Hossein Soltani

+98 993 614 2131 | hosoltani42@gmail.com | LinkedIn | Github

Research Interests

Computer Vision - NLP - Machine Learning - Deep Learning - Generative Models - GANs Transformers - Computer Graphics - Object Detection - Self-Driving Cars

Education

Shahid Beheshti University (SBU) - Tehran, Iran — Sept 2019 - Present
Bachelor of Science, Electrical Engineering
— **GPA(Last 1.5 Years): 18.32/20**
— **Thesis Topic:** Small-Scale Autonomous Car: Design, Implementation, and Remote Monitoring
— **Thesis Grade:** 20/20 – **Supervisor**: Dr. Asharioun

Ghaem Educational Institute - Yazd, Iran — 2016 - 2019
Diploma, Mathematics and Physics
— **GPA: 18.87/20 - Top student**

Publications

Alireza Morsali, MohammadJavad Vaez, **Hossein Soltani**, Amirhossein Kazerouni, Morteza Mohammad-Noori **"STAF: Sinusoidal Trainable Activation Functions for Implicit Neural Representation"** (Submitted to NeurIPS 2024)

Research Experience

University of Tehran - Tehran, Iran — Sept 2023 - May 2024
Research Assistant Under Supervision of Alireza Morsali and Morteza Mohammad-Noor, *Remote*

- Worked on the "STAF: Sinusoidal Trainable Activation Functions for Implicit Neural Representation" paper and led the implementation of the project codebase, including model architecture, refactoring, and experimental setup.
- Conducted literature review on Neural Tangent Kernel (NTK) analysis of SOTA Implicit Neural Representations (INRs) and STAF.

Institute for Research in Fundamental Sciences (IPM) - Tehran, Iran — June 2023 - Sept 2023
Summer Intern, *Remote*

- Worked on "Image Segmentation on Aerial Images of Natural Disasters" project.

Honors and Rewards

- **IUST ChillinWars AI Challenge** - Ranked 3^{rd} in Junior Section

Teaching Assistant

- **Digital Systmes 1** - Winter 2024 - Dr. Pouladi
- **Artificial Intelligence** - Fall 2023 - Dr. Nabavi
- **Linear Algebra** - Winter 2023 - Dr. Jahangiri
- **Programming and Software Architecture** - Fall 2023 - Dr. Asharioun
- **Probability and Statistics** - Winter 2022 - Dr. Mansouri

Work Experience

Freelancer — April 2021 - Present
I undertake and do projects that align with my skills. Including:

- **AI:** ML, DL, Computer Vision
- **Website development:** Back-end, Front-end, DevOps

Paya Communication Industries, *One of the largest providers of telecommunication infrastructure in the country*
Back-end developer — March 2022 – Sept 2022

- Worked on the **Masiryar**, an **Indoor Positioning project** which was deployed and being utilized in **HamrahAval(MCI)** main building.

Radar, *An innovative retail and shopping startup*
Back-end developer — Oct 2021 – March 2022

Selected Courses

Online: ML for Intelligent Systems (Cornel CS4780) - Deep Learning (NPTEL) - DL for Computer Vision (Stanford CS231n) - Artificial Intelligence (MIT) - Computer Vision and Image Processing(MaktabKhooneh) - Generative Vision Models (across the internet)

SBU: Probability and Statistics - Signals and Systems - Linear Algebra (19.36/20) - Machine Learning - Modern Control (20/20)

OnGoing: Diffusion Models (Ali Ghodsi's Lectures) - Introduction to AI (SBU)

Selected Projects

Aerial Images Segmentation - Aerial images of natural disasters segmentation using U-Net.
The project that I worked on during my Internship at IPM.

EBSE-Yolo - An implementation of the EBSE-Yolo paper.
I did this as my final project for Introduction To AI course under supervision of Prof. Aghaee.

Neo Pilot E2E - End-to-End Lane Follower.
An End to End lane follower which I did for my bachelor project and implemented and tested it in real world.

Neo Pilot Modular - Small-scale navigation system based on Modular paradigm.
Modular small-scale navigation system which was designed in AVIS Engine simulation environment and then tested in real world on a test track.

Inverter AI Fault Detection - 5-level H-bridge cascaded inverter fault detection using AI.
I did this under supervision of Prof. Aghashabani for my Electrical Machines Lab course.

Bicycle Dynamics - Stability analysis and designing state feedback controller for Bicycle.
Modern Control course final project.

NeoDoorLock - IoT-based door lock using Raspberry Pi, Arduino, and ESP8266.
Secured using Face Recognition algorithms.

Tron.AI - My submission for IUST ChillinWars AI challenge.

AVR Clock - Digital clock with date, alarm and temperature on AVR ATMEGA32.

Volunteering

- **Summarizing webinar for Linear Algebra** - Held by EE Scientific Association of SBU.

Skills

Programming Skills: Git, C/C++, Python, JavaScript, TypeScript, MATLAB, VHDL

AI: NumPy, Pandas, Matplotlib, Scikit-learn, TensorFlow, PyTorch, Jax Ecosystem, OpenCV

Hardware: Arduino, RaspberryPi, Jetson Nano, AVR Atmega32, ESP8266, FPGA

Software: Simulink, Pspice, VHDPlus, Xilinx Vivado

Website Development: Flask, Django, Ubuntu server, Docker, HTML, CSS, Bootstrap

Databases: SQLite, MySQL, MongoDB, Redis

Languages: English (Professional), Persian (Native)