Saleh Shamloo Ahmadi

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Education

Sharif University of Technology, Tehran, Iran Fall 2019 – Present (Expected February 2024)
Bachelor of Physics *GPA: 18.75/20.00 (Ranked 5th out of 55 in class)*

Research Interests

Simulation of Materials, Quantum Technology, Condensed Matter Physics, Computational Physics.

Research Experience

Monte Carlo Simulation of Polygonal Colloids in Various Geometries Summer 2022 – Present
Supervisor: Prof. Mohammad Reza Ejtehadi *Sharif University of Technology*

- Developed a new Julia package to allow for arbitrary geometries (HOOMD-blue, which is the package used for this kind of simulation, has limited ability for adding constraints).
- Introduced novel optimizations.
- Utilizing CUDA GPU acceleration.

Exfoliation of Layered Materials into Nanosheets Testing Data Collection Summer 2022 – Fall 2022
Supervisor: Dr. Naimeh Naseri *Sharif University of Technology*

- Worked in the lab to gather testing data for the evaluation of a machine learning model.
- Created the samples using bath sonication.
- Analyzed samples with UV-Vis tests.

Lab Assistant in the Health and Energy Lab Winter 2022 – Fall 2022
Supervisors: Dr. Naimeh Naseri, Mr. Nikan Afsahi *Sharif University of Technology*

- Trained under the supervision of a master's student.
- Helped with micro-supercapacitor projects.

Achievements

Ranked 8th in the Iranian Universities Physics Olympiad — Summer 2022

Ranked in the top 0.2% (284th out of 150666) in the mathematics and physics Konkour (Iranian universities entrance exam) and 1st (out of 139131) in the foreign language Konkour — Summer 2019

Awarded the bronze medal in the Iranian Physics Olympiad — Summer 2018

Projects

Ising Model, Argon MD, and Percolation Simulation | GitHub repository Fall 2021

- Supervisor: Prof. Mohammad Reza Ejtehadi. Computer Simulations in Physics course assigment projects.
- Other notable simulation include various deposition models, diffusion-limited aggregation and different random walks.

Simulating Electrodynamic Systems using the FDTD Method | GitHub repository Spring 2021

- Supervisor: Prof. Mahmud Bahmanabadi. Electromagnetism II course project

Nonlinear Market Model Study Reproduction GitHub Repository Spring 2023

- Supervisor: Dr. Saman Moghimi Araghi. Nonlinear Dynamics and Chaos course project.
- Joint work with Erfan Rahbari.
- Reproduced the result of this paper which discusses nonlinear asset-price dynamics and stabilization policies.

Astronomical Image Processing | GitHub repository Summer 2023

- Supervisor: Dr. Reza Rezaei. Astronomy Lab course assignment projects.
- Performed 9 amature astronomy experiments in teams of 3, involving observations and intensive image processing.

Measurement of Short Particle Lifetimes | Documents Spring 2022

- Supervisor: Dr. Amin Faraji Astaneh. Particle Physics course project.
- Joint work with Hossein Hatamnia.

- Used CERN tutorial data to demonstrate one of the methods.

Sound Amplifier Circuit Design | Documents — Fall 2020
- Supervisor: Dr. Seyed-Nader Seyed-Reihani. Electronics I course project

Trajectory of Supersonic Projectile with Variable Air Resistance | GitHub repository — Fall 2020
- Supervisor: Prof. Sohrab Rahvar. Analytical Mechanics I course project.

Simulating Wheel-Pendulum System with Lagrangian Mechanics | GitHub repository — Winter 2021
- Supervisor: Prof. Sohrab Rahvar. Analytical Mechanics II course project.

Courses

Quantum Computation and Information I | Webpage — Spring 2023
Prof. Vahid Karimipour — *Grade: 17.6/20.0*
- Graduate course. Aimed to be a comprehensive introduction to the theory behind quantum computing and quantum information technology.
- Presented a literature review of quantum simulation at the end of the course.

Data Science and HPC | Webpage — Spring 2022
Dr. Hamidreza Arian — *Grade: 20.0/20.0*
- Offered by the Graduate School of Management and Economics.
- The syllabus included supervised learning, clustering methods, and parallel computing. GitHub repository

Advanced Programming — Spring 2021
Dr. Mohammad Amin Fazli — *Grade: 20.0/20.0*
- Programming Language: Java
- The course project was developing a Yu-Gi-Oh game in teams of 3. Course project GitHub repository
- The syllabus included object oriented programming, graphical user interface (with JavaFX), client-server and peer-to-peer (P2P) networks, version control with Git, and regex. Assignments GitHub repository

Teaching Experience

Teaching Assistant, Computer Simulations in Physics — Spring 2023
Prof. Mohammad Reza Ejtehadi — *Sharif University of Technology*

Teaching Assistant, Introductory Programming (in C) — Spring 2021
Dr. Reza Fakouri — *Sharif University of Technology*

Technical Skills

Programming Languages	Julia, Python, C/C++, Java, Octave/MATLAB, Mathematica
Tools & Frameworks	CUDA, Machine Learning, LaTeX, git, Parallel Computation, Blender, Inkscape, Microsoft/Libre Office
Machine Learning	scikit-learn, TensorFlow, Flux.jl, Keras

Language

English	Fluent (C1∼C2 CEFR Level) TOEFL Score: 111/120 (Reading: 30/30, Listening: 29/30, Speaking: 22/30, Writing: 30/30)
Persian	Native

Community & Leadership

Head of Translation | Webpage — August 2021 – September 2022
Zharfa Scientific Community — *Sharif University of Technology*
- Translated parts of The Feynman Lectures on Physics (license for free electronic publication secured from The eFLP Group)

Member of the Board of Directors | Website — September 2021 – September 2022
Zharfa Scientific Community — *Sharif University of Technology*

Member of the Lambda Study Circle | Webpage — February 2020 – Present
Quanta Study Circles — *Sharif University of Technology*