

# Parsa Kamalipour

Montréal, QC – Canada

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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 (Thesis-based), Computer Science, Lab: Algorithms & Complexity.

Sep 2024–Aug 2026

- **Master's Thesis:** To be decided (Community Detection on Social Networks).
- **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. **Thesis grade:** 20/20.
- **Bachelor's Thesis:** Community detection in complex network based on an improved random algorithm using local and global network information

## 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

### Research Assistant (Internship) [✉](#)

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, bug fixing the "KotlinCode2Text" parser + "RefDetect" tools, and creating two refactoring datasets.
  - Implementing the "KotlinCode2Text" parser for the "RefDetect" tool
  - 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 348: Principles of Programming Languages:** Tutorial leader & POD & Marker: Winter 2025

**COMP 465: Design and Analysis of Algorithms:** Tutorial leader: Winter 2025

**SOEN 363: Data Systems for Software Engineers:** Tutorial leader & POD & Marker: Winter 2025

**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

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

## Honors and Awards

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### 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

### Awarded Top Researcher status among all undergraduate students of Kerman province

Shahid Bahonar University of Kerman Nov 2023

★ [Click here to see more information about me](#) [↗](#)

## Extra Curricular Activities

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### 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

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**Programming Languages:** C, C++, Python, MATLAB, C#, Java, SQL **Frameworks & Libraries:** Qt, Numpy, Pandas, Matplotlib, NetworkX, Scikit-learn, PyTorch

**Tools:** Jupyter, L<sup>A</sup>T<sub>E</sub>X, Git, Markdown, Linux, Microsoft office, Obsidian **Software Engineering:** Refactoring, Debugging, Unit Testing, Agile mythology, Pattern Design, SOLID

**Game Development:** Unity **Soft Skills:** Team Work, leadership, Collaboration, Teaching, Research, Problem Solving

## Languages

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**Persian:** Native

**English:** Fluent

**French:** Beginner (Early A1)

## References

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Available upon Request