

# Seyed Ali Tabatabaee

Ph.D. Candidate

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## Research Interests

**Algorithms:** Algorithmic Graph Theory, Computational Geometry, Approximation Algorithms, Distributed Algorithms, Algorithmic Game Theory, Algorithms in Bioinformatics

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

## Education

- 2021 – 2025 **Ph.D. in Computer Science**  
(Expected) [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

## Research Experience

### Research Assistant

- 2021 – 2025 [The University of British Columbia](#)  
Research on optimization with explorable uncertainty 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 2024 [The University of Edinburgh](#)  
Research on spectral clustering for graphs with hierarchical clusters supervised by Dr. He Sun
- Summer 2023 [Kyoto University](#)  
Research on fast construction of frequency difference consensus trees supervised by Dr. Jesper Jansson

- 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

- 2019 – 2025 **Teaching Assistant, UBC**  
Intermediate Algorithm Design and Analysis (5 terms), Basic Algorithms and Data Structures (3 terms), Advanced Algorithms Design and Analysis (2 terms), Data Structures and Algorithms for Electrical Engineers (2 terms), and Introduction to Theory of Computing (1 term)
- 2016 – 2018 **Teaching Assistant, SUT**  
Design of Algorithms (3 terms), Discrete Structures (2 terms), Artificial Intelligence (2 terms), and Theory of Languages and Automata (2 terms)
- 2013 – 2016 **Instructor, Top High Schools in Tehran (Salam, Danesh, and Allameh Amini)**  
Design of Algorithms, Programming in C++, Graph Theory, and Combinatorics

## Publications

- 2024 William Evans and **Seyed Ali Tabatabaee**. **Minimizing the Size of the Uncertainty Regions for Centers of Moving Entities**. In *Proceedings of the 16<sup>th</sup> Latin American Theoretical Informatics Symposium (LATIN)*.
- 2024 Jesper Jansson, Wing-Kin Sung, **Seyed Ali Tabatabaee**, and Yutong Yang. **A Faster Algorithm for Constructing the Frequency Difference Consensus Tree**. In *Proceedings of the 41<sup>st</sup> International Symposium on Theoretical Aspects of Computer Science (STACS)*.
- 2024 Arash Beikmohammadi, William Evans, and **Seyed Ali Tabatabaee**. **Fractional Bamboo Trimming and Distributed Windows Scheduling**. In *Proceedings of the 49<sup>th</sup> International Conference on Current Trends in Theory and Practice of Computer Science (SOFSEM)*.
- 2023 Fangyu Gai, Jianyu Niu, Mohammad Jalalzai, **Seyed Ali Tabatabaee**, and Chen Feng. **A Secure Sidechain for Decentralized Trading in Internet of Things**. *IEEE Internet of Things Journal (IoT-J)*.
- 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 4<sup>th</sup> 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 29<sup>th</sup> International Symposium on Quality of Service (IWQoS)*.
- 2019 Kian Mirjalali, **Seyed Ali Tabatabaee**, and Hamid Zarrabi-Zadeh. **Distributed Unit Clustering**. In *Proceedings of the 31<sup>st</sup> Canadian Conference on Computational Geometry (CCCG)*.
- Submitted William Evans and **Seyed Ali Tabatabaee**. **Perpetual Scheduling with Explorable Uncertainty**. Submitted to the 50<sup>th</sup> International Conference on Current Trends in Theory and Practice of Computer Science (SOFSEM), September 19, 2024.

- Submitted Jesper Jansson, Wing-Kin Sung, **Seyed Ali Tabatabaee**, and Yutong Yang. **A Faster Algorithm for Constructing the Frequency Difference Consensus Tree**. Submitted to *the Journal of Computer and System Sciences (JCSS)*, August 13, 2024.
- Submitted Kian Mirjalali, **Seyed Ali Tabatabaee**, and Hamid Zarrabi-Zadeh. **Massively Parallel Unit Clustering**. Submitted to *Theoretical Computer Science (TCS)*, December 28, 2022.

## 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 – 2023 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 **1<sup>st</sup> Place** in the 7<sup>th</sup> Hellinet Programming Contest by the **National Organization for Development of Exceptional Talents (NODET)**
- 2012 **1<sup>st</sup> Place** in the 2<sup>nd</sup> Salamcup Programming Contest
- 2012 **Bronze Medal** in the **Iranian National Olympiad in Informatics (INOI)**

## Presentations

- Mar 2024 Presented **Minimizing the Size of the Uncertainty Regions for Centers of Moving Entities** at the 16<sup>th</sup> *Latin American Theoretical Informatics Symposium (LATIN)*
- Feb 2024 Presented **Fractional Bamboo Trimming and Distributed Windows Scheduling** at the 49<sup>th</sup> *International Conference on Current Trends in Theory and Practice of Computer Science (SOFSEM)*
- Jun 2022 Presented **One Bad Apple Spoils the Bunch: Transaction DoS in MimbleWimble Blockchains** at the 4<sup>th</sup> *Blockchain Technology Symposium (BTS)*
- May 2022 Presented **One Bad Apple Spoils the Bunch: Transaction DoS in MimbleWimble Blockchains** at the *IEEE 4<sup>th</sup> International Conference on Blockchain and Cryptocurrency (ICBC)*
- Aug 2019 Presented **Distributed Unit Clustering** at the 31<sup>st</sup> *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  $\LaTeX$ , Microsoft Office, Google Docs, LibreOffice  
Preparation  
Languages Persian (native), English (fluent)

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## References

**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