Mehrshad Taziki

My Homepage | Mehrshad00taziki@gmail.com | My Github

Education

Bachelor of Computer Science, Sharif University of Technology **Sep. 2020 – Present**
GPA : 19.90/20 (Rank 1st in Computer Science Programme) *Tehran, Iran*

High School Diploma in Mathematics and Physics **Sep 2014 – Sep 2020**
National Organization for Development of Exceptional Talents (Sampad) *Gorgan, Iran*

Research Interests

- Combinatorial Optimization
- Algorithmic Graph Theory
- Approximation Algorithms
- Theory of Computation

Research Experience

Bachelor's Research Project **Sep 2023 – Present**
Sharif Univeristy of Technology, Tehran, Iran

- Working under the supervision of Prof. Shahram Khazaei and Prof. Sharareh Alipour on Uncertain K-Center Problem and different methods to approximate this problem in certain specific settings.
- Since most of the time in the real world, we need to solve a problem based on probabilistic data, the uncertain k-center problem tries to capture this by assigning each client a probability distribution over different locations rather than a deterministic single location.
- The objective now would be to allocate each client to a corresponding center as well as decide which k centers to open.

Summer Research Program **Jul 2023 – Present**
The Institute of Theoretical Computer Science and Communications, Chinese University of Hong Kong

- Working with Prof. Amin Aminzadeh Gohari about the relative fractional independence number and it's applications to approximate the zero error capacity of graphs.
- I have developed methods for computing this number within specific graph families as well as some useful properties and theorems regarding this number. you can find these results in here.

Research Project for Combinatorial Optimization Course **Jun 2023 – Jul 2023**
Sharif Univeristy of Technology, Tehran, Iran

- We explored various algorithms to solve this problem, including Goldberg's Algorithms, Charikar's LP, Greedy Peeling algorithm, and the recently introduced Iterative Greedy Peeling algorithm. We implemented these algorithms efficiently and conducted a computational study on each of them over a comprehensive dataset that we created.
  You can find the results in here or on my homepage. Additionally, you can find these implementations and our dataset on my github.

Teaching Experiences

Teaching Assistant | Design of Algorithms, Instructor: Prof. Hamid Zarrabi-Zadeh **Fall 2023**

Teaching Assistant | Data Structures and Algorithms, Instructor: Prof. Shahram Khazaei **Fall 2023**

Teaching Assistant | Theory of Languages and Automata, Instructor: Prof. Amir Daneshgar **Fall 2023**

Teaching Assistant | Foundation of Mathematics, Instructor: Prof. Mohammad Ardeshir **Spring 2023**

Head Teaching Assistant | Basic Programming, Instructor: Prof. Mojtaba Tefagh **Fall 2022**

Teaching Assistant | Data Structures and Algorithms, Instructor: Prof. Alireza Zarei **Fall 2022**

Teaching Assistant | Theory of Languages and Automata, Instructor: Prof. Ali Movaghar **Fall 2022**

Head Teaching Assistant | Linear Algebra, Instructor: Prof. Mohsen Djamali **Fall 2022**

Work Experience

Iran's Mathematics Olympiad **Nov 2022**
Grading Exams *Tehran, Iran*

- I Graded Combinatorics and Graph Theory Questions for Iran's Mathematics Olympiad.

Olympiad in Informatics Teacher **Sep 2021 – Sep 2022**
National Organization for the Development of Exceptional Talents (Sampad) *Gorgan, Iran*

- I Taught Combinatorics, Graph Theory, and Algorithms Design to students in order to prepare them for Iran's Informatics Olympiad.

Relevant Courses

Approximation Algorithms$^+$ (Graduate) | Ongoing **Fall 2023**

Randomized Algorithms$^+$ (Graduate) | Ongoing **Fall 2023**

Algorithms and Computation Seminar$^+$ (Graduate) | Ongoing **Fall 2023**
This Seminar Is Mainly Focused on Augmentation Problems, Especially, Tree and Cactus Augmentation Problems.

Operational Research | Ongoing **Fall 2023**
Combinatorial Optimization | 20/20 **Spring 2023**
Theory of Computation | 20/20 **Spring 2023**
Analysis of Algorithms | 20/20 **Spring 2023**
Game Theory | 20/20 **Fall 2022**
Artificial Intelligence | 20/20 **Fall 2022**
Graph Theory and Applications | 20/20 **Spring 2022**
Theory of Languages and Automata | 20/20 **Spring 2022**
Mathematical Logics | 20/20 **Spring 2022**
Data Structures and Algorithms | 20/20 **Fall 2021**

Voluntary Works

University Mentor for New Students **Sharif University of Technology**
Provided guidance and support to new students during their transition to university life.

Environmental Enthusiasts Scientific Association **Sharif University of Technology**
Participated in environmental awareness campaigns and events on and off campus.

Computer Skills

- Java **Advanced**
- C++ **Advanced**
- Python **Advanced**
- LaTeX **Advanced**

Languages

- Persian **Mother-tongue**
- English **Fluent**