

# Amir Masood Baghi

Uppsala, Sweden

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Currently a computer science Master's student at Uppsala University, I have a strong interest in both machine learning and game development. With a solid foundation in these areas, I aim to participate in research-oriented activities towards developing AI (or non-AI) approaches to practical problems, such as those found in the development of games. In addition, I enjoy exploring art, philosophy, and overall programming, which helps broaden my perspective and enhance my creative thinking.

## Education

### Uppsala University

Uppsala, Sweden

#### Master of Science In Computer Science

Fall 2022 - Current

- Passed with *distinction* in all completed courses.
- Recipient of the Uppsala University International Scholarship Fund for the second year.

### Shiraz University

Shiraz, Iran

#### Bachelor's Program In Computer Engineering

Fall 2018 - Fall 2022

- Ranked 662<sup>nd</sup> in the National Entrance Exam (among 144,000 applicants).
- Finished in four years with an 18.56/20 CGPA. Ranked 2<sup>nd</sup> among the 81 students of my class.

### National Organization for Development of Exceptional Talents Asadpour High School

Bandar Abbas, Iran

#### Mathematics-Physics Diploma

2014 - 2018

- Graduated with 19.28/20 CGPA.

## Work Experience

### Electronic Arts, SEED

Stockholm, Sweden

#### Master's Thesis Intern In Machine Learning

Jan 2024 - Current

- Currently working on my master's thesis as an intern in the SEED research team at Electronic Arts.
- Researching the application of modern *multi-agent reinforcement learning* methods in game-AI using machine learning, in addition to possible improvements to the methods.

### Medrick Games

Tehran, Iran (Remote)

#### Unity Game Developer (Internship)

Sept 2021 - Aug 2022

- My team and I made *four casual/hyper-casual mobile games* among other activities.
- Additionally participated in game design tasks, e.g. idea development and refinement, and marketing activities, e.g. creating one minute videos for our games.

## Academic Experience

### Teaching Assistant, Various Courses

Uppsala, Sweden

#### Uppsala University

Spring 2023 - Current

- Previously Human-Computer Interaction, Combinatorial Optimization, and Statistical Machine Learning. Currently the new instance of Statistical Machine Learning and Reinforcement Learning.

### Research Intern

Uppsala, Sweden

#### Uppsala University

Summer 2023 - Winter 2023

- A voluntary research endeavour, I studied the neural compression and novel view synthesis of high-resolution micro-CT imaging using state-of-the-art methods in the field and implemented a feasible solution to the problem. *Supervised by Jens Sjölund.*

### Teaching Assistant, Various Courses

Shiraz, Iran

#### Shiraz University

Fall 2019 - Spring 2022

- Assisted in various courses including Database Design Principles, Operating Systems Lab, Advanced Programming, and more.

## University Projects

### Neural Compression and Novel View Synthesis of High-Resolution Micro-CT Imaging

Uppsala, Sweden

Uppsala University - Independent Research Work and Project in Computer Systems Course

Winter 2023

Implicit neural representations (INRs), like CuNeRF and hash-based methods, were used to compress, reconstruct, and render high-resolution 3D micro-CT scans. Implemented using PyTorch and Optuna. Under supervision of Jens Sjölund and partly Stefanos Kaxiras in the Project In Computer Systems course.

## Learning To Play Pong Using DQN

Uppsala University - Reinforcement Learning Course

A Deep Q-Network (DQN) was implemented, based on the Nature paper by Mnih et al. (2015), to learn and play the game of Pong (and most Atari games). The network was tested on "Breakout!" successfully as well. Implemented using PyTorch.

Uppsala, Sweden

Spring 2023

## Various Classifiers and a DL Model For Lead Role Prediction In Films

Uppsala University - Statistical Machine Learning Course

Five types of classifiers and a neural network were developed with advanced hyper-tuning for prediction of the lead actor's gender based on a script's attributes. Implemented using PyTorch, RayTune, and scikit-learn. Got a *golden star* in the course.

Uppsala, Sweden

Spring 2023

## Advanced Reversi AI

Uppsala University - Functional Programming I Course

The game of Reversi (Othello) and an advanced opponent AI were implemented in Haskell. Ranked 3rd in a tournament against other AIs.

Uppsala, Sweden

Fall 2022

## Aphrodite, A Covid-19 Detection Application

Shiraz University - Systems Analysis and Design Course

Developed a Dockerized COVID-19 detection application for Shiraz hospitals using a pre-trained model (COVIDNet-CT). Utilized Python, Qt C++, Prometheus, Grafana, Node Exporter, and MySQL.

Shiraz, Iran

Fall 2021

## Alethia, Mock LinkedIn Website

Shiraz University - Databases Design Principles Course

As the course project, a website simulating the features and looks of LinkedIn was developed. Vue.js, Gin (Golang), MySQL, Docker, gRPC, cron, Redis, and Nginx were utilized. All services were dockerized and an effective container orchestration was designed. *Ranked 2nd in the course.*

Shiraz, Iran

Spring 2021

## Game Engine Development Mini-Projects

Shiraz University - Computer Games Design and Computer Graphics I Courses

Implemented game engine components in C++ with OpenGL/GLFW/GLUT, incorporating core game development and graphics concepts such as skeletal animation, game physics, rendering engines, design patterns, and metric analysis.

Shiraz, Iran

Fall 2020 - Spring 2021

## Teatro, Game Console In C

Shiraz University - Principles of Programming Course

As the course project, our team implemented a game console to be able to render certain 2D games on PC, written in C. *Ranked 2nd in the course.*

Shiraz, Iran

Spring 2019

## Awards, Honors, And Certificates

|      |  |                 |
|------|--|-----------------|
| 2023 | <b>Completion of SFI (Svenska För Invandrare),</b> Uppsala Kommun                | Uppsala, Sweden |
| 2023 | <b>International Scholarship Fund,</b> Uppsala University                        | Uppsala, Sweden |
| 2022 | <b>Dean's List,</b> Shiraz University  | Shiraz, Iran    |
| 2021 | <b>TOEFL iBT (120/120),</b> ETS  | Tehran, Iran    |
| 2020 | <b>Ranked First In The Technical Footsteps Competition,</b> I.D.E.A Association  | Shiraz, Iran    |
| 2019 | <b>Completion Of A Full Program In English Language,</b> Iran Language Institute | Shiraz, Iran    |

## Skills

|                                   |  |
|-----------------------------------|--|
| <b>Programming Languages</b>      | Python, Java, C/C++, C#, JavaScript, Golang, HTML/CSS, MiniZinc, Haskell, GLSL |
| <b>Game Development</b>           | Unity, Game Design Patterns  |
| <b>Graphics and GPU Libraries</b> | OpenGL, GLUT, GLFW, SDL, CUDA, OpenACC   |
| <b>Web/Application Frameworks</b> | Flutter, Vue, Qt, Spring, Django REST, Gin, Bootstrap, Flask                   |
| <b>Mathematical and ML Tools</b>  | PyTorch, Ray, NumPy, Polars, Pandas, Optuna, Scikit-Learn                      |
| <b>Project Management</b>         | Agile Software Development (SCRUM), Git, Trello, JIRA                          |
| <b>Miscellaneous</b>              | Docker, MySQL, LaTeX, UML Diagrams   |
| <b>Soft Skills</b>                | Communication, Teamwork, Team Management, Resilience, Perseverance             |

## Interests

Programming / Games and their Development / Art, Music, Film / Artificial Intelligence / Philosophy

## Languages

|                |                          |
|----------------|--------------------------|
| <b>English</b> | Full Proficiency         |
| <b>Farsi</b>   | Native Proficiency       |
| <b>Swedish</b> | Intermediate Proficiency |

References available upon request.