: High Frequency Circuits, Communications Circuits, Electromagnetic Fields and Waves

RESEARCH INTERESTS

Deep Learning, Biomedical Signal Processing, Computational Neuroscience, System on Chip, Embedded System, Image Processing, Computer Vision, IOT

RELATED RESEARCH EXPERIENCES

- **Statistics and applied mathematics:**

- Implementation of Exact point process filter to decode 2-D position from hippocampal neural data of a rat moving in a W-shaped maze (project under supervision of Prof. Uri Eden and Dr. Ali yousefi department of mathematics and statistics, Boston University)
- Implementation of Gaussian Mixture Model (GMM) filter to decode 2-D position from hippocampal neural data of a rat moving in a W-shaped maze (project under supervision of Prof. Uri Eden and Dr. Ali yousefi department of mathematics and statistics, Boston University)

- **Deep learning:**

- Implementation Convolutional Neural Networks for classification, segmentation, object detection and instance segmentation problems (Digital Signal Processing Research Lab, Isfahan University of Technology)
- Design Convolutional Neural Networks for MNIST dataset classification (digital signal processing research lab, Isfahan University of Technology)
- Implementation Recurrent Neural Networks for language modeling and text generation (digital signal processing research lab, Isfahan University of Technology)
- Implementation LSTM Neural Network for MNIST dataset classification (digital signal processing research lab, Isfahan University of Technology)
- Implementation character level language modeling with LSTM in Tensorflow platform (digital signal processing research lab, Isfahan University of Technology)
- Deep learning applications in medical imaging Application (digital signal processing research lab, Isfahan University of Technology)
- Survey on Generative Adversarial Networks (GANs) (digital signal processing research lab, Isfahan University of Technology)
- Keras platform tutorial for deep learning applications (digital signal processing research lab, Isfahan University of Technology)

- **Medical Engineering:**

- Design an ECG simulator device with normal and arithmetic signals to test cardiography equipments (introduction of medical engineering course)

- **System On Chip:**

- Design and implementation of an autopilot system on zynq SoC (project under supervision of Dr. Behzad Nazari, Isfahan University of Technology)
- Implementation Mobile Industry Processor Interface (MIPI) on Zynq SoC with the raspberry pi camera (project under supervision of Dr. Behzad Nazari, Isfahan University of Technology)
- Design and implementation an real time colored objects detection system in 3-D space on zynq Soc (project under supervision of Dr. Behzad Nazari, Isfahan University of Technology)
- Design and implementation of an OSD system for real-time video processing (project under supervision of Dr. Behzad Nazari, Isfahan University of Technology)

- **Internet Of Things:**

- Design and implementation of an System for controll temperature and luminance of building automatically or from internet (project under supervision of Dr. Behzad Nazari, Isfahan University of Technology).

- **Industrial Projects**

- Design and implementation of a system for pelletizing and automatic speed controlling in steel industry(Mobarakeh Steel Company)
- Design and implementation of a system for monitoring of hot steel slabs in hot rolling industry(Mobarakeh Steel Company)

PUBLICATIONS

- **Mohammad reza Rezaei**, Anna K Gillespie, Jennifer A Guidera, Behzad Nazari, Saeid Sadri, Loren M Frank, Uri T Eden, Ali Yousefi, "A Comparison Study of Point-Process Filter and Deep Learning Performance in Estimating Rat Position Using an Ensemble of Place Cells", 40th International Conference of the IEEE Engineering in Medicine and Biology Science (EMBC 2018), Hawaii, USA, Jul , 2018

PRESENTATIONS

- **Deep learning applications in classification, segmentation, object detection and instance segmentation**
Seminar , Dr. M. Naghsh, fall 2017
- **Applications of kalman filter in robust controll**
Seminar for estimation cource, Dr. M. Taban, spring 2017
- **Vivado HLS applications in hardware design**
Seminar for hardware description language, Dr. E. Yazdian, fall 2015

HONORS AND AWARDS

- Ranked 350 (top 0.8%) among more than 35,000 participants in National University Entrance Exam for Graduate Studies in Iran, 2014
- Ranked 960 (top 0.4%) among more than 270,000 participants in National University Entrance Exam of Iran, 2012

ENGINEERING SKILLS

- **Programming:** C, C++, Python, Matlab, Verilog
 - **Engineering Software:** Matlab (Programming, Simulink, GUI), Keras, Theano, Caffe And Tensorflow (Deep Learnig Platforms), Labview, Vivado, ISE, Modelsim, Altium, QT, Visual Stdio, Eclipse, Orcad, Pspice, ADS.
 - **Hardware:** PLC (Siemens,LG), AVR (Proteus, Codevision), ARM (Keil), FPGA(ISE, Modelsim), Soc (Vivado, Vivado HLS,SDK), Embedded Boards(Raspberry pi,OrangePi, ...).
 - **Operating Systems:** Linux(ubuntu, debian, arch), Android, Windows, Free RTOS.
 - **Typesetting:** L^AT_EX, Microsoft Office
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LANGUAGE
SKILLS

- Farsi (Mother Tongue)
- English (Fluent)

TEACHING
EXPERIENCE

- **Teacher Assistant for "Digital Image Processing"**
Supervisor:Dr. S.Sadri Fall 2018
- **Teacher Assistant for "C Programming Language"**
Supervisor:Dr. B.Nazari Fall 2018
- **Lecturer of "AVR Micro Controllers"**
Student Scientific Society of Electrical and Computer Engineering Department, Isfahan University of Technology,The Summer, 2014
- **Lecturer of "ARM Micro Controllers"**
Student Scientific Society of Electrical and Computer Engineering Department, Isfahan University of Technology,The Summer, 2015
- **Teacher Assistant for "Digital Design Systems"**
Supervisor:Dr. V.ghafarinia Fall 2016
- **Digital Design Systems Lab Assistant**
Supervisor:Dr. N.karimi Fall 2016

VOLUNTARY
ACTIVITIES

- Active member of Electrical Engineering Students Scientific Society (EESSS), 2014
- Author of a scientific section of the electrical engineering student scientific society magazine "Feedback"

REFERENCES

- Prof. Saeid Sadri, Professor
<http://ece.iut.ac.ir/en/user/95>
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- Dr. Behzad Nazari, Assistant Professor
<http://http://nazari.iut.ac.ir/>
E-mail: nazari@cc.iut.ac.ir
- Dr. Ehsan Yazdian, Assistant Professor
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