Armin Soleymani — Curriculum Vitae

AmirKabir University of Technology–Department of Electrical Engineering
(+98) 939 310 8181 • Armin.Soleymani82@gmail.com
Armin-Soleymani-b07733134 • ArminSLM

RESEARCH INTERESTS

- Computer Vision
- Computer Graphics
- Applied Deep Learning
- Robotics
- Generative AI
- RF Sensing

EDUCATION

- Bachelor of Science — 2021–Present / Tehran-Iran
  Amirkabir University of Technology

Electrical Engineering	*Last two years GPA:* 3.6/4	*GPA:* 3.21/4
Telecommunications	Out of 68 credits	Out of 140 credits

PUBLICATIONS

- **FiReT: A Neural Radiance Fields Framework for Wireless Field Reconstruction and Transmitter Placement**
  - Extended NeRF to the RF wave propagation domain for reconstructing wireless channels from sparse measurements
  - Integrated ray-tracing and Direction-of-Arrival (DoA) guidance to improve convergence and physical consistency
  - Enabled transmitter placement optimization by ranking candidate locations through learned field representations
  - **Paper accepted for presentation at IEEE IKT 2025, indexed by IEEE Xplore**
- **RadarPose: Frequency-Domain Diffusion for mmWave Radar-Based Human Pose Estimation**
  - Design a diffusion-based framework for human pose estimation from mmWave radar signals
  - Applied frequency-domain diffusion to better capture global motion structure and reduce high-frequency noise.
  - Incorporated spatio-temporal features with diffusion models and GCN to improve joint localization under occlusion
  - Paper in Preparation

HONORS

- Ranked among **1%** in university entrance exam, among more than **142,000 participant**
- **1st Place** – RoboCup Salvador 2025, Rescue Line League – RoboCup Federation
- **1st Place** – RoboCup Sydney 2019, Rescue Line League – RoboCup Federation
- **2nd Place** – RoboCup Eindhoven 2024, Rescue Line League – RoboCup Federation
- **1st Place** – FIRA RoboWorld Cup Taichung City 2018 – Federation of International Robot-Sport Association
- Awarded a **Fellowship** for the B.Sc. program in Electrical Engineering at the Amirkabir University of Technology

WORK & RESEARCH EXPERIENCE

- **Iran Telecommunication Research Center (ITRC)** — July 2024 - October 2024
  Deep Learning–Based Image Segmentation for Estimating Cultivated Areas of Strategic Crops:
  - Developed a GAN-based augmentation pipeline to enrich satellite imagery datasets for segmentation tasks
  - Integrated real and synthetic images into a U-Net model for improved land segmentation
  - Refined segmentation outputs using Dense Conditional Random Fields (CRF) to boost spatial accuracy
- **Microwave Measurement Research Lab** — October 2024 - May 2026
  - Conducting research on Neural Radiance Fields (NeRF), Signal Processing and Computer Vision methods for radio signal processing, wireless channel estimation, RF propagation modeling and microwave measurement
- **Benis Food Industries Company** — Feb 2024 - Feb 2026
  Machine Vision and Automation developer :
  - Designed an vision system to detect and classify objects on the cake packaging line
  - Integrated object detection with Festo pneumatic actuators to enable precise separation and automation
- **RoboCup Federation** — July 2024 - May 2026
  Rescue Line League Technical Committee member:
  - *RoboCup 2025, Salvador*
  - *RoboCup 2024, Eindhoven*
  - *RoboCup IranOpen 2025, Tehran*
  - *RoboCup IranOpen 2024, Tehran*
- **RoboDanesh Academy** — June 2022 - May 2026
  Robotics Instructor and Curriculum Developer:
  - Python programming for image processing
  - C++ programming using AVR controllers and Arduino

SELECTED PROJECTS

- **Autonomous Driving with Vision-Based PPO Reinforcement Learning** — Computational Intelligence
  - Trained a PPO-based reinforcement learning agent in Webots to autonomously drive and avoid obstacles
  - Achieved stable lane-keeping behavior using OpenCV for visual lane detection and object recognition
  - Integrated sonar sensor readings with vision data to enhance perception and design the reward function
  - Developed a modular simulation pipeline for testing autonomous policies in dynamic environments
- **Hybrid ResNet-Inception CNN Classifier for Tiny ImageNet Dataset** — Multimedia Systems
  - Designed a custom CNN architecture integrating concepts from ResNet and Inception models
  - Applied the model to the Tiny ImageNet dataset for multi-class image classification
  - Used multiple convolutional branches with different kernel sizes to capture multi-scale features
- **Twitter Emotion Classifier using Transformer Encoder** — Multimedia Systems
  - Developed a transformer-based model from scratch in PyTorch to classify emotions in tweets
  - Preprocessed raw Twitter data using custom tokenization, padding, and truncation logic
  - Engineered a Transformer Encoder with positional encoding to retain sequence semantics
  - Captured contextual dependencies effectively for emotion prediction in short-text inputs
- **Speech Emotion Recognition using Wav2Vec2 and Text-Based Transformer** — Multimedia Systems
  - Leveraged Wav2Vec2 from HuggingFace to transcribe emotional audio into structured text sequences
  - Unified emotion labels across multiple datasets to enable consistent and scalable model training
  - Developed a text-based Transformer classifier for emotion prediction from transcribed speech
- **Interpretable MNIST Classification with Saliency Maps and FGSM Attacks** — Multimedia Systems
  - Built a CNN-based image classifier for MNIST with a focus on visual interpretability and robustness
  - Developed custom saliency mapping tools to expose model attention over input pixels
  - Highlighted key features via gradient-based methods to enhance decision transparency
  - Evaluated model stability under FGSM adversarial attacks to reveal vulnerability patterns
- **ECG Signal Processing with RNNs for Denoising and R-Peak Detection** — Multimedia Systems
  - Designed a pipeline to preprocess and augment ECG signals with Gaussian noise and temporal segmentation
  - Implemented an LSTM model for sequence-to-sequence denoising,evaluated with MAE and RMSE
  - Developed a GRU-based classifier to detect R-peak presence in ECG segments through binary labeling
  - Automated CSV export of predictions and visualized denoised signals, error curves, and detection outcomes

LANGUAGE SKILLS

- English: Fluent (IELTS: Will be provided by November)
- Persian: Native
- Azari: Conversational

COURSES

Computational Intelligence	4/4 (A+)	Digital Communication	4/4 (A)
Multimedia Systems	4/4 (A+)	Wave Propagation	4/4 (A)
Digital Signal Processing	4/4 (A)	Information Theory & Coding	4/4 (A+)
Computer Programming	4/4 (A)	*(M.Sc Course – Audited)*	

COMPUTER SKILLS

Programming Languages & Frameworks

- Python
  - Pytorch
  - Tensorflow
  - Numpy
  - OpenCV
- C/C++
- Matlab
- VHDL
- Git
- LaTeX

IDEs/Tools

- VSCode
- Simulink
- CodeVisionAVR
- Arduino
- Raspberry Pie
- Altium:PCD Designer
- Webots Simulator
- Isis Proteus Professional
- 3D High Frequency Simulation Software (HFSS)
- Advance Design System
- Xilinx ISE Designer

TEACHING EXPERIENCES

- Teaching Assistant
  - Filter Synthesis — Winter 2025
    - Instructor: Prof. Zahra Seifi
  - Logical Circuits — Winter 2025
    - Instructor: Prof. Zahra Sadat Shariatmadar
  - Electromagnetics — Fall 2024
    - Instructor: Prof. Amir Nader Askarpour
  - Communication Systems — Winter 2025
    - Instructor: Prof. Yaser Norouzi

REFRENCES

- Dr. Gh. Moradi, Professor, Electrical Engineering, Amirkabir University of Technology
  - ghmoradi@aut.ac.ir
- Dr. F. Abdollahi, Associate Professor, Electrical Engineering, Amirkabir University of Technology
  - f_abdollahi@aut.ac.ir
- Dr. AN. Askarpour, Associate Professor, Electrical Engineering, Amirkabir University of Technology
  - askarpour@aut.ac.ir
- Dr. RS. Shirazi, Associate Professor, Electrical Engineering, Amirkabir University of Technology
  - sarraf@aut.ac.ir
- Dr. AHA. Bafghi, Assistant Professor, Electrical Engineering, Amirkabir University of Technology
  - ali.h.abdolahi@gmail.com
- Dr. ZS. Shariatmadar, Assistant Professor, Electrical Engineering, Amirkabir University of Technology
  - zshariatmadar@aut.ac.ir
- Dr. Z. Seifi, Assistant Professor, Electrical Engineering, Amirkabir University of Technology
  - z.seifi@aut.ac.ir