Room 213, Old SISSA building, ICTP, Strada Costiera, 11
34151, Trieste, Italy
✉ mkhodada@ictp.it
🖥 users.ictp.it/~mkhodada
🔗 mkh240
⊕ mkhm
stackoverflow
Born in Sep 1991

Mojtaba Khodadadi

Research Interests

Application of Machine Learning in Data Analysis, Computational Social Science, User Behavior, Online Social Media & Networks Analysis, Social Physics, The Physics of Data, Complex Systems, Stochastic Processes, Statistical Physics of {Complex Networks, Social Systems, Financial Markets}, Econophysics, Computational Finance, Collective Phenomena in Complex Systems, Computational Neuroscience

Education

2015 – 2016 **ICTP Postgraduate Diploma Programme in Physics**, *International Centre for Theoretical Physics (ICTP)*, Trieste, Italy.
- Thesis: "Application of the Critical Variable Selection in Keyword Extraction".
- Supervisors: Prof. Matteo Marsili from ICTP.

2013 – 2015 **M.Sc. Condensed Matter Physics with Highest Distinction (Summa Cum Laude)**, *Isfahan University of Technology (IUT)*, Isfahan, Iran.
- GPA: *19.15/20 (%96, 4.00/4.00)*, thesis grade: *19.5/20 (%98, 4.00/4.00)*.
- Master's thesis: "Investigation of Epileptic Seizures by Analyzing EEG Data using Machine Learning". abstract
- Supervisors: Dr. Farhad Shahbazi from Isfahan University of Technology & Prof. Mohammad Reza Rahimi Tabar from Sharif University of Technology and Oldenburg University.

2009 – 2013 **B.Sc. Physics with Distinction**, *Isfahan University of Technology (IUT)*, Isfahan, Iran.
- GPA: *17.54/20 (%88, 3.78/4.00)*, and Major GPA: *17.82/20 (%90, 3.85/4.00)*.

2005 – 2009 **Diploma Mathematics & Physics**, *Saadi High School & Adle Pre-University School*, Isfahan, Iran.
- Diploma GPA: *19.69/20 (%98, 4.00/4.00)*, and Pre-University GPA: *19.51/20 (%98, 4.00/4.00)*.

Honors and Awards

Computer-related:

2013 **Merit-Based Admission Offer**, to full-time Master Program in both **Software Engineering and AI** without entrance exam, School of Computer Engineering, Iran University of Science and Technology, Tehran, Iran.

2010 **Honored as Outstanding Researcher Activity**, *SBM Project*, President of IUT, Isfahan, Iran.

2010 **Institute of Steel Employee Support & Retirement Fund Award**, *SBM Project*, Chairman & CEO, Tehran, Iran.

2009 **Ranked 2nd in 11th Iran's National Youth Kharazmi Award with the Statuette**, *for "Smart Bandwidth Manager (SBM)" Project*, Minister of Science, Research and Technology & Minister of Education, Iran.

Physics-related:

2010 & 2015 **Isfahan University of Technology Dean Award with the Statuette**, President of IUT, Isfahan, Iran.

2014 & 2015 **Ranked 1st, out of 58 Students**, *in all Programs of M.Sc. Physics according to GPA*, IUT, Isfahan, Iran.

2014 & 2015 **Ranked 1st, out of 34 M.Sc. Students**, *in Condensed Matter Physics Program according to GPA*, IUT.

2013 **Ranked 15th in 18th Iran's National Collegiate Scientific Olympiad**, among all B.Sc Physics Students of Nation, Iran.

2013 **Merit-Based Admission Offer**, to full-time Master Program in **Physics** without Entrance exam, IUT, Iran.

2013 **Ranked 4th, out of 61 in Undergraduate Physics program**, according to GPA, IUT, Isfahan, Iran.

Fellowships & Grants

2015 – 2016 **ICTP Scholarship and Travel Grant**, International Centre for Theoretical Physics, Trieste, Italy.

2013 & 2015 **Iran's National Elites Foundation 2-year Graduate Fellowship**, Government of Iran.

2010 & 2015 **University Outstanding Student Scholarship**, Isfahan University of Technology, Isfahan, Iran.

2014 **Isfahan University of Technology Research Grant**, *for Master Thesis*, Isfahan, Iran.

2009 – 2013 **Iran's National Elites Foundation 4-year Undergraduate Fellowship**, Government of Iran.

2011 **Isfahan Science & Technology Town (ISTT) Research Grant**, *for "Electronic Content Management System (eCMS)" Project*, Association of Creativity Efflorescence, Isfahan, Iran.

2010 **Iran's National Elites Foundation Research Grant**, *for "Smart Bandwidth Manager (SBM)" Project*, Vice President for Science and Technology, Government of Iran.

Relevant Courses

Postgraduate Program, ICTP	Statistical Mechanics (E, %100), Numerical Methods (E, %100), Numerical Methods II (E, %100). E: Excellent. grading system
M.Sc., IUT	Computational Physics (20, %100), Advanced Statistical Mechanics (19.1, %96), Advanced Statistical Mechanics II (20, %100). grading system
B.Sc., IUT	Computational Physics (20 out of 20, %100), Statistical Mechanics (20, %100), Biophysics (20, %100). grading system

Research Experience

2014 – 2015 **Graduate Researcher (Master's Thesis)**, *under supervision of Dr. F. Shahbazi and Prof. M.R.R. Tabar*, Physics department, Isfahan University of Technology and Sharif University of Technology, Iran. abstract.
Fields of research: EEG Data Analysis, Machine Learning, Stochastic Processes, Complex Systems.
○ Identifying epilepsy seizures focus by correlation matrix and stochastic processes methods.
○ Investigating the possibility of seizure prediction using hierarchical clustering of correlation matrices of different parts of brain over time.

2011 – 2013 **Researcher**, *Isfahan Science & Technology Town (ISTT)*, Isfahan, Iran.
I was member of *Association of Creativity Efflorescence* at ISTT.
○ Implementing an Integrated *"Electronic Content Management System (eCMS)"*.
○ Upgrade eLibrary to eCMS.

2007 – 2011 **Researcher**, *IT Center, Isfahan University of Technology*, Isfahan, Iran.
○ Designing and Implementing *"Smart Bandwidth Manager (SBM)"* core.
○ Developing, Testing and Debugging SBM v2.2.1 .

2010 **Researcher**, *Research Projects Office, Isfahan Science & Technology Town (ISTT)*, Isfahan, Iran.
○ Developing, Testing and Debugging SBM v2.1.1 .

Publications

Mojtaba Khodadadi, Farhad Shahbazi, **"Classification of Epilepsy Focus in Interictal and Ictal States"**, *accepted for 20-minute presentation at* **CCS'15 (Conference On Complex Systems)**, Sep 26 - Oct 2, 2015 at Tempe, Arizona, USA, invitation letter.

Mojtaba Khodadadi, et. al., **"PyMarkov: A Python Module for Markovian Stochastic Processes"**, *In preparation*.

Mojtaba Khodadadi, et. al., **"PyCorrState: A Python Package for Correlation States Extraction"**, *In preparation*.

Mojtaba Khodadadi, et. al., **"Identifying Epilepsy Focus by Correlation Matrix Method"**, *In preparation*.

Mojtaba Khodadadi, et. al., **"Identifying States of an Epilepsy Seizure"**, *In preparation*.

Invited Lectures

Winter 2015 **Scientific Computing with Python: An Introduction to Data Analysis & High Performance Computing (16 hours)** , **at age 23**, for graduate students of Physics, *Department of Physics, Isfahan University of Technology*, Isfahan, Iran. more info github.

Winter 2014 **Python Short Course for Physics Students: An introduction to Scientific Computing (14 hours)** , **at age 22**, for graduate students of Physics, *Electronic and Open Learning Center, Isfahan University of Technology*, Isfahan, Iran. github.

Summer 2010 **Java course: from Novice to Professional (50 hours)**, *Electronic and Open Learning Center, Isfahan University of Technology*, Isfahan, Iran.
At age 18, I was invited by *"Electronic and Open Learning Center"* to teach Java to senior and graduate students of Computer Science & Engineering. more info

Teacher Assistantship

Fall 2015 **Advanced Statistical Mechanics I (graduate course)**, *Instructor: Dr. J. Hashemifar*, Physics Dept., IUT.

Fall 2015 **Advanced Statistical Mechanics II (graduate course)**, *Instructor: Dr. F. Shahbazi*, Physics Dept., IUT.

Fall 2014 **Modern Physics**, *Instructor: Dr. F. Fazileh*, Physics Dept., IUT.

Work Experience

2007 – 2011 **Java Developer**, *IT Center, Isfahan University of Technology*, Isfahan, Iran.
○ Designing, Implementing, Developing and Supporting an Electronic Library (eLibrary).
○ Testing Smart Bandwidth Management (SBM) on the IUT internet network.

Computer Skills

Java
8 years' experience,
- Multithreaded Programming, Object Oriented Programming, Socket Programming, Network Programming, Web Scraping.
- JSP, JSF, Hibernate, Swing, , JUnit framework, Log4j, , NIO, Java Sockets, JCF, RegEx, iText, JavaDJVU, PDFBox, J4L OCR, Servlets, Struts, JDBC.

Python
4 years' experience,
- Scientific Computing.
- NumPy, Pandas, Matplotlib, Scikit-learn, SciPy, VPython, NetworkX, BLZ, Blosc, Bcolz.

Database
MYSQL, SQLite,

Software
Gephi, Mathematica, Maple.

IDE & Editor
Netbeans, IPython, Spyder, IEP IDE, PyScripter, Ninja IDE, Eclipse.

Other
Familiar with GIT, Fortran, PHP, Javascript, AJAX, C++, LaTex, HTML, XML, CSS, SQL, Wordpress, Drupal.

Long Projects

2008 – 2010
Smart Bandwidth Manager (SBM), *IT Center, Isfahan University of Technology*, Isfahan, Iran.
SBM is a dynamic network bandwidth management software that I and my friend have implemented at IT Center of IUT when we were high school students. **SBM saves 48,000$ per year for Isfahan University of Technology**. Awards: 2nd, 3rd & 4th award in Honors & Awards section and the last grant in Fellowships & Grants section are related to this project. I started working on this project **at age 16**. more info

2011 – 2013
Electronic Content Management System (eCMS), *Isfahan Science & Technology Town (ISTT)*, Isfahan, Iran.
eCMS is a research project which its main task is extracting metadata from ebook files and checking them with LoC website for validity. It also uses Tesseract OCR technology for scanned ebooks.
Awards: 6th grant in Fellowships & Grants section is related to this project. more info

2007 – 2010
Electronic Library (eLibrary), *IT Center, Isfahan University of Technology*, Isfahan, Iran.
eLibrary enables users to search in metadata and subject of ebooks. **eLibrary was sold to two universities each paid 8000$ (equals to 5 years' salary of one employee in Iran).** more info

Professional Membership

2013 – Present
Complex Systems Group, Physics Dept., Isfahan University of Technology, Isfahan, Iran.

2009 – Present
Iran's National Elites Foundation (BMN), Government of Iran.

2011 – 2013
Isfahan Science & Technology Town (ISTT), *Association of Creativity Efflorescence*, Isfahan, Iran.

Non-Academic Courses

Summer 2012
Introduction to Market Research and Marketing, Isfahan Science & Technology Town (ISTT), Isfahan.

Fall 2011
Ideas and Opportunities, Isfahan Science & Technology Town (ISTT), Isfahan, Iran.

Summer 2011
Entrepreneurship, SITCO International, NIIT Isfahan Center, Iran's National Elites Foundation (BMN).

April 2010
Security & Hack, Ashiyaneh Security Corporation, Tehran, Iran.

Conference Organization

January 2015
12th Iran National Conference on Condensed Matter Physics, *Member of Organization Committee*, Isfahan University of Technology, Isfahan, Iran.

September 2014
International Iran Conferences on Quantum Information 2014 (IICQI), *Member of Local Coordinating Committee*, Sharif University of Technology and Isfahan University of Technology, Isfahan, Iran, more info.

Participation in Conferences

Summer 2014
4th Iran's Workshop on Computational Neuroscience, Physics Dept., Institute for Advanced Studies in Basic Sciences (IASBS), Zanjan, Iran.

Winter 2013
18th Special School of Physics, Physics Dept., Institute for Advanced Studies in Basic Sciences (IASBS), Zanjan, Iran.

Fall 2013
2nd IPM Conference on Soft Matter, Biological and Statistical Physics, School of Physics, Institute for Research in Fundamental Sciences (IPM), Tehran, Iran.

Fall 2013
Workshop on Physics of Polymers and Biopolymers, School of Physics, Institute for Research in Fundamental Sciences (IPM), Tehran, Iran.