

# Mojtaba Khodadadi

## Research Interests

- Complex Systems
- Computational Social Science
- Stochastic Processes
- Online Social Media & Networks
- Application of Machine Learning in Data Analysis
- Econophysics

## Education

- 2015 – 2016 **ICTP Postgraduate Diploma Programme in Physics**, *International Centre for Theoretical Physics (ICTP)*, Trieste, Italy.
- 2013 – 2015 **M.Sc. Condensed Matter Physics**, *Isfahan University of Technology (IUT)*, Isfahan, Iran.  
○ GPA: 19.15/20 (4.00/4.00).  
○ Supervisor: Dr. Farhad Shahbazi from *Isfahan University of Technology* & Prof. Mohammad Reza Rahimi Tabar from *Sharif University of Technology* and *Oldenburg University*.  
○ Master's thesis title: "Investigation of Epileptic Seizures by Analyzing EEG Data using Machine Learning". [abstract](#)
- 2009 – 2013 **B.Sc. Physics**, *Isfahan University of Technology (IUT)*, Isfahan, Iran.  
○ GPA: 17.54/20 (3.78/4.00), and Major GPA: 17.82/20 (3.85/4.00).
- 2005 – 2009 **Diploma Mathematics & Physics**, *Saadi High School & Adle Pre-University School*, Isfahan, Iran.  
○ Diploma GPA: 19.69/20 (4.00/4.00), and Pre-University GPA: 19.51/20 (4.00/4.00).

## Honors and Awards

### Computer-related:

- [1] 2013 **Merit-Based Admission Offer**, to full-time Master Program in **Software Engineering** without Entrance exam, School of Computer Engineering, Iran University of Science and Technology, Tehran, Iran.
- [2] 2010 **Honored as Outstanding Researcher Activity**, *SBM Project*, President of IUT, Isfahan, Iran.
- [3] 2010 **Institute of Steel Employee Support & Retirement Fund Award**, *SBM Project*, Chairman & CEO, Tehran, Iran.
- [4] 2009 **Ranked 2nd in 11th Iranian 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:

- [5] 2010 & 2015 **Isfahan University of Technology Dean Award with the Statuette**, President of IUT, Isfahan, Iran.
- [6] 2014 & 2015 **Ranked 1st, out of 58 Students**, in all Programs of M.Sc. Physics according to GPA, IUT, Isfahan, Iran.
- [7] 2014 & 2015 **Ranked 1st, out of 34 M.Sc. Students**, in Condensed Matter Physics Program according to GPA, IUT.
- [8] 2013 **Ranked 15th in 18th Iranian National Collegiate Scientific Olympiad**, among all B.Sc Physics Students of Nation, Iran.
- [9] 2013 **Merit-Based Admission Offer**, to full-time Master Program in **Physics** without Entrance exam, IUT, Iran.
- [10] 2013 **Ranked 4th, out of 61 in Undergraduate Physics program**, according to GPA, IUT, Isfahan, Iran.
- [11] 2010 – 2015 **Selected as an Exceptional Talent in Physics Department**, IUT, Isfahan, Iran.

## Fellowships & Grants

- [1] 2015 – 2016 **ICTP Scholarship and Travel Grant**, International Centre for Theoretical Physics, Trieste, Italy.
- [2] 2013 & 2015 **Iranian National Elites Foundation 2-year Graduate Fellowship**, Government of Iran.
- [3] 2010 & 2015 **University Outstanding Student Scholarship**, Isfahan University of Technology, Isfahan, Iran.
- [4] 2014 **Isfahan University of Technology Research Grant**, for Master Thesis, Isfahan, Iran.
- [5] 2009 – 2013 **Iranian National Elites Foundation 4-year Undergraduate Fellowship**, Government of Iran.
- [6] 2011 **Isfahan Science & Technology Town (ISTT) Research Grant**, for "*Electronic Content Management System (eCMS)*" Project, Association of Creativity Efflorescence, Isfahan, Iran.
- [7] 2010 **Iranian National Elites Foundation Research Grant**, for "*Smart Bandwidth Manager (SBM)*" Project, Vice President for Science and Technology, Government of Iran.

---

## 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 .

---

## Computer Skills

- Java 9 years experience,
- Proficient** in Multithreaded Programming, Object Oriented Programming, Socket Programming, Network Programming, Web Scraping.
  - Proficient** with JSP, JSF, Hibernate, Swing, Spring framework, JUnit framework, Log4j, GWT, NIO, Java Sockets, JCF, RegEx, iText, JavaDJVU, PDFBox, J4L OCR, Servlets, Struts, JDBC.
- Python 4 years experience,
- Proficient** in Scientific Computing.
  - Proficient** with NumPy, Pandas, Matplotlib, Scikit-learn, SciPy, VPython, NetworkX, Graph-tool, Snap, BLZ, Bcolz, Bcolz.
- Database MySQL, SQLite, HSQLDB, SciDB, OpenTSDB.
- Software Gephi, Mathematica, Matlab, Maple.
- IDE & Editor Netbeans, IPython, Spyder, IEP IDE, PyScripter, Ninja IDE, PyCharm, Wing IDE, Eclipse.
- Other Familiar with PHP, Javascript, AJAX, C++, Fortran, LaTeX, HTML, XML, CSS, SQL, Wordpress, Drupal.

---

## 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, Farhad Shahbazi, Mohammad Reza Rahimi Tabar, "**PyMarkov: A Python Module for Markovian Stochastic Processes**", *In preparation*.
- Mojtaba Khodadadi, Farhad Shahbazi, Mohammad Reza Rahimi Tabar, "**PyCorrState: A Python Package for Correlation States Extraction**", *In preparation*.
- Mojtaba Khodadadi, Farhad Shahbazi, Mohammad Reza Rahimi Tabar, "**Identifying Epilepsy Focus by Correlation Matrix Method**", *In preparation*.
- Mojtaba Khodadadi, Farhad Shahbazi, Mohammad Reza Rahimi Tabar, "**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](#)

---

## Long Projects

### National

- 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 highschool students. **SBM saves 48,000\$ per year for Isfahan University of Technology.**  
**Awards:** 2<sup>nd</sup>, 3<sup>rd</sup> & 4<sup>th</sup> 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](#)

### Other

- 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:** 6<sup>th</sup> 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 payed 8000\$.** [more info](#)

---

## Work Experience

### Vocational

- 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.

---

## Teaching Experience

### Teacher Assistant

- 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.

---

## Professional Membership

- 2013 – Present **Complex Systems Group**, Physics Dept., Isfahan University of Technology, Isfahan, Iran.
- 2009 – Present **Iranian 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, Iranian National Elites Foundation (BMN).
- April 2010 **Security & Hack**, Ashiyaneh Security Corporation, Tehran, Iran.

---

## Participation in Conferences

- Summer 2014 **4th Iranian 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.

---

## 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.  
Web site: <http://iicqi.sharif.edu/events/iicqi-14>