

# Yaghoub Shahmari

## Academic Resume

### Education

- 2019-Present **Bachelor of Physics and minor of Computer Science:** Sharif University of Technology, Tehran  
CGPA: 3.28/4.0 Highest SGPA: 3.66/4.0
- 2012-2019 **Middle-school & High-school:** NODET Schools (National Organization for Development of Exceptional Talents), Tehran

### Area of Expertise

Modeling infectious diseases, Mean field models, Agent based models, Complex networks, Adaptive dynamics, Time-series analysis, Machine learning, Scientific algorithms

### Technical Skills

#### Languages

JULIA(MAIN), PYTHON(NUMPY, SCIPY, PANDAS,...), C/C++/C#, MATLAB

#### Software and Tools

BASH, GIT, HPC, L<sup>A</sup>T<sub>E</sub>X,

### Research Experiences

- Jul 2022 **B.Sc. Project (Physics Department):** Sharif University of Technology, Iran  
**Investigating interdependencies of Crypto-currencies and Fiat-currencies (Supervisor: Prof. Shahin Rouhani)**
- Oct 2022 **Research Intern(Complexity and evolution unit):** Okinawa Institute of Science and Technology, Japan  
**Seasonality selects for pathogen latency (Supervisors: Prof. Ulf Dieckmann, Prof. Ake Brannstrom)**

### Selected Courses

- Spring 2020 Introduction to Universe (Dr. B.Mashhoon) - Grade: 3.6/4.0
- Spring 2021 Modeling Statistical Phenomena (Dr. F.Ghanbarnejad) - Grade: 3.3/4.0
- Spring 2021 Thermodynamic and Statistical Physics 1 (Dr. O.Akhavan) - Grade: 3.8/4.0
- Fall 2021 Thermodynamic and Statistical Physics 2 (Dr. O.Akhavan) - Grade: 3.96/4.0
- Fall 2021 Computer Simulation in Physics (Dr. M.R.Ejtehadi) - Grade: 3.5/4.0
- Fall 2021 Computer Simulation lab (Dr. M.R.Ejtehadi) - Grade: 3.5/4.0
- Spring 2022 Complex Systems (Dr. S.Ruhani) - Grade: 3.2/4.0
- Spring 2022 Data Science & HPC (Dr. H.R.Arian) - Grade: 3.52/4.0

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## Projects

December 2020 **Simulation of Mechanical Random Walker System:** The first project I have undertaken in computational science. In Analytical Mechanic 1 (presented by Prof. S.Rahvar), it was presented as my term project.

[Github\(Code/Description\)](#)

May 2021 **Simulation of Janus bunch:** By numerically solving the dynamics of two-phase coupled oscillators, I attempted to simulate the Janus Bunch device. In Analytical Mechanic 2 (presented by Prof. S.Rahvar), it was presented as my term project.

[Github\(Code/Description\)](#)

May 2021 **Investigating the effects of Prevention and Quarantine on SIR:** Under the supervision of Dr. F.Ghanbarnejad, I presented this project as my term project for the Modeling Statistical Phenomena course. The algorithm was simple, but optimization (of our large network) was the challenge. We used complex networks and mean field models to illustrate how prevention and quarantine affect a breakout.

[Github\(Code/Description\)](#)

January 2022 **Neuroscience term project:** As part of our Neuroscience course term project, we presented this. In this project, we have used the electrophysiological dataset recorded in the motor cortex of two macaque monkeys (N) during an instructed delayed reach-to-grasp task to create numerous plots. I was responsible for the data analysis, algorithm, and technical parts.

[Github\(Code/Description\)](#)

March 2022 **Modeling and analyzing the commodity prices:** This project was a spontaneous project I started under the supervision of Prof. S.Rouhani. It is about modeling commodity prices, by analyzing the time-series of the market data. The final task failed because of the lack of the required data.

[Github\(Code/Description\)](#)

July 2022 **The effect of rumor dynamics on disease dynamics:** As part of our Sharif SocioPhysics summer school term project, we presented this. The goal of this project was to explore the influence of misinformation about COVID-19 on its dynamics and propagation and to determine how a lack of valid information can lead to faster disease spread and increased mortality.

[Github\(Code/Description\)](#)

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## Related Repositories

Spring 2021 **Modeling infectious diseases(fragmentary)** This is a fragmentary archive of what is remained of the codes and all of my efforts in modeling statistical phenomena course.

[Github\(Code/Description\)](#)

Fall 2021 **Simulations in Physics 2021** This archive contains my assignments for the Computer Simulation in Physics course.

[Github\(Code/Description\)](#)