Ali Keramatipour (alikeramatipour.ir)

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EDUCATION

- **B.S. in Computer Engineering, University of Tehran** (Iran)   2017 - ongoing
  GPA: 19.04/20 (4/4) - Last year: 19.46/20

- **Diploma in Mathematics and Physics, Allameh Helli High School**, Tehran (Iran)   2013 - 2017
  Affiliated with the National Organization for Development of Exceptional Talents
  GPA: 19.41/20 (4/4)

RESEARCH INTERESTS

- Graph Theory and Combinatorics
- Algorithms and Computation Theory
- Coding and Information Theory
- Bioinformatics
- Data Networks
- Machine Learning

RESEARCH EXPERIENCE

Research Assistant at Data Analytics Lab, University of Tehran   2018 - ongoing

- **Zombie number of the Cartesian product of graphs**, under supervision of Dr. Behnam Bahrak:
  Studied Zombies and Survivor game and its variants. Proved the Zombie number problem belongs to NP-Hard, also proved the correctness of conjectures about Zombie number of the Cartesian product of graphs.

- **Limits of Caching** in networks, under supervision of Dr. Seyed Pooya Shariatpanahi:
  For a network using the coded caching scheme, what would be its maximum throughput?
  Proved the maximum multicast throughput problem belongs to NP-Hard, also developed an approximation algorithm. Currently trying to improve the constant approximation factor or prove no better PTIME algorithm exists. *(Paper under preparation, will be provided upon request)*

PUBLICATIONS

- Keramatipour, Ali, and Behnam Bahrak. "Zombie number of the Cartesian product of graphs." Discrete Applied Mathematics, VOL.289, pp545-549, Jan 2021.

HONOURS AND AWARDS

- Ranked Top 3 in Cumulative GPA Computer Engineering, University of Tehran   2018
- Ranked 11th, ACM-ICPC Asian Regional Contest in Iran - Tehran Site   2017
- Ranked 2nd, University of Tehran qualification for ACM-ICPC Regional Contest   2017
- Selected Team Member of University of Tehran, Computer Eng. Olympiad (Top 5 Students)   2021
- Member of Iran's National Elites Foundation (INEF)   2017
- Finalist in Iranian National Olympiad in Informatics   2016
- Among top 0.5% participants in the National University Entrance Exam (Konkur)   2017

Teaching Experience

Teaching Assistant	• Data Transmission Chief TA (Fall 2021) • Algorithm Design (Spring 2021) • Engineering Probability and Statistics (Fall 2019) • Head Team Organizer, Discrete Mathematics Contest (Spring 2018-Fall 2019) • Discrete Mathematics (Spring 2018-Fall 2019)
Private Tutor	• Olympiad in Informatics • Discrete Mathematics

Selected Courses

- Discrete Mathematics (19.1/20)
- Probability and Statistics (20/20)
- Algorithmic Graph Theory (20/20)
- Design Algorithm (20/20)
- Machines and Language Theory (20/20)
- Theory of Computation (18.9/20)
- Artificial Intelligence (20/20)
- Data Transmission (20/20)
- Wireless Communications (19.2/20)
- Cyber Security (20/20)

Selected Projects

- Real-time Propeller Led Display: implementation of a real-time propeller led display where user can write text, watch animation, and draw a sketch in real-time, Android (Java) and Arduino(C), ESP32 chip
- Classifying Coronavirus and healthy CT scan photos using neural networks, TensorFlow and Python
- Housing price prediction using machine learning, Python
- XV6 operating system: implementation of different CPU-Scheduling on XV6 OS, C and Assembly
- Implemented an OAuth 2.0 protocol to authenticate GitHub users, Python
- Design and implementation of an Asynchronous FIFO, Verilog/Quartus
- Design and implementation of MIPS processor using pipeline, Verilog/Quartus
- RTL design of a frequency multiplier and divider, Verilog/Quartus
- IoT smart home project, Android (Java) and Arduino(C)

Technical Skills

- Great experience in Competitive Programming through Codeforces, Topcoder, USACO, etc. contests
- Programming Languages: C/C++, Python, Java, Verilog/SystemVerilog, R, ANTLR, Visual Basic, Latex, etc.
- Web: HTML, CSS, JavaScript - Certified by MFT (2010)

References

- Dr. Behnam Bahrak, Assistant Professor, University of Tehran
- Dr. Seyed Pooya Shariatpanahi, Assistant Professor, University of Tehran
- Dr. Siamak Mohammadi, Associate Professor, University of Tehran