Alireza Fathian

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EDUCATION

Sep. 2018 - Present	Master of Science in MATHEMATICAL BIOLOGY, Tarbiat Modares University
	Thesis Title: "Applications of Brain Activity Data in Predicting Brain Disorders."
	Supervisor: Prof. Yousef Jamali
	Adviser : Prof. Mohammad Reza Raoufy
	GPA: 17.46/20, Ranked 2nd in GPA
Sep. 2014 - Sep. 2018	Bachelor of Science in APPLIED MATHEMATICS, Isfahan University Of Technology
	GPA: 16.10/20, Ranked within the top 20 percent in GPA

RESEARCH INTERESTS

Network Neuroscience, Complex Systems, Functional Connectivity, Connectomics, fMRI Data Analysis, Mathematical Modeling, Machine Learning.

SELECTED COURSES

Dynamical Networks (19.5/20), Fundamentals of Dynamical Systems (17/20), Machine Learning (19/20), Fundamentals of Mathematical Biology (17.9/20), Computational Biology (16.5/20), Fundamentals of Bioinformatics (17/20), Game Theory (17.4/20).

FURTHER EDUCATION

NEUROSCIENCE	• IBRO-VLTP COURSE IN NEUROSCIENCE at Tarbiat Modares University, Oct. 2019. • SIMULATION NEUROSCIENCE by EPFL on edX • PRINCIPLES OF FMRI 1 by Johns Hopkins University on Coursera
MACHINE LEARNING	• DEEP LEARNING, A 5-COURSE SPECIALIZATION by deeplearning.ai on Coursera (in progress) • MACHINE LEARNING FOUNDATIONS: A CASE STUDY APPROACH by University of Washington
TEACHER EDUCATION	• TEACHER PREPARATION COURSE, Isfahan Teachers Research Center, Ministry of Education of Iran, July 2017. • SECONDARY MATH TEACHER PREPARATION COURSE, Isfahan Teachers Research Center, Ministry of Education of Iran, Aug. 2017.

TECHNICAL SKILLS

PROGRAMMING	Proficient: PYTHON, R Intermediate: BASH, MATLAB, C, SQL, HTML Libraries: PANDAS, NUMPY, SCIKIT-LEARN, NILEARN, NETWORKX, GRAPHLAB CREATE
SOFTWARES	MAPLE, WOLFRAM MATHEMATICA, SPSS, GEPHI, GIT, LaTeX, VIM
PLATFORMS	LINUX, MICROSOFT WINDOWS

LANGUAGE SKILLS

ENGLISH: Proficient   PERSIAN: Native   ARABIC: Basic

PUBLICATIONS

- **Fathian, A.**, Jamali, Y., & Raoufy, M. R. (2021). The trend of disruption in the functional brain network topology of Alzheimer's disease. Manuscript submitted for publication. ↗

- **Fathian, A.**, Jamali, Y. (2021). Comparative assessment of the functional connectivity estimators for fMRI data. Manuscript in preparation.

ACADEMIC PROJECTS ↗

MAY 2019	**Analysis of the macaque cerebral cortex network,** Conducted research on the anatomical network of the macaque cerebral cortex from a complex network perspective.
MAY 2019	**Microarray Data Analysis,** Conducted research on using microarray data to compare the expression of two different sets of genes from different cells maintained in particular conditions.
FEB. 2019	**Modeling of Bribery and Corruption,** Conducted research on modeling bribery and corruption with ordinary differential equations.

Experience

Aug. 2019 - Present	Project Associate, Cognitive Sciences and Technologies Council Project Title: In-silico Investigation of the Topological and Dynamical Properties of the Brain Networks • Implemented and assessed different methods for constructing the brain's functional connectivity network from functional magnetic resonance imaging (fMRI) data. • Analyzed the networks generated with different denoising methods and connectivity estimators from a complex network perspective. • Investigated the changes in the functional brain connectivity of Alzheimer's disease and mild cognitive impairment.
May 2019 - Feb. 2020	Research Assistant to Prof. Yousef Jamali Department of Mathematics, Tarbiat Modares University • Conducted literature review on neuroimaging data analysis. • Conducted literature review on the effects of brain disorders on structural and functional connectivity. • Prepared and delivered presentations to the biomathematics group at the Tarbiat Modares University on the topics mentioned above.
Sep. 2019 - Feb. 2020	Teaching Assistant, Fundamentals of Bioinformatics Department of Mathematics, Tarbiat Modares University • Taught cell biology fundamentals, including cell structure and function, chemical components of cells, energy, catalysis, biosynthesis and protein structure and function to graduate students. • Implemented algorithms covered in the class, including algorithms for pairwise sequence alignment and computing phylogenetic trees.
Aug. 2018 - Sep. 2018	Intern, Directorate of Economic Statistics, Central Bank of Iran • Assisted with analyzing data and updating and managing the databases. • Gained an insight into methodological and operational work on statistics and data management in a professional work environment. • Got an excellent grade in this internship program (The highest possible grade).

Grants

Aug. 2019	Cognitive Sciences and Technologies Council, Supporting fund for the project 'In-silico investigation of the topological and dynamical properties of the brain network', IRR 255 million (€5158)

Honors

Sep. 2018	Tuition scholarship, Tarbiat Modares University, M.Sc. (an award given to top students in entrance exam)
May 2018	Ranked within the top 3% among more than 8,000 participants in the Nationwide Graduate School Entrance Exam in Mathematics.
Jan. 2018	Privilege to enter graduate school exempted from National University Entrance Exam for Master's Degree.
Sep. 2014	Tuition scholarship, Isfahan University of Technology, B.Sc. (an award given to top students in entrance exam)
Jul. 2014	Ranked within the top 10% among more than 191,000 participants in the Nationwide Undergraduate School Entrance Exam in Mathematics and Physics.

Memberships and Activities

2019 - Present	Member, Cognitive Sciences and Technologies Council
2018 - Present	Member, Iranian Mathematical Society

References

- **Yousef Jamali**, **Assistant Professor**
  Department of Applied Mathematics
  Tarbiat Modares University
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- **Mehdi Mirzaie**, **Assistant Professor**
  Department of Applied Mathematics
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- **Mohammad Reza Raoufy**, **Associate Professor**
  Department of Physiology
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