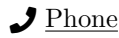
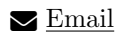


Soroush Mesforush Mashhad

Department of Electrical and Computer Engineering, San Diego, CA.



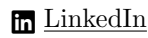
[Phone](#)



[Email](#)



[Website](#)



[LinkedIn](#)



[GitHub](#)



[Google Scholar](#)

Education

University of California, San Diego

Sep 2024 – Present

Ph.D. in Electrical Engineering (Communications Theory and Systems)

La Jolla, USA

- GPA: 3.945/4
- Advisor: Prof. Rahul Parhi

University of Tehran

Sep 2019 – Sep 2023

B.Sc. in Electrical Engineering (Communications)

Tehran, Iran

- GPA: 18.97/20 - (3.94/4)

Research Interests

- Stochastic Processes
- Statistical Signal Processing
- Universality
- Detection and Estimation Theory
- Compressed Sensing
- Information Theory

Publications

- **S.Mesforush**, R.Parhi "Lasso Universality Under Linearly Dependent Covariates in the Sparse Regime", *Submitted to Information and Inference: A Journal of the IMA*
- **S.Mesforush**, R.Parhi "Adaptive Minimax Estimation Across SNR Regimes", *The 62nd Annual Allerton Conference on Communication, Control and Computing (Allerton'26)*, Oct.2026.
- **S.Mesforush**, M.Amiri, A.Olfat "Efficient signal detection via compressive sensing in uplink massive MIMO systems", *ICEE*, 2024

Research Experience

Sparsity Laboratory

UCSD

Graduate Student Researcher, Advisor: Prof. Rahul Parhi

Jan. 2026 – Present

- Research on universality, compressed sensing, optimization, and signal processing
 - * Investigating **Universality** in **High-Dimensional Regression**, with applications to compressed sensing and statistical signal processing
 - * Studying **LASSO** and **Elastic-Net** under **Structured Dependent Covariate Models** and analyzing the respective asymptotic properties
 - * Developing theoretical analysis and simulation frameworks for **Sensing Matrices** with **Spatial** and **Temporal** dependence

Signal Processing and Communication Systems Laboratory

University of Tehran

Undergraduate Researcher, Advisor: Prof. Ali Olfat

Feb. 2023 – Sep. 2023

- **B.Sc. Thesis:** Sparsity-based detector for **Massive MIMO** systems. In this project, an effective iterative signal detection scheme based on sparse representation was proposed and implemented. This scheme has a particularly efficient runtime and low computational complexity

Summer Internship (HARA AI)

Tehran, Iran

Summer Intern, Supervisor: Dr. Reshad Hosseini

Summer 2022

- Explored neural network fundamentals and applied deep learning methods to computer vision tasks
- Extended the **YOLOv7** object detection model to support rotated boxes

Related Course Projects¹

Detection and Estimation Theory †

- Complete review and implementation of the paper **Autocorrelation-Based Decentralized Sequential Detection of OFDM Signals in Cognitive Radios** by Sachin Chaudhari, Visa Koivunen and HV Poor

Deep Generative Models †

- Developed a **Projected Diffusion Planner** for kinodynamic motion planning, combining learned denoised priors with optimization-based projection for safe differential drive control

- Designed a **Multimodal Generative Pipeline** for prompt conditioned story and image generation using transformers, and diffusion models
- Implemented a **VAE-based Medical Image Generator** for chest X-rays via convolutional latent variable modeling and quantitative evaluation of synthesis and reconstruction quality
- Implemented a **DCGAN for Painting Generation on WikiArt**, producing visually plausible images of artwork, along with evaluation of performance with relevant metrics

Intelligent Systems

- **Logistic Binary Regression** Analysis, Implementation of **GD**, **SGD**, and **SVM** from scratch
- Implementation of **Decision Trees** and **Random Forest Algorithm** via **ID3 Algorithm** from scratch
- Implementation of **KNN** classifier and **Naive Bayes Algorithm** from scratch
- **Model Based** and **Model Free** reinforcement learning of the **Gambler's Problem** and **Taxi Problem**
- **Object Detection** in video using the **YOLOv3** model and **OpenCV**

Digital Signal Processing

- Analyzed the effect of **Sampling Rate** in audio files via **Simulation**, **Compression** and **Expansion** of audio, and the effect of **Zero Padding**
- Studied the effect of the **Amplitude** and **Phase** of the Fourier transform in **Images** via **Simulation**

Relevant Courses¹

-
- | | | |
|------------------------------|-----------------------------|-------------------------------|
| • Detection and Estimation † | • Deep Generative Models † | • Probability and Statistics |
| • Random Processes † | • Digital Signal Processing | • Filter Banks and Wavelets † |
| • Convex Analysis I&II † | • Linear Algebra † | • Information Theory † |

Skills

Programming & Frameworks: L^AT_EX, MATLAB, Octave, CVX, Python, PyTorch, TensorFlow, scikit-learn, Keras, NumPy, Pandas, C/C++, Verilog

Software & Developer Tools: Jupyter Notebook, Wireless InSite, ADS, Wireshark, ModelSim, Simulink, Git

Honors and Awards

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- Ranked among top 0.2% (154th Regional and 477th National) in the nationwide university entrance exam among approximately 165000 test takers in Mathematics and Physics fields for B.Sc. degree, 2019
 - Ranked in the top 6 of the undergraduate class (4th in the graduating class), Electrical Engineering Department, University of Tehran
 - M.Sc. Admission from Electrical Engineering Department, Communication Systems Major, Sharif University of Technology, as an exceptionally distinguished student
 - M.Sc. Admission from Electrical Engineering Department, Communication Systems Major, University of Tehran, as an exceptionally distinguished student

Professional Service and Teaching

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- **Reviewer:** IEEE International Conference on Communications (ICC), 2026
 - **Teaching Assistant, UCSD** (2026): Supporting instruction for Linear Electronic Systems, including lab sessions and office hours
 - **Teaching Assistant, University of Tehran** (2020–2024): Supported 13 courses, including Random Processes, Probability and Statistics, Engineering Mathematics, Communication Systems

¹Graduate courses are indicated by †