



# Fatemeh Nikpanjeh

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Physics M.Sc. Student | Data Analyst

📧 fnikp

in Fatemeh Nikpanjeh

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## WHO AM I?

I am currently in the last semester of my master's degree in physics, with a focus on complex systems, and a strong passion for data science and machine learning. Throughout my academic journey, I have taken a proactive approach in expanding my knowledge and skills in these areas by completing online courses and projects that have helped me develop a solid understanding of the fundamental concepts. My background in complex systems, closely related to data science, provides me with a unique perspective that I am eager to bring to the table. Additionally, I am a team player and have strong communication and interpersonal skills which I believe will be valuable assets in any professional setting.

## EDUCATION

2021 – Present



**Master of Science in Physics**  
**Sharif University of Technology**

Tehran, Iran

Research Area: Complex Systems  
GPA: 18.2 / 20.0

2016 – 2021



**Bachelor of Science in Physics**  
**Shahid Beheshti University**

Tehran, Iran

🏆 Ranked 7<sup>th</sup> in National Scientific Physics Olympiad for University Students  
🎓 Ranked among the top 15% of the graduating class

## ACADEMIC PROJECTS

Mar. 2022 – Present

**Dynamical Analysis and Control of Tipping Cascades in Complex Systems**

M.Sc.

**Supervisor:** Prof. M. Reza Rahimi Tabar

- Analysis of the effects of interaction strength and network topology on the size of tipping cascades.
- Study of the controllability of tipping cascades in various networks, considering parameters such as control time horizon and cost of control.
- Examination of the impact of higher-order interactions on tipping cascades and their control.
- Development of a data-driven approach to identify early warning signals for tipping cascades.

Relevant Skills:

Time-series Analysis

Clustering

Numerical Simulation

Dynamical Systems

Control Theory

Sep. 2019 – Feb. 2020

**Footprint of Network Modularity in The Spectrum of Eigenvalues of Adjacency Matrix**

B.Sc.

**Supervisor:** Prof. Seyed Ali Hosseiny

- Investigated the relationship between network modularity and the spectrum of eigenvalues of the adjacency matrix in large random networks.

Relevant Skills:

Linear Algebra

Data Analysis

Visualization

Random Matrix Theory

## LANGUAGES



**Persian**

Mother tongue



**English**

C1 Proficient User



**Turkish**

B1 Independent User



**German**

A2 Basic User

## EXPERIENCES

**Teaching Assistant**

Academic

- Fundamental Physics II
- Thermodynamics and Statistical Physics I

Spring 2021

**Chair and Member of The Board of The Scientific Association of Physics SBU**

Volunteer

2016-2019

## TEST SCORES

**Physics GRE**

Sep. 2021

**Total score:** 840 (70%)

- **Classical Mechanics:** 86 (76%)
- **Electromagnetism:** 85 (74%)
- **Quantum Mechanics:** 84 (73%)

## COURSES | CERTIFICATES



**Advanced Learning Algorithms** | by Andrew NG (Certificate )



**Supervised Machine Learning: Regression and Classification** | by Andrew NG (Certificate )



**SQL for Data Science** | by UC Davis (Certificate )



**Machine Learning** | by Ali Hejazi (Pytopia )



**Python Programming(Beginner to Advanced)** | by Ali Hejazi (Pytopia )



**Stochastic Processes** | by Prof. M. Reza Rahimi Tabar (Sharif University of Technology)

## SKILLS

### ✓ Programming languages

Python	<div><div></div><div></div><div></div><div></div><div></div></div>
SQLite	<div><div></div><div></div><div></div><div></div><div></div></div>
C++	<div><div></div><div></div><div></div><div></div><div></div></div>

### ✓ Data Processing

Numpy	<div><div></div><div></div><div></div><div></div><div></div></div>
Pandas	<div><div></div><div></div><div></div><div></div><div></div></div>

### ✓ Data Visualization

Matplotlib	<div><div></div><div></div><div></div><div></div><div></div></div>
Seaborn	<div><div></div><div></div><div></div><div></div><div></div></div>

### ✓ Machine Learning

Scikit-Learn	<div><div></div><div></div><div></div><div></div><div></div></div>
Tensor Flow	<div><div></div><div></div><div></div><div></div><div></div></div>

### ✓ Additional Libabries

Scipy	<div><div></div><div></div><div></div><div></div><div></div></div>
Sympy	<div><div></div><div></div><div></div><div></div><div></div></div>
NetworkX	<div><div></div><div></div><div></div><div></div><div></div></div>

### ✓ Development Tools

Git	<div><div></div><div></div><div></div><div></div><div></div></div>
Jupyter Notebook	<div><div></div><div></div><div></div><div></div><div></div></div>

### ✓ Markup Languages

LaTeX	<div><div></div><div></div><div></div><div></div><div></div></div>
Markdown	<div><div></div><div></div><div></div><div></div><div></div></div>

### ✓ Miscellaneous

Microsoft Office	<div><div></div><div></div><div></div><div></div><div></div></div>
Adobe Photoshop Suite	<div><div></div><div></div><div></div><div></div><div></div></div>

## REFERENCES

### Prof. M. Reza Rahimi Tabar



Sharif University of Technology



M.Sc. Supervisor



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### Prof. Seyed Ali Hosseiny



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