

AYLAR SEDAEI

+989336334379

aylarsedaei@gmail.com

[aylarsedaei](https://www.linkedin.com/in/aylarsedaei)

[aylarsedaei](https://github.com/aylarsedaei)

EDUCATION

Amirkabir University of Technology (Tehran Polytechnic)

2019 – 2023 (Expected)

Bachelor of Science in *Computer Engineering* (Rank 2 among all Iranian Universities)

Tehran, Iran

• Cumulative Grade Average for: Recent two years: **17.90/20** Total 132 units: **16.88/20**

• Selected coursework: **18.23/20**

✱ *Cosmology (20/20)*

✱ *Stellar Structures and Evolution (19/20)*

✱ *Applied Linear Algebra (18.95/20)*

✱ *Information Retrieval (18.26/20)*

✱ *Research and Technical Presentation (18.1/20)*

✱ *Data Mining (17.27/20)*

✱ *Principles of Artificial Intelligence (17.2/20)*

✱ *Principles of Computational Intelligence (17/20)*

Farzanegan 1 High School

2016 – 2019

Completed preparatory courses for Iran's Olympiad of Astronomy & Astrophysics using advanced-level textbooks.

✱ *Cosmology*

✱ *Stellar Structures*

✱ *Galactic Dynamics*

✱ *Astronomical Data Analysis*

✱ *Astrophysics*

✱ *Orbital Mechanics*

Diploma in Physics and Mathematics Discipline Cumulative Grade Average: **18.26/20**

RESEARCH INTERESTS

• Cosmology

• Computational Astronomy

• Stellar Evolution

• Machine Learning

RESEARCH EXPERIENCE

Research Intern, *MEF University, İstanbul, Turkey*

Jul. 2023 – Sep. 2023

• Developed and executed an automated system to preprocess neuroscientific datasets, train diverse models, and generate comprehensive evaluation metrics reports. Successfully completed as a paid on-site summer internship.

• Tools: Tensorflow, SKLearn, and PyCaret for AI — Flask framework for User Interface

Undergraduate Research Assistant, *Sharif University of Technology, Tehran, Iran*

Mar. 2023 – Jun. 2023

• Conducted an extensive survey of challenges within the standard model of cosmology, with a specific focus on addressing the H_0 tension. Explored solutions involving time-delay cosmography and gravitational lensing for determining H_0 .

• This research was undertaken as part of my cosmology course project under the supervision of Dr. Shant Baghran, and a comprehensive report detailing the findings can be accessed [here](#).

Undergraduate Research Assistant, *Amirkabir University of Technology, Tehran, Iran*

Mar. 2023 – Present

• Developed an automated estimation system using neural networks to determine gravitational lens parameters in images. This ongoing research project constitutes my B.Sc. thesis, under the supervision of Dr. Maryam AmirMazlaghani.

• Tools: Tensorflow, Lenstronomy, SKLearn and other useful frameworks in Python

TEACHING EXPERIENCE

Teaching Assistant, *Computer Eng. Department, Amirkabir University of Technology*

Sep. 2021 - Jul. 2023

• Information Retrieval

• Research and Technical Presentation

• Microprocessors and Assembly Language

• Discrete Mathematics

• Applied Linear Algebra

• Fundamentals of Programming

Astronomy Olympiad Instructor, *Farzanegan 2 Highschool*

Sep. 2020 – Jan. 2022

• Taught **Astrophysics, Celestial Mechanics, Astronomical Data Analysis, and Cosmology** to Young Scholars

PROFESSIONAL EXPERIENCE

Associate Product Manager, *Snapp!*

Feb. 2023 – Present

• Enhanced a technological product through data-driven decision-making, including database queries, event logging, and user surveys, aligning with company objectives to elevate business and product success metrics.

Back-End Development Intern, *Mabna Intelligent Technologies*

Jul. 2022 – Sep. 2022

• Tools: Django framework, REST APIs, and databases such as MySQL, SQLite, and MongoDB

Front-End Development Intern, *TEDinar*

Jan. 2021 – Jun. 2021

• Tools: HTML, CSS, JavaScript, React JS, and jQuery.

SKILLS

Technical Skills

- *Programming Languages and HDLs*: Python, Matlab, Java, Javascript, C, C++, VHDL, Verilog
- *Software Packages*: Astropy, Lenstronomy, Tensorflow, Numpy, Matplotlib, Pandas, SKLearn
- *Tools and Typesetting*: Git, Jira, Microsoft, L^AT_EX


Personal Skills: Detail-oriented, eager to learn and teach, strong research abilities, adept at problem-solving

Language Skills: English (fluent), French (familiar)

- **GRE subject physics:** To be taken in November 2023
- **TOEFL iBT:** 103/120 (Reading 21/30, Listening 30/30, Speaking 26/30, Writing 26/30) Aug. 2023

ONLINE COURSES & CERTIFICATES

Deep Learning Specialization, *DeepLearning.AI*  Certificate

Quantum Mechanics for Engineers Specialization, *University of Colorado Boulder*  Certificate

Electrodynamics Specialization, *Korea Advanced Institute of Science and Technology (KAIST)*  Certificate


Data-driven Astronomy, *University of Sydney*  Certificate

Understanding Modern Physics: Relativity and Cosmology, *Hong Kong University*  Certificate

NOTABLE PROJECTS

Astronomical Data Analysis on M67 Cluster's stars |  *Code on GitHub* Jun. 2023

- ★ Conducted Comprehensive Data Analysis on GAIA-Collected M67 Open Cluster Stars Dataset, Deriving Key Parameters Including Luminosity, Magnitude, Mass, Central Pressure, Density, and Main Sequence Membership

Data-Driven Astronomy Course Projects |  *Code on GitHub* Apr. 2023

- ★ Implemented Galaxy Matching Techniques: Naive Cross-Matcher and Cross-Matching with k-d Trees, Aligning Galaxies from Radio Survey (AT20G BSS Catalogue) and Optical Survey (SuperCOSMOS Galaxy Catalogue).
- ★ Developed a Regression Classifier with Decision Trees to Predict Galaxy Redshifts from Photometric Colors.
- ★ Performed Ensemble Learning with Decision Tree Classifiers on Galactic Data Using the Hubble Classification Chart, Categorizing Galaxies into Three Types (Ellipticals, Spirals, or Galactic Mergers) Based on Observed Properties, Leveraging sklearn Library.

Persian News Search Engine |  *Code on GitHub* Jan. 2023

- ★ Designed and Implemented a Document Retrieval System Utilizing Positional Indexing & tf-idf Method

Python Popularity Prediction |  *Code on GitHub* Dec. 2022

- ★ Embarked on an Analysis: Forecasting Python Language Popularity at 2021 from 2005-2017 Data Using Linear and Non-Linear Regression Models

Data Preprocessing and Normalization |  *Code on GitHub* Dec. 2022


- ★ Conducted Rigorous Data Preprocessing on the IMDb Movies Dataset

NeuroEvolution Game |  *Code on GitHub* Jun. 2022

- ★ Applied Evolutionary Algorithms to Train Neural Networks in Low-Data Environments: A Game Scenario

Fuzzy Inference System for Heart Disease Diagnosis |  *Code on GitHub* Apr. 2022

- ★ Developed a Fuzzy Expert System for Heart Disease Diagnosis, Utilizing Input Variables to Diagnose Disease

Add AI Algorithms to Pac-Man Game |  *Code on GitHub* Dec. 2021

- ★ Developed Various Search Algorithms (Depth-First, Breadth-First, Uniform Cost, A*), Multiagent Minimax, and Expectimax Algorithms, along with the Design of Evaluation Functions for Pac-Man Game

HONORS & REWARDS

Top Marks in Entrance Nationwide Exam

Aug. 2019

- Ranked **top 1%** place among approximately 140,000 applicants in Mathematics and Physics Discipline
- Ranked **top 0.5%** place among approximately 120,000 applicants in Foreign Languages (English)

Silver Medal at National Olympiad of Astronomy and Astrophysics (NOAA)

Aug. 2018

- Ranked **top 0.01%** place among approximately 1,000 applicants in National Olympiad of Astronomy & Astrophysics, was Awarded a National **Silver Medal**
- Advanced to the Summer Program by ranking among the **top 45 students** in the Second step of NOAA, Attending courses at the Young Scholars Club during a summer program

VOLUNTEER & EXTRACURRICULAR ACTIVITIES



Students' Scientific Chapter, Computer Eng. Department, Amirkabir University of Technology

- Member of Executive Committee of 6th Amirkabir Artificial Intelligence Competitions ([AAIC](#)) Apr. 2022
- Member of Executive Committee of 13th Amirkabir Linux Festival ([LinuxFest](#)) Jan. 2022
- Member of Executive Committee of 3rd Amirkabir Artificial Intelligence Student Summit ([AAISS](#)) Aug. 2021

Students' Guild Council, Computer Eng. Department, Amirkabir University of Technology

- President of Students' Guild Council Jun. 2021 – Dec. 2022
- Member of Pouyesh Student Magazine's Editorial Committee Aug. 2020 – Dec. 2022

REFERENCES

- | | |
|---|---|
| • Associate Prof. Shant Baghrām
✉ Email: baghrām@sharif.edu  Google Scholar | • Associate Prof. Maryam Amirmazlaghani
✉ Email: mazlaghani@aut.ac.ir  Google Scholar |
| • Assistant Prof. Ahmad Nickabadi
✉ Email: nickabadi@aut.ac.ir  Google Scholar | • Assistant Prof. Tuna Çakar
✉ Email: cakart@mef.edu.tr  Google Scholar |