Parham Kazemi

School of Electrical and Computer Engineering, McMaster University, 1280 Main St W, Hamilton, Ontario, Canada
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EDUCATION

Master of Aplied Science in Electrical and Computer Engineering Sep. 2022 – Aug. 2024
McMaster University *Hamilton, Ontario, Canada*

- Thesis: "**Probabilistic Shaping for Optical Wireless Intensity Channels**"
- Supervisor: Prof. Steve Hranilovic

Bachelor of Science in Electrical Engineering (Communications) Sep. 2017 – July 2022
University of Tehran[1] *Tehran, Iran*

- Last two years' GPA: 18.41/20 (4/4) – Total GPA: 17.46/20 (3.76/4) [2]
- Bachelor Project: "**Extracting Singer Vocal From Music Using Blind Source Separation**"
- Supervisor: Dr. Saeed Akhavan Behabadi

Diploma in Mathematics and Physics Sep. 2013 – Aug. 2017
Allameh Helli High School *Tehran, Iran*

- Affiliated with the National Organization for the Development of Exceptional Talents (NODET)
- GPA: 19.79/20 (4/4)

RESEARCH INTERESTS

- Wireless Communications
- Coding and Information Theory
- Optimization
- Signal Processing
- Blind Source Separation

PUBLICATIONS

Akhavan, S., Baghestani, F., **Kazemi, P.**, Karami, A. and Soltanian-Zadeh, H., 2022. Dictionary Learning for Sparse Representation of Signals With Hidden Markov Model Dependency. *Digital Signal Processing*, p.103420.

EXPERIENCES

Research Assistant Apr. 2021 – Present
University of Tehran

- Devised a new approach to improve the performance of dictionary learning algorithms when there is hidden Markov model (HMM) dependency among the training signals; Resulted to a paper mentioned in publications.

Teaching Assistant Sep 2019 – Present
University of Tehran

- **Discrete-Time Signal Processing** Fall 2021
  Instructor: Dr. Majid Badieirostami
- **Electrical Circuits I** Fall 2021
  Instructor: Prof. Jalil Rashed-Mohassel
- **Signals and Systems** Spring 2021
  Instructor: Dr. Saeed Akhavan Behabadi
- **Principles of Communications Systems**
  Instructor: Dr. Sadaf Salehkalaibar Spring 2021
- **Linear Control Systems** Fall 2020
  Instructor: Dr. Fariba Bahrami
- **Electronics II** Fall 2020
  Instructor: Dr. Shahin Jafarabadi Ashtiani
- **Electronics I** Spring 2020
  Instructor: Dr. Zeinab Sanaee
- **Physics II** Spring 2020
  Instructor: Dr. Zahra Shaterzadeh Yazdi
- **Introduction to Electrical Engineering**
  Instructor: Prof. Mahmoud Shahabadi Fall 2019
- **Electrical Circuits Lab** Spring 2019
  Instructor: Dr. Hossein Iman-Eini

Editor-in-Chief Apr. 2018 – Dec. 2018
Serat Student Journal, College of Engineering, University of Tehran

- Led a group of 10-15 engineering students providing helpful information for first-year students to have a good starting in the university; Restarted journal after many years of inactivity.

[1] Ranked 151-200 in electrical engineering according to QS World University Ranking in 2021.
[2] University and department average GPA are 15.58 and 15.1 respectively.

SELECTED COURSES[3]

- Discrete-Time Signal Processing 19.83/20
- Blind Source Separation (Graduate) 18/20
- Wireless Communications 16.7/20
- Digital Communications Systems 16.5/20
- Linear Control Systems 19.15/20
- Antenna I 19.25/20
- Microwave I 18.7/20
- Electromagnetic Fields and Waves 17.1/20
- Communication Circuits 17/20
- Filter and Circuit Synthesis 20/20

SELECTED COURSE PROJECTS

Blind Source Separation | *MATLAB* **Spring 2021**

- Retrieved source signals from a set of noisy observations using different ICA algorithms(minimizing Kullback–Leibler divergence based on estimating score function, deflation approach, and equivariant algorithm and maximizing kurtosis function based on deflation approach, fixed-point approach, and FastICA).
- Implemented single-channel and multi-channel blind source deconvolution in both time domain and frequency domain.
- Implemented dictionary learning algorithms(MOD and K-SVD) for sparse representation of signals.
- Generated an LDA classifier for an EEG dataset based on the Common Spatial Pattern(CSP) approach.
- Performed CCA approach in stimulation frequency detection of SSVEP-based BCI.
- Obtained transmitted signals from mixed signals received by a vertical uniform array using MUSIC and beamforming.

Digital Signal Processing (DSP) | *MATLAB* **Fall 2020**

- Estimated pulse rate by processing ECG dataset.
- Implemented audio processing in Cepstrum domain and Image Compression using DCT.
- Designed filters for image processing using kernel matrix.

Digital Communications Systems Lab | *MATLAB* **Fall 2020**

- Simulated digital modulation techniques such as PAM, QAM, PSK, DBPSK, and FSK(coherent and non-coherent detection) with various detailed considerations (Implemented Gray coding, pulse shaping, symbol to bit converting and vice versa, channel phase offset and delay effect; Designed correlator, matched filter, and minimum-distance detector; Calculated bit error rate).

Wireless Communications | *MATLAB* **Spring 2021**

- Simulated receiver and transmitter blocks of an OFDM system and calculated bit error rate for AWGN and Rayleigh channels with and without equalizer.

TECHNICAL SKILLS

Languages: Python, C, Verilog HDL
Simulation Software: MATLAB(highly skilled) and Simulink, ADS, Ansys HFSS, NI Multisim, AutoCAD

LANGUAGES

- Farsi : Native
- English : Fluent {TOEFL iBT : 99 / 120 (Reading : 26 – Listening : 25 – Speaking : 21 – Writing: 27)}

HONORS AND AWARDS

- Full-fund offers for Master's studies from University of Waterloo and McMaster University
- Ranked among top 10 % out of 130 undergraduate students, School of Electrical and Computer Engineering, University of Tehran
- Received scholarship from the Supporter Foundation of University of Tehran as an exceptional talent, 2017-2018 and 2020-2021
- Ranked 291^{th}(top 0.2 %) among almost 138,000 participants in the Nationwide Iranian University Entrance Exam in Mathematics and Physics, June 2017
- Member of the National Organization for Development of Exceptional Talents (NODET), Sep. 2010 - Aug. 2017

[3] All mentioned grades are equivalent to A.

REFERENCES

Available upon request.