Mohammad Mahdi Kooranifar

Curriculum Vitae

Education

2018–2023 **B. Sc. Major in Computer Science**, *School of Mathematics, Statistics and Computer Science, University of Tehran*, Tehran, Iran , *GPA – 16.05/20*.

2018–2023 **B. Sc. Minor in Mathematics**, *School of Mathematics, Statistics and Computer Science, University of Tehran*, Tehran, Iran , *GPA – 19.5/20*.

2011–2018 **Diploma in Mathematics**, *Allameh Helli 1 (National Organization for Development of Exceptional Talents) High School and Middle School*, Tehran, Iran, *GPA – 19.86/20*.

Selected Upper Division Courses (*GPA – 4/4*)

Abstract Algebra I, *grade – 16.5/20*.

Complex Functions, *grade – 19.5/20*.

Elementary Number Theory, *grade – 17.3/20*.

Abstract Algebra II, *grade – ?/20*.

Professional Experience

2021 - April **Attended "The Creative Power of Categories : Elements of History and Some New Perspectives"**, *Speaker: Laurent Lafforgue (IHES)*, IPM - Isfahan (Institute for Research in Fundamental Sciences).

2020 **Presentation "Introduction to Cryptography"**, *at Sharif University of Technology Physics Study Circle (Quanta)*.
A brief history of cryptography, introduction to RSA cryptosystem and symmetric cryptography were covered. Materials available here.

2020 **Published a translation in "Jong e Riazi" student Journal**, *original paper: Beineke, L., Wilson, R. The Early History of the Brick Factory Problem. Math Intelligencer 2010 (4841, 32) Crossing Number.*

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2020 **Attended Mathematics Summer School**, *IPM Institute For Research In Fundamental Sciences*, held at Institute for Advanced Studies in Basic Sciences, Zanjan, Iran.

This summer school is on:

- Topological Graph Theory: Simplicial Spaces, Borsuk-Ulam Theorem, Tucker Lemma & Tverberg Theorem
- Geometric Group Theory: Svarc-Milnor Lemma, Milnor-Wolf Theorem & Gromov Theorem

2019 **Attended "The Significance of Foundational Problems in Basic Sciences" Conference** , *School of Physics, IPM (Institute for Research in Fundamental Sciences)* .

2019 **Participation in Workshop on Algebra and Cryptography**, *Mosaheb Institute of Mathematics*.

This workshop is on:

- Rational points on Conics and Hyper elliptic curves
- Rational points on Elliptic curves and Cryptography

2018 **Teaching Assistant at Psychophysics and Psychtoolbox Workshop** , *National Brain Mapping Laboratory, Second Iranian Symposium on Brain Mapping updates* , Instructors: Hossein Vahabi, Pooya Pakarian .

- Equations and codes for some visual motion stimuli: RDK, Gabor wavelet, Spiral, Missing fundamental, Motion Quadrature
- Precise timing for visual stimuli by synchronization with monitor refresh rate

2018 **Participation in Elementary Data Science Workshop** , *Department of Computer Science at Amirkabir University of Technology* .

- Introduction to Python programming, Jupyter, Numpy, Pandas and Data Visualization
- Materials available on my Github repository

2017 **Teaching Assistant at Psychophysics Workshop**, *Allameh Helli 1 Physics Club, workshops on Neurosciences*, Instructor: Pooya Pakarian.

- Introduction to Psychopy and Python language
- Codes for measuring Reaction Time of subjects and some visual Stimuli demos
- Implementing Stroop Task Effect in Psychopy

2016 **Teaching Assistant at Psychophysics Workshop**, *School of Advanced Technologies in Medicine*, Instructor: Pooya Pakarian .

- Measuring and analyzing Reaction time and Error rate
- Masking and Persistence
- Priming, Automaticity and Stroop Effect
- Short range vs. long range motion, Phi vs. Beta and intersection of constraints vs. vector sum visual

Computer Skills

General Programming.

- Object Oriented Programming
- Version Control System: Github
- Languages: Java (and IntelliJ IDEA IDE), C/C++, Python

Data Analysis.
- MATLAB language
- Numpy and Pandas modules in Python
- Jupyter Notebook

Psychophysics.
- Psychopy app (developed in Python)
- Psychtoolbox module in MATLAB

Web development.
- HTML, CSS, JavaScript, PHP and MySQL

Courses and Activities

Relevant Curricular Courses

- Advanced Programming
- Data Structures and Algorithms
- Statistical Methods
- Linear Algebra
- Introduction to Theory of Computation

Extracurricular Activities

- Cryptography Circle of Department:
  - A group of undergraduate students interested in both mathematical and engineering aspects, exploring various topics of the subject.
  - Reading "Introduction to Mathematical Cryptography", by Joseph H. Silverman – Covered first 5 chapters.
- Course "Programming for Psychologists":
  - School of Psychology at the University of Nottingham, taught by Dr. Matt Johnson

Selected Projects

Zimnat Insurance Recommendation Challenge, *(Statistical Methods)*.
creating a machine learning model to use customer data to predict which kinds of insurance products to recommend to customers.

Alter Tank, *(Advanced Programming Course)*.
- Implementation of a Multiplayer Game (Battle of Tanks)
- Developed in Java

Photo Editor Website, *(Basic Programming Course)*.
- Implementation of a Website that utilizes users to edit and share their photos
- Developed in Django Framework, Python

Audio-visual Stimuli for integration visual illusions.
- Flash lag effect, Phi and Beta Movements, Sound-induced Flash Illusion, Stroop Task and...
- These Stimuli were created through high school researches on the subject or for teaching purposes in workshops

* All source codes are available on my Github repository

Honors and Rewards

2021 (?)th Prize at International Mathematics Competition (IMC)

2018 Ranked among the top 1% in Iranian University Entrance Exam (Konkur) in Mathematics and Engineering Sciences

2018 Ranked among the top 1% in Konkur of Foreign Languages

2017 Ranked among top 6 Projects of Tehran Province in Kharazmi Youth Festival
- Project Title: Interaction of Flash Lag Effect with sound-induced Flash Illusion and Apparent Motion for analyzing brain mechanisms on perception of audio-visual information.

2016 Best Project Winner at 32nd Allameh Helli's Seminar of Sciences and Engineering

2013 Ranked among top 10% teams competing for BIMC (Bulgaria International Mathematics Competition) national selection test

2010 Awarded Diploma of Honor in Nano Art and Technology National Competition – For creating Animations that demonstrate Nanotechnology's use in different industries. Available on my Github.

2007-2009 Ranked among top 3 in the Youth Computer Olympiad of Fars Province, Iran for 3 consecutive years

Virtual Profiles

www.github.com/kooranifar

www.linkedin.com/in/kooranifar