Farnoosh Hashemi

Email : farsh@cs.ubc.ca
Mobile : +1-778-829-1375
Webpage: farnooshha.github.io

Education

- **University of British Columbia (UBC)**
  M.Sc. in Computer Science; GPA: 96.5/100 — *2020 – present*
- **Sharif University of Technology**
  B.Sc. in Computer Engineering, Minor in Mathematics; GPA : 18.86/20 — *2015 – 2020*
- **Farzanegan 1 High School**
  Diploma in Mathematics; GPA: 19.54/20 — *2011 – 2015*

Research Interest

Computational Social Science
Social Networks Analysis
Machine Learning
Data Science

Preprints and Publications

∗ Equal contribution

- **CS-MLGCN : Multiplex Graph Convolutional Neural Network for Community Search in Multiplex Networks**
  A. Behrouz and* ***F.Hashemi****
  Conference on Information and Knowledge Management, CIKM 2022 (Best Paper Honorable Mention Award)

- **FirmTruss Community Search in Multilayer Networks**
  A. Behrouz,* ***F.Hashemi****, and L. Lakshmanan*
  VLDB 2023

- **FirmCore Decomposition of Multilayer Networks**
  F. Hashemi*, A. Behrouz*, and L. Lakshmanan*
  The Web Conference, WWW 2022

- **Misinformation Mitigation under Differential Propagation Rates and Temporal Penalties**
  M. Simpson, ***F.Hashemi****, and L. Lakshmanan*
  VLDB 2022

- **Green Space and Happiness of Developed Countries**
  F. Hashemi*, A. Behrouz, J. Yang, D.Y. Wohn, and M. Cha*
  IEEE International Conference on Big Data and Smart Computing, BigComp 2020

Honors and Awards

- CIKM Conference Best Paper Honorable Mention Award. 2022
- Student Travel Grant from ACM The Web Conference. 2022
- Ranked 1st among all Information Technology students entered in 2015. 2020
- Recipient of the scholarship for undergrad research at Institute for Basic Science, South Korea. Summer 2019
- Recipient of the scholarship for undergrad research at Max Planck Institute for Informatics. Summer 2018
- Awarded as Outstanding Student by Sharif University President. 2018
- Silver Medal in PAYA International Mathematical League. 2010

Related Course

- **Graduate Courses**: Machine Learning and Data Mining (100/100), Multimodal Learning with Vision, Language and Sound (100/100), Advanced Machine Learning (96/100), Deep Learning with Graphs (99/100), Social and Information Networks (89/100), Directed Studies in Social Network Analysis (95/100).
- **Selected Undergraduate Courses**: Artificial Intelligence (20/20), Linear Algebra (20/20), Engineering Probability and Statistics (20/20), Introduction to Game Theory (20/20), Engineering Mathematics (20/20), Design and Analysis of Algorithms (19/20), Data Structures and Algorithms (19/20), Graph Theory and Applications (18.6/20).

Selected Research Projects

- **Fair Influence Maximization** Canada, 2022
  Data Management and Mining Lab
  Supervisor: Prof. Laks V.S. Lakshmanan
  - Ongoing project in which we propose a fair influence maximization framework based on social welfare theory and optimize the Atkinson welfare function.

- **Map Conflation with Graph Neural Network** Canada, 2022
  Data Management and Mining Lab
  Supervisor: Prof. Laks V.S. Lakshmanan
  - Ongoing project in which we represent a map by a knowledge graph and use GNN for knowledge graph matching. Then we formulate map merging as a mixed integer linear programming problem.

- **Graph Neural Network for Community Discovery in Multiplex Networks** Canada, 2022
  - We introduce a supervised community search model via graph neural networks in multiplex networks.

- **Computational Fact Checking by Subgraph Matching over Knowledge Graphs** Canada, 2021
  Data Management and Mining Lab
  Supervisor: Prof. Laks V.S. Lakshmanan
  - Ongoing project in which we propose a top-k graph query engine for the computational fact checking problem that develops search algorithms for simple triple queries and makes use of them to solve general graph queries.

- **Community Search in Multilayer Networks** Canada, 2021
  Data Management and Mining Lab
  Supervisor: Prof. Laks V.S. Lakshmanan
  - We present a new community model based on network homophily, using a new family of dense subgraphs, firmtruss, in multilayer networks.

- **Misinformation Mitigation under Differential Propagation Rates and Temporal Penalties** Canada, 2021
  Data Management and Mining Lab
  Supervisor: Prof. Laks V.S. Lakshmanan
  - We introduce a novel propagation model capturing important temporal aspects pertaining to the diffusion of and reaction to truth and misinformation and define a novel misinformation mitigation problem formulation with delay-dependent reward. We employ a sandwiching technique for providing data-dependent guarantees.

- **Multilayer Graph Decompositions** Canada, 2021
  Data Management and Mining Lab
  Supervisor: Prof. Laks V.S. Lakshmanan
  - We present a new family of dense subgraphs in multilayer networks which unlike the state of the art core decomposition of multilayer graphs has a polynomial time algorithm. We show that this new family can be used to obtain efficient approximation algorithms for finding the densest subgraphs of multilayer networks.

- **Green Space and Happiness of Developed Countries** South Korea, Summer 2019
  Institute for Basic Science (IBS)
  Supervisor: Prof. Meeyoung Cha
  - In this project, by considering 30 developed countries, we show that there is a correlation and statistical relationship between urban green space and happiness, and this relationship becomes stronger among countries with higher GDP.

- **Membership Inference attack against Watermarked Model** South Korea, Summer 2019
  Institute for Basic Science (IBS)
  Supervisor: Prof. Meeyoung Cha
  - We study the effect of watermarking on the accuracy of membership inference attack. In fact, we work on the trade-off between protecting intellectual property and leaking information about the model's training data.

- **Complexity of Random Padded and Continuant Version of Polynomials** Germany, Summer 2018
  Max Planck Institute for Informatics
  Supervisor: Dr. Christian Ikenmeyer
  - In this algebraic complexity theory project, we show that the complexity of random added polynomial is more than the complexity of random continuant polynomial with the same degree and the same number of variables.

Teaching Experience

- **Teaching Assistant**
  - University of British Columbia
    - Programming for Data Science (Master of Data Science (MDS) program) *Winter 2022*
    - Supervised Learning I (Master of Data Science (MDS) program) *Winter 2022*
    - Feature and Model Selection (Master of Data Science (MDS) program) *Winter 2022*
    - Introduction to Artificial Intelligence *Summer 2022, Winter 2021*
    - Machine Learning and Data Mining *Summer 2021*
    - Intermediate Algorithm Design and Analysis *Spring 2021, Summer 2021, Spring 2020*
  - Sharif University of Technology
    Matrix Computations (Graduate Course, Fall 2019), Linear Algebra (Spring 2019), Artificial Intelligence (Spring 2019), Computer Simulation (Spring 2019), Data Structure and Algorithms (Spring, Fall 2019), Engineering Probability and Statistics (Spring 2018), Discrete Mathematics (Spring 2018), Advanced Programming (Fall 2017)
- **Lecturer** *2015 – 2016*
  - Farzanegan 1 High School
    Teaching in classes for preparing students for the National Mathematical Olympiad.

Industrial Experience

- **Facebook (Meta)**
  Software Engineer Intern, implement a rank join-based algorithm for footway conflation. *2022*
- **Vakavic**
  Data Scientist in Intelligent Text Digester Project *Iran, 2019*

Technical Skills

- **Languages**: Python (preferred), MATLAB, Julia, and familiar with JAVA, R and C/C++
- **Typesetting**: LaTeX
- **Machine Learning Tools**: PyTorch, Keras, TensorFlow, SciKit-Learn

Service

- **Reviewer**
  - VLDB Conferance 2022
  - ACM TKDD Journal 2022
- **Technical Staff**
  - Scientific Staff of 1st, 2nd, 3rd, 4th Iranian Geometry Olympiad(IGO) 2014 – 2017
  - Technical Staff in AI Challenge held at Sharif University Of Technology 2018
  - Technical Staff in Winter Seminar Series (WSS) held at Sharif University Of Technology 2018