



## PROFILE

Passionate physicist with a strong foundation in **problem-solving skills**, **mathematical modeling**, and **analytical thinking**. Experienced in **simulation** and study of various dynamical systems, employing **computational methods**, analyzing and interpreting **data**, and effective data **visualization**, with proficient coding skills in **C/C++**, **Python**, and **MATLAB**. More than 4 years of experience in **machine learning**, specifically (**deep**) **reinforcement learning**, by applying it to cutting edge **research** on active matter physics. Also, familiar with underlying mathematics and implementation of different **neural network** models, including, FCN, CNN, Boltzman machines, Autoencoders, and Reservoir computers. Possessing over a decade of **teaching experience** in various settings, and **presenting** scientific results in several **international conferences**, gives me the confidence in **communication** and skills to convey **technical information** in simplified terms. **International collaboration** with people from diverse backgrounds has made me efficient in **teamwork**. Moreover, having experience of working in different roles such as CEO, organizer, and journal editor, has enhanced my **leadership skills**.

## HOBBIES

Astrophotography, Calligraphy, Camping.

## CONTACT DETAILS

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(See extended version of my CV on my homepage)

## EDUCATION

**Ph.D. of Physics.** *University of Gothenburg, Sweden.*

Jan. 2020 - Present

Thesis title: *Planktonic navigation in turbulent flow.*

**M.Sc. of Physics.** *Shiraz University, Iran.*

Sep. 2016 - Sep. 2018

Thesis title: *Statistical properties of particle spread in random media.*

**B.Sc. of Physics.** *Shiraz University, Iran.*

Sep. 2011 - Sep. 2016

Thesis title: *Kuramoto model simulation of a system of oscillators.*

## EXPERIENCE

**Researcher** at Beheshti University (Tehran, Iran)

Jul. 2019 - Dec. 2019

Studied the first-passage time statistics of generation of new pages in Wikipedia as a complex network. Used Python API for Wikipedia for data collection and analysis.

**Data scientist** at Tarjoman Club (Shiraz, Iran)

Sep. 2018 - Dec. 2018

Built a database of best selling books, separated in translated/non-translated (to Persian) groups. Used Python web-scraping libraries such as BeautifulSoup to collect the data and MongoDB for database.

**CEO, Developer** at Satvis Institue (Shiraz, Iran)

Jan. 2016 - Oct. 2019

Co-founded an institute for teaching astronomy using virtual reality glasses. Developed the framework for the courses, developed material and videos, and taught the courses.

**Web developer** at Biruni Observatory (Shiraz, Iran)

Sep. 2017 - Jan. 2018

Collaborated as a developer of the observatory's website ([See](#)).

**Researcher** at Biruni Observatory (Shiraz, Iran)

Sep. 2013 - Apr. 2016

Studied variable stars by photometry. Observation and data collection with large scale telescopes. Data reduction and analysis with various astronomical packages and software.

## TEACHING

**Chalmers and University of Gothenburg**

Sep. 2020 - Dec. 2023

Artificial neural networks ([info](#)), Dynamical systems ([info](#))

**Shiraz University**

Sep. 2013 - Sep. 2018

Computational physics, Thermodynamics, Mechanics, Electromagnetism

**Biruni Observatory**

Sep. 2013 - Sep. 2018

Astrophysics, Cosmology, Observational astronomy and instrumentation

**Satvis Institue**

Jan. 2016 - Oct. 2019

Astronomy

## SKILLS

**Coding:** C/C++, Python, MATLAB, Octave, Mathematica

**Tools:** GIT, TensorFlow, Pytorch, scipy, numpy, pandas, BeautifulSoup, JSON, HDF5

**Text and Visualization:**  $\text{\LaTeX}$ , Microsoft word, matplotlib, plotly, GIMP, Inkscape

## PUBLICATION

Efficient survival strategy for zooplankton in turbulence

**N. Mousavi**, J. Qiu, B. Mehlig, L. Zhao, K. Gustavsson, submitted to Physical Review Letters, **2023**

Active gyrotactic stability of microswimmers using hydromechanical signals

J. Qiu, **N. Mousavi**, L. Zhao, K. Gustavsson, Physical Review Fluids, 7 (1), 20, 014311, **2022**

Navigation of micro-swimmers in steady flow: the importance of symmetries

J. Qiu, **N. Mousavi**, K. Gustavsson, C. Xu, B. Mehlig, L. Zhao, Journal of Fluid Mechanics, 932, 21, A10, **2021**

Synchronization in coupled phase oscillators with asymmetric interaction

**N. Mousavi**, M. G. N. Haghighi, S. Bazmi, Annual Physics Conference of Iran, **2016**

Light curve and maximum time report of SX Phe star AE UMa

S. Hojjatpanah, **N. Mousavi**, S. M. Kazemi, Information Bulletin on Variable Stars (IBVS) No. 6199, **2014**

## LEADERSHIP

Manager of outreach programs at Biruni Observatory

**2015-2018**

Committee member of astronomy and astrophysics student society of Shiraz University (AASSU)

**2012-2015**

Director of AASSU

**2013-2014**

Editor of Giti magazine (scientific magazine of AASSU)

**2012-2013**