

Hossein Raeis

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Birth Date: 10th of June 1997

Education

M.Sc. Electrical Engineering – Digital Electronic Systems 2019 - 2022
University of Isfahan, Isfahan, Iran

GPA: 18.63/20

Thesis Project: Human Activity Recognition (HAR) in multi-subject environments based on device-free sensor (FMCW microwave radar) by utilizing deep convolutional autoencoder neural network and morphological image processing.

Supervisor: Prof. Mohammad Kazemi

Co-Supervisor: Prof. Shervin Shirmohammadi

B.Sc. Electrical and Electronics Engineering 2015 - 2019
University of Isfahan, Isfahan, Iran

GPA: 18.05/20

Thesis Project: Designing an interface circuit, including various peripherals and sensors, for ZYNQ device to apply in UAVs flight controller.

Supervisor: Prof. Mohammad Kazemi

Research Interests

- Signal and Image Processing
- Sensing Systems
- Applied Artificial Intelligence (AI)
- Healthcare System Engineering

Publications

- H. Raeis, M. Kazemi, and S. Shirmohammadi, "Human activity recognition with device-free sensors for well-being assessment in smart homes," IEEE Instrumentation & Measurement Magazine, vol. 24, no. 6, pp. 46-57, 2021. (Published)
- H. Raeis, M. Kazemi, and S. Shirmohammadi, "InARMS: Individual Activity Recognition of Multiple Subjects with FMCW radar," in 2022 IEEE International Instrumentation and Measurement Technology Conference (I2MTC), 2022: IEEE, pp. 1-5. (Published)
- H. Raeis, M. Kazemi, and S. Shirmohammadi, "Real-Time Individual Activity Recognition in Multi-Subject Environments with FMCW Radar," IEEE Transactions on Instrumentation and Measurement. (Under Revision)
- H. Raeis, M. Kazemi, and S. Shirmohammadi, "Deep Convolutional Autoencoder Individual Activity Recognition of Multiple Subjects with FMCW Microwave Radar,". (In Preparation)

Awards & Honors

- Ranked 1st GPA (18.63 out of 20) among all majors of M.Sc. Electrical Engineering students at the University of Isfahan
- Exceptional talented entrance for master's degree at the University of Isfahan
- Ranked 5th GPA (18.05 out of 20) among all graduated B.Sc. Electrical Engineering students at the University of Isfahan

Experience

Teaching Assistant

Logic Circuits courses at University of Isfahan, Iran 2019 – 2020

Work Experience

Part-time robotic teacher for elementary students at Robotic School, Iran 2019 – 2020

Part-time robotic teacher for elementary students at Saeb Institute, Iran 2019 – 2020

Part-time robotic teacher for elementary students at Pendar Institute, Iran 2017 – 2019

Selected Projects

- Implementing CNN, RNN, VAE and GAN deep neural networks with the aim of handwritten digit recognition and text and image generation.
- Implementing morphology operations (Erosion and Opening), PCA and CAE to denoise Range-Doppler maps extracted by FMCW radar.
- Applying genetic algorithm to achieve optimization points in single-objective and multi-objective optimization problems.
- Door and Window detection in Iran Open UAV-indoor league.
- Implementing Sobel edge detection through designing a systolic array architecture by FPGA.
- Downloading image data from a USB flash drive and displaying it on a monitor display utilizing FPGA Xilinx Spartan 6.
- Interface GPS, accelerometer, barometric pressure sensors with FPGA ZYNQ device.
- Designing high accuracy tilt angle measurement with MPU6050 sensor and ARM microcontroller.
- Designing high power oven temperature controller utilizing AVR microcontroller.
- Designing a boost voltage regulator by AVR microcontroller.
- Designing a line follower robot using AVR microcontroller.
- Designing an emotional touch sensitive robot utilizing AVR microcontroller.
- Driving Stepper Motors of a 3D Printer by employing Arduino.

Certificates

- Machine Learning certificate from Coursera by Stanford University.
- Participate in Senior UAV-Indoor league at National Drone Racing 2018 Competitions.
- Participate in Senior UAV-Indoor league at RoboCup Iran Open 2018 Competitions.
- Participate in Senior UAV-Indoor league at RoboCup Iran Open 2017 Competitions.
- Robotics Workshop certificate from IEEE by Iran section - Isfahan branch.
- Participate in Junior Rescue B league at RoboCup Iran Open 2013 Competitions.

Selected Courses

Graduate

Course Name	Score	Professor
• Image Processing	19.75/20	Peyman Moallem
• Advanced Digital Image Processing	17.50/20	Peyman Moallem
• Advanced Microprocessors	18.95/20	Peyman Moallem
• Computational Intelligence	19.70/20	Peyman Moallem and Behzad Mirzaeian
• Advanced Digital Electronics	18.75/20	Mehdi Habibi
• Digital Signal Processing	17.75/20	Farzad Parvaresh

Undergraduate

Course Name	Score	Professor
• Analog Electronics I	18.70/20	Mohammad Kazemi
• Analog Electronics II	17.60/20	Mehdi Habibi
• Logic Circuits and Digital Systems	19.70/20	Mohammad Kazemi
• Microcomputers and Microcontrollers	20.00/20	Peyman Moallem
• Pulse Technique	17.70/20	Mehdi Habibi
• RF Circuits	20.00/20	Mohsen Mivehchy
• VHDL	18.40/20	Mohammad Kazemi
• Computer Architecture	17.70/20	Mohammad Kazemi
• Solid State Devices	17.70/20	Hamidreza Karimi

Skills

Programming Languages: Python, C, C++, MATLAB, VHDL

Applications: Code Vision AVR, Keil, Xilinx ISE, Xilinx Vivado, Keil

Circuit Designer: Altium Designer, PSPICE, Proteus

Languages

Persian: Native

English:

IELTS (Academic): 7.0 (overall score)

Listening: 7.5, Writing: 6.0

Speaking: 7.0, Reading: 7.0

Test date: 10/06/2021

References

Mohammad Kazemi

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Shervin Shirmohammadi

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University of Ottawa, ON, Canada
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Mehdi Habibi

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