Seyed Ali Tabatabaee

Ph.D. Student

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Research Interests

Algorithms: Algorithmic Graph Theory, Computational Geometry, Algorithmic Game Theory, Distributed Algorithms, Approximation Algorithms

Blockchains: Blockchain Networks, Theoretical Analysis of Blockchains, Consensus Algorithms, Security and Privacy of Blockchains, Distributed Systems

Education

2021 – 2025   **Ph.D. in Computer Science**
The University of British Columbia (UBC), Vancouver, Canada
Supervisor: Dr. William Evans

2019 – 2021   **M.Sc. in Computer Science**
The University of British Columbia (UBC), Vancouver, Canada
Supervisors: Dr. Ivan Beschastnikh and Dr. Chen Feng
Thesis: Attacking Transaction Relay in MimbleWimble Blockchains
GPA: 91.17/100.00

2014 – 2019   **B.Sc. in Computer Engineering**
Sharif University of Technology (SUT), Tehran, Iran
Supervisor: Dr. Hamid Zarrabi-Zadeh
Thesis: Distributed Unit Disk Covering
GPA: 17.16/20.00

Publications

2022   **Seyed Ali Tabatabaee**, Charlene Nicer, Ivan Beschastnikh, and Chen Feng. **One Bad Apple Spoils the Bunch: Transaction DoS in MimbleWimble Blockchains**. In *Proceedings of the IEEE 4th International Conference on Blockchain and Cryptocurrency (ICBC)*.

2021   Fangyu Gai, Jianyu Niu, **Seyed Ali Tabatabaee**, Chen Feng, and Mohammad Jalalzai. **Cumulus: A Secure BFT-based Sidechain for Off-chain Scaling**. In *Proceedings of the IEEE/ACM 29th International Symposium on Quality of Service (IWQoS)*.

2019   Kian Mirjalali, **Seyed Ali Tabatabaee**, and Hamid Zarrabi-Zadeh. **Distributed Unit Clustering**. In *Proceedings of the 31st Canadian Conference on Computational Geometry (CCCG)*.

Submitted   Fangyu Gai, Jianyu Niu, Mohammad Jalalzai, **Seyed Ali Tabatabaee**, and Chen Feng. **A Secure Sidechain for Decentralized Trading in Internet of Things**. Submitted to *the IEEE Internet of Things Journal* on June 4, 2022.

Expected   Kian Mirjalali, **Seyed Ali Tabatabaee**, and Hamid Zarrabi-Zadeh. **Distributed Unit Clustering in Fixed Dimensions**. In Preparation for Submission to a Journal.

Honors and Awards

2021 – 2025   The **President's Academic Excellence Initiative Ph.D. Award** from **UBC**
2021 – 2025   The **Faculty of Science Ph.D. Tuition Award** from **UBC**

2020 – 2021	The **Mitacs Accelerate Award** **(3 Units)**
2019 – 2021	The **Special UBC Graduate Scholarship** - **Blockchain@UBC** **Graduate Student Award**
2019 – 2025	The **International Tuition Award** from **UBC**
2014 – 2019	The **Grant for Undergraduate Studies** from **Iran's National Elites Foundation**
2013	**Gold Medal** in the **Iranian National Olympiad in Informatics (INOI)**
2013	**1st Place** in the 7th Hellinet Programming Contest by the **National Organization for Development of Exceptional Talents (NODET)**
2012	**1st Place** in the 2nd Salamcup Programming Contest
2012	**Bronze Medal** in the **Iranian National Olympiad in Informatics (INOI)**

Research Experience

Research Assistant

2021 – 2025	**The University of British Columbia** Research in the area of algorithms supervised by Dr. William Evans
2019 – 2021	**The University of British Columbia** Research on transaction relay in privacy-focused blockchains and a novel BFT-based sidechain construction supervised by Dr. Ivan Beschastnikh and Dr. Chen Feng
2017 – 2019	**Sharif University of Technology** Research on the unit clustering problem in a distributed setting supervised by Dr. Hamid Zarrabi-Zadeh

Research Intern

Summer 2022	**The University of Zurich** Research on Bitcoin consensus without block rewards and centralization in PoS blockchains supervised by Dr. Claudio J. Tessone
2020 – 2021	**Aquanow** Research on transaction relay in privacy-focused blockchains
Summer 2020	**Peer Social** Research on the scalability of a decentralized social network application
Summer 2018	**Aalto University** Research on blockchains and development of a decentralized marketplace for the Secure Open Federation for Internet Everywhere (SOFIE) project supervised by Dr. Pekka Nikander
Summer 2017	**IT-Orbit Co.** Research on blockchains and cryptocurrencies

Teaching Experience

Teaching Assistant

2022	**Data Structures and Algorithms for Electrical Engineers, UBC** Supervised by Dr. Geoffrey Tien (1 term)
2020 – 2022	**Basic Algorithms and Data Structures, UBC** Supervised by Dr. Cinda Heeren (1 term) and Dr. Geoffrey Tien (1 term)
2019 – 2022	**Intermediate Algorithm Design and Analysis, UBC** Supervised by Dr. Anne Condon (3 terms), Dr. Nicholas Harvey (1 term), and Dr. Patrice Belleville (1 term)
2018	**Discrete Structures, SUT** Supervised by Dr. Mohammad Ali Abam (1 term) and Dr. Hamid Zarrabi-Zadeh (1 term)

2017 – 2018	**Theory of Languages and Automata, SUT** Supervised by Dr. Arash Ahadi (1 term) and Dr. Ali Movaghar (1 term)
2017 – 2018	**Artificial Intelligence, SUT** Supervised by Dr. Mahdieh Soleymani Baghshah (2 terms)
2016 – 2018	**Design of Algorithms, SUT** Supervised by Dr. Mohammad Ali Abam (2 terms) and Dr. Hamid Zarrabi-Zadeh (1 term)

Instructor

2013 – 2016	**Olympiad in Informatics, Top High Schools in Tehran (Salam, Danesh, Allameh Amini)** Instructor for Design of Algorithms, Programming in C++, Graph Theory, and Combinatorics

Presentations

June 2022	Presented **One Bad Apple Spoils the Bunch: Transaction DoS in MimbleWimble Blockchains** at *the 4ᵗʰ Blockchain Technology Symposium (BTS)*
May 2022	Presented **One Bad Apple Spoils the Bunch: Transaction DoS in MimbleWimble Blockchains** at *the IEEE 4ᵗʰ International Conference on Blockchain and Cryptocurrency (ICBC)*
August 2019	Presented **Distributed Unit Clustering** at *the 31ˢᵗ Canadian Conference on Computational Geometry (CCCG)*

Software Projects

Winter 2020	**World of Tulips** A fully decentralized application that virtualizes a tulip growing community
Summer 2018	**SOFIE Marketplace** A decentralized marketplace that enables the trade of different types of assets
Summer 2017	**The Supervisor** (Rahnama) A supervisor simulator system comprising eight subsystems that provide students with recommendations on scheduling, internships, accommodation, etc.

Skills

Programming	C, C++, Python, JAVA, JavaScript, Solidity, R, Git, SQL, Django, HTML, CSS, Bash, Verilog, MPI, MIPS Assembly, Prolog
Operating Systems	macOS, Linux, Windows, Android
Document Preparation	LATEX, Microsoft Office, Google Docs, LibreOffice
Languages	Persian (native), English (fluent)

Hobbies and Activities

Chess, Hiking, Basketball, Piano, Novels

Academic References

Dr. Mohammad Ali Abam, Sharif University of Technology, Iran

Dr. Ivan Beschastnikh, The University of British Columbia, Canada

Dr. William Evans, The University of British Columbia, Canada

Dr. Chen Feng, The University of British Columbia, Canada

Dr. Victoria Lemieux, The University of British Columbia, Canada

Dr. Hamid Zarrabi-Zadeh, Sharif University of Technology, Iran