Hesam Mojtahedi

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Research Interests

- ◇ Robotics
- ◇ Optimization
- ◇ Deep learning
- ◇ Robot perception

Education

University of California San Diego — **La Jolla, USA**
Ph.D. in Electrical & Computer Engineering (Intelligent Systems, Robotics & Control) — *Sep. 2022 – Present*

University of Tehran — **Tehran, Iran**
B.Sc in Electrical Engineering GPA: 18.37/20 — (3.94/4)
Minor in Computer Engineering GPA: 17.4/20
Thesis: "**Incentive Mechanism for Reliable Coded Federated Learning**; Applications in distributed edge computation" — *Sep. 2017 – Jul. 2022*
Advisor: Prof. Hamed Kebriaei

Honors And Awards

- ◇ University of California San Diego Ph.D. fellowship.
- ◇ **Ranked 1st** in control engineering at University of Tehran.
- ◇ Among **top 5%** of students in Electrical Engineering at University of Tehran..
- ◇ Member of the **National Organization for Development of Exceptional Talents** (**NODET**)

Publications

◇ Mojtahedi, H., Liao, F.Y. and Zheng, Y., A Spectral Bundle Method for Sparse Semidefinite Programs. *CDC*, 2023.

◇ Milad Soltany Kadarvish*, **Hesam Mojtahedi***, Hossein Entezari Zarch*, Amirhossein Kazerouni*, Alireza Morsali, Azra Abtahi, Farokh Marvasti. Ensemble Neural Representation Networks. *TCAS-II*,-13069-2022 submitted.
(* equal contribution)

◇ Rezaeijo Seyed Masoud, Mohammadreza Ghorvei, Razzagh Abedi-Firouzjah, **Hesam Mojtahedi**, and Hossein Entezari Zarch. Detecting COVID-19 in chest images based on deep transfer learning and machine learning algorithms. *Egyptian Journal of Radiology and Nuclear Medicine*, 2021.

◇ Rezaeijo, Seyed Masoud, **Hesam Mojtahedi**, Hossein Entezari Zarch , Nahid Chegeni, and Amir Danyaei. Feasibility study of synthetic DW-MR images at different b-values in patients with prostate cancer compared with real DW-MR images: qualitative and quantitative assessment of CycleGAN, Pix2PiX, and DC2Anet models. *Applied Magnetic Resonance Journal*, 2022 submitted.

Research Experience

Research Assistant, Autonomous Vehicle Laboratory (AVL) — **University of California San Diego**
Supervisor: Prof. Henrik I. Christensen — *April 2024 – Present*
- Working on geometric 3D reconstruction of urban area for autonoumus using Gaussian Splatting.

Research Assistant, Scalable Optimization and Control (SOC) Lab — **University of California San Diego**
Supervisor: Prof. Yang Zheng — *Sep. 2022 – Jan. 2024*
- Worked on efficient efficient and scalabe solvers for semi-definite programming in sparse settings.

Research Assistant, Smart Networks Lab — **University of Tehran**
Supervisor: Prof. Hamed Kebriaei — *Oct. 2021 – Jul. 2022*
- Worked on distributed optimization and federated learning tasks in edge computing.

Research Assistant, Multimedia and Signal Processing Lab — **Sharif University of Technology**
Supervisor: Prof. Farokh Marvasti — *Apr. 2019 – Mar. 2020*

Attention-based Sparse Generative Language Model for Machine Translation

- Implemented different machine translation models based on RNNs, LSTM, and transformer models like BERT.

Research Intern, Nojan Robotics and Artificial Intelligence **Science & Technology Park, U of Tehran**
Supervisor: Prof. Ahmad Kalhor *Jun. 2020 – Oct. 2020*

- Employed Deep Neural Networks for Object Detection based on YOLO models for sorting edible seeds.
- Implemented an image processing pipeline on an industrial sorting machine that sorts edible seeds like pistachio by their quality. This machine significantly increases the productivity in food supply chain.

TEACHING ASSISTANTSHIP @ UNIVERSITY of TEHRAN

◇ **Neural Networks** Spring & Fall 2020
Instructor: Prof. Ahmad Kalhor

◇ **Linear Control Systems** Fall 2020
Instructor: Prof. Fariba Bahrami

◇ **Mechatronics** Spring 2021
Instructor: Prof. Mehdi Tale Masouleh

◇ **Probability and Statistics** Fall 2020
Instructor: Prof. Behnam Bahrak

◇ **Probability and Statistics** Spring & Fall 2020
Instructor: Mohammad-Reza A. Dehaqani & Fall 2019

◇ **Convex Optimization** Spring 2022
Instructor: Prof. Arezou Keshavarz

RELATED COURSES (Graduate courses are indicated by †)

◇ **ECE276A. Sensing & Est. in Robotic**† A
Instructor: Prof. Nikolay Atanasov

◇ **ECE285. SDP and SOS Optimization**† A
Instructor: Prof. Yang Zheng

◇ **MAE280A. Nonlinear systems**† A
Instructor: Prof. Miroslav Krstić

◇ **Convex Optimization**† 20/20
Instructor: Dr. Arezou Keshavarz

◇ **Machine Learning Theory**† [Audit]
Instructor: Prof. Mohammad Ali Maddah-Ali

◇ **Linear Control Systems** 19.25/20
Instructor: Prof. Tooraj Abbasian

◇ **Modern Control Systems** 19.5/20
Instructor: Prof. Hamed Kebriaei

◇ **Data Structures** 18.8/20
Instructor: Prof. Fathiyeh Faghih

◇ **Mechatronics** 19/20
Instructor: Prof. Mehdi Tale Masouleh

◇ **ECE276B. Planning in Robotics**† A
Instructor: Prof. Nikolay Atanasov

◇ **ECE 271A. Statistical Learning I** † A+
Instructor: Prof. Nuno Vasconcelos

◇ **ECE 250. Random Process** † A-
Instructor: Prof. Behrouz Touri

◇ **Machine Learning**† 20/20
Instructor: Prof. Babak N. Araabi

◇ **Neural Networks and Deep Learning** † 17/20
Instructor: Prof. Ahmad Kalhor

◇ **Linear Algebra** 18.3/20
Instructor: Prof. M. J. Yazdanpanah

◇ **Operational Research** 20/20
Instructor: Dr. Reza Shokri

◇ **Engineering Probability and Statistics** 17.6/20
Instructor: Prof. Mohammad-Reza A. Dehaqani

◇ **Advanced Programming (C++)** 16.8/20
Instructor: Prof. Ramtin khosravi

INVITED TALKS

Southern California Control Workshop **UCSB, Apr. 2023**

Student seminar series on optimization, control & learning **UCSD, Nov. 2022**

PROFESSIONAL ACTIVITIES

Reviewer:
- American Control Conference (ACC)

SKILLS

Programming Languages:
- Proficient in C/C++, Python, Matlab, and Verilog
- Familiar with R,and LaTeX

Softwares and Frameworks:
- PyTorch, ROS, Git, Docker, CVX/CVXPY, and scikit-learn

LANAGUAGE

- **English** [Proficient]
  GRE General (Sept. 12, 2021) — **V**: 165 (96%), **Q**: 168 (91%), **AW**: 4 (54%)
  TOEFL iBT (Oct. 03, 2021) — **107/120** (**R**: 30, **L**: 30, **S**: 22, **W**: 25)
- **Turkish** [Native]
- **Persian** [Native]