Parsa Kamalipour

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Research Interests

- Design & Analysis of Algorithms
- Graph Theory & its applications
- Combinatorial Optimization
- Approximation & Randomized Algorithms
- Complexity Theory & Online Algorithms
- Social Networks Analysis

Education

Concordia University **Montreal, QC, Canada**
Master of CS, Computer Science, Lab: Algorithms & Complexity. *Sep 2024–Aug 2026*

- **GPA:** Just started!
- **Master's Thesis:** To be decided.
- **Supervisor:** Prof. Hovhannes Harutyunyan

Vali-e-Asr University of Rafsanjan **Rafsanjan, Iran**
B.S. Computer Engineering, Major Track: Software Engineering. *Sep 2018–Jun 2023*

- **CGPA:** 16.26/20 with 140 credits passed. **GPA of Specialized Courses:** 17.80/20
- **Bachelor's Thesis:** Community detection in complex network based on an improved random algorithm using local and global network information
- **Bachelor's Thesis grade:** 20/20 (4.0/4.0)

Publications

Journal papers

- Fahimeh Dabaghi-Zarandi, **Parsa KamaliPour**, "Community detection in complex network based on an improved random algorithm using local and global network information," *Journal of Network and Computer Applications*, vol.206, p.103492, Aug 2022, doi. Q1, Impact factor: 7.574, link.

Conference papers

- I. Hemati Moghadam, M. M. Afkhami, **P. Kamalipour**, and V. Zaytsev, "Extending refactoring detection to Kotlin: A dataset and comparative study," *In Proceedings of the 31st IEEE International Conference on Software Analysis, Evolution and Reengineering (SANER 2024)*, IEEE, 2024. link.

Research Experience

Graduate Research Assistant **Montreal, QC, Canada**
Algorithms & Complexity Lab - Department of CS & SE, Concordia University *Aug 2024–Present*

- **Field of Research:** Algorithms Design, Graph Theory, and Social Network Analysis
- **Supervisor:** Prof. Hovhannes Harutyunyan

Remote Research Assistant **Enschede, The Netherlands**
FMT group - Faculty of EE, Math and CS, University of Twente *Aug 2023–Mar 2024*

- **Field of Research:** Software Refactoring, **Supervisor:** Dr. Iman Hemati Moghadam
- **My key role consisted of:**
  - Writing Java codes, unit tests, debugging, refactoring, maintenance, and bug fixing the "KotlinCode2Text" parser + "RefDetect" tools
  - Implementing the "KotlinCode2Text" parser for the "RefDetect" tool
  - Creating two refactoring datasets
  - Running Numerous testing stages and providing new ideas to improve our research results
  - Prompt engineering and utilizing LLMs for Software Translation

Undergraduate Research Assistant **Rafsanjan, Iran**
Department of Computer Engineering, Vali-e-Asr University of Rafsanjan *Aug 2021–Mar 2024*

- **Field of Research:** Graph Algorithms, **Supervisor:** Dr. Fahimeh Dabaghi-Zarandi.
- **My key role consisted of:**
  - Reading and reviewing related papers (Investigation)
  - Implementing ideas in MATLAB and Python (Data curation, Software, Programming)
  - Testing and improving the written code (Validation)
  - Gathering information and writing the initial text for the paper (Writing primary draft preparation)

Teaching Experience

Graduate Teaching Assistant **Montreal, QC, Canada**
Gina Cody School of Engineering and Computer Science, Concordia University *Sep 2024–Present*

COMP/MATH 339: Combinatorics: Tutorial leader & Marker TA: Fall 2024

COMP 335: Introduction to Theoretical Computer Science: Marker TA: Fall 2024

Undergraduate Teaching Assistant **Rafsanjan, Iran**
CE Department, Vali-e-Asr University of Rafsanjan *Mar 2021–Jan 2024*

Data Structures: Head TA: Spring (2023 , 2022 , 2021), Fall (2023 ,2022 ,2021)

Algorithms Design: Head TA: Spring (2023 ,2022 , 2021), Fall (2022 , 2021)

Discrete Mathematics: TA: Spring 2022 , Fall 2021

Operating Systems: Grading TA: Spring 2022

Introduction to Information Retrieval: TA: Spring (2023 , 2022)

Software Engineering: TA: Spring 2023

Database: Head TA: Fall 2022

Intro to Data Mining: TA: Spring 2023

Fundamentals of Programming: Head TA: Fall 2022

Artificial Intelligence: Head TA: Fall 2022

Selected Relevant Coursework

Fundamental of Programming: 20/20
Advance Programming: 16.5/20
Theory of Machines and Languages: 17.9/20
Engineering Mathematics: 17.04/20
Software Engineering: 18.75/20
Design and Analysis of Algorithms: 18/20
Introduction to Data Mining: 17.5/20
Statistics and Probability for Engineering: 16.25/20

⋆ *Click here to see more*

Selected Projects

Introduction to Data Mining
Multiple assignments regarding to the Intro to Data Mining course *Spring 2022*
Data Pre Processing, Apriori Algorithm, Data Visualization, K-Means, Agglomerative Clustering, DBSCAN, K-Nearest Neighbors Algorithm, Decision Tree, Support Vector Machines, Multi-Layer Perceptron

Uncertainty: an action-adventure space-shooter game built with Unity3D
Null References *Spring 2021*
- Uncertainty is an action-adventure space-shooter game, and currently It's under development.
- We have utilized the beta version of this game as our "Software Engineering Lab" course project.

Multiple projects regarding to Design and Analysis of Algorithms course
Designing and implementation of: *Fall 2020*
The Closest Pair of Points Problem, Sudoku Solver, Tournament Scheduler, Huffman Coding, Bellman–Ford, Matrix Chain Multiplication, N-Queens Solver Traveling Salesman Problem

Multiple projects regarding to Data Structures and Algorithms course
Designing and implementation of: *Fall 2019*

the Red-Black Tree, the AVL Tree, the Trie Dictionary, Threaded Binary Tree, the Sparse Matrix via Linked List, the Rat in the maze problem

⋆ *Click here to see more projects*

Test Scores

TOEFL: 99/120 - Reading: 26/30, Listening: 29/30, Speaking: 23/30, Writing: 21/30

Honors and Awards

Awarded the DRW Graduate Scholarship in Computer Science
Issued by Concordia University & DRW Company *Oct 2024*

Awarded Concordia Merit Scholarship (Entrance Scholarship Award)
Issued by Concordia University & School of Graduate Studies *Sep 2024*

Awarded Concordia Faculty of Engineering & Computer Science Financial Research Support
Issued by Concordia University & Gina Cody School of Engineering and Computer Science *Sep 2024*

Won Distinguished Student Award among all students of Vali-e-Asr University
Vali-e-Asr University of Rafsanjan *July 2024*

Awarded Top Researcher status among all undergraduate students of Kerman province
Shahid Bahonar University of Kerman *Nov 2023*

Ranked top 10 among undergraduate students of Computer Engineering
Vali-e-Asr University of Rafsanjan, Among Fall of 2018 Computer Engineering students *Spring 2022*

⋆ *Click here to see more information about me*

Extra Curricular Activities

Director of Research Assistant Committee
Vali-e-Asr University Scientific Association of Computer Engineering *Nov 2022–Sep 2023*

Director of Teaching Assistant Committee
Vali-e-Asr University Scientific Association of Computer Engineering *July 2022–Sep 2023*

Member of Teaching Staff
Vali-e-Asr Collegiate Programming Contest (VCPC) *Sep 2021–Jun 2022*

Skills

Programming Languages: C, C++, Python, MATLAB, C#, Java, SQL
Tools: Jupyter, LaTeX, Git, Markdown, Linux, Microsoft office, Obsidian
Game Development: Unity
Frameworks & Libraries: Qt, Numpy, Pandas, Matplotlib, NetworkX, Scikit-learn, PyTorch
Software Engineering: Refactoring, Debugging, Unit Testing, Agile mythology, Pattern Design, SOLID
Soft Skills: Team Work, leadership, Collaboration, Teaching, Research, Problem Solving

Languages

Persian: Native
English: Fluent
French: Beginner (Early A1)

References

Available upon Request