

# PARHAM KAZEMI

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## EDUCATION

### Bachelor of Science in Electrical Engineering (Communications)

Sep. 2017 – Present

*University of Tehran*<sup>1</sup>

*Tehran, Iran*

- Expected Graduation Date: February 2022
- Last two years' GPA: 18.45/20 (4/4) – Total GPA: 17.4/20 (3.74/4) <sup>2</sup>
- Bachelor Project: "Extracting Singer Vocal From Music Using Blind Source Separation" (Ongoing)
- 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

S. Akhavan, F. Baghestani, **P. Kazemi**, A. Karami, and H. Soltanian-zadeh, "Dictionary Learning for Sparse Representation of Signals With Hidden Markov Model Dependency," 2021. Manuscript submitted for publication.

## 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*

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

<sup>1</sup>Ranked 151-200 in electrical engineering according to QS World University Ranking in 2021.

<sup>2</sup>University and department average GPA are 15.58 and 15.1 respectively.

## SELECTED COURSES<sup>3</sup>

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

## SELECTED COURSE PROJECTS

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### 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 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.

### Communications Circuits | *ADS*

Fall 2020

- Designed and simulated an LNA using Source Inductive Degenerated structure.

### Microwave Engineering I | *HFSS*

Fall 2020

- Simulated a Faraday ferrite phase shifter; Represented a review report of its operation, structure, and applications.

## TECHNICAL SKILLS

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**Languages:** Python, C, Verilog HDL

**Simulation Software:** MATLAB (highly skilled) and Simulink, ADS, Ansys HFSS, NI Multisim, AutoCAD

## LANGUAGES

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- English: Fluent (TOEFL will be taken on Nov. 28<sup>th</sup>)
- Farsi: Native

## HONORS AND AWARDS

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- Ranked among top 15% 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<sup>th</sup> (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

## REFERENCES

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Available upon request.

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<sup>3</sup>All grades above are equivalent to A or A<sup>+</sup>.