

# Shabnam Ghasemirad

✉ shabnam.ghasemirad@inf.ethz.ch | 📞 +41 77 967 47 44 | 🏠 shabnamrad.github.io

## Research Interests and Areas of Expertise

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Verification, Formal Methods & Foundations of Programming

Databases, Data Management & Distributed Systems

## Education

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### ETH Zurich

Doctorate in Computer Science, Information Security Group  
Supervised by Prof. David Basin and Dr. Christoph Sprenger

*Nov. 2022 - Present*

### ETH Zurich

M.Sc. Computer Science  
Major: Secure and Reliable Systems, Minor: Data Management.

*Sep. 2020 - Nov. 2022*  
*GPA: 5.49/6*

Related Courses: Formal Methods in Information Security (6), Program Verification (5.75),  
Data Management Systems (5.75), Informal Methods (5.75), Information Security Lab (6).

### Sharif University of Technology

B.Sc. Computer Engineering, Major: Software.

*Sep. 2015 - Feb. 2020*  
*GPA: 19.01/20*

## Publications

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### Verlso: Verifiable Isolation Guarantees for Database Transactions

Shabnam Ghasemirad, Si Liu, Christoph Sprenger, Luca Multazzu, and David Basin  
Proc. VLDB Endow., 2025

### Pushing the Limit: Verified Performance-Optimal Causally-Consistent Database Transactions

Shabnam Ghasemirad, Christoph Sprenger, Si Liu, Luca Multazzu, and David Basin  
In Tools and Algorithms for the Construction and Analysis of Systems - 31st International Conference, TACAS 2025, Held as Part of the European Joint Conferences on Theory and Practice of Software, ETAPS 2025, 2025

## Research Projects and Experience

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### Master's Thesis, ETH Zürich

Mechanized Data Consistency Models for Distributed Database Transactions  
Supervisors: Dr. Christoph Sprenger, Dr. Si Liu, Prof. David Basin

*Spring-Fall 2022*  
*Grade: 6*

### MSc Semester Project, ETH Zürich

Modular Reasoning about Distributed Systems in Igloo  
Supervisors: Dr. Christoph Sprenger, Dr. Si Liu, Prof. David Basin

*Spring 2021*

- Bachelor's Thesis, Sharif University of Technology** *Fall 2019*  
 Strategy Design for Expert Aggregation to Predict Stock Market  
 Supervisor: Dr. MohammadAmin Fazli, Algorithms & Systems Design Group
- Research Intern, Max Planck Institute for Software Systems** *Summer 2019*  
 A Fine-Grained Concurrent Queue Verification in Iris/Coq Separation Logic Framework  
 Supervisor: Prof. Derek Dreyer, Foundations of Programming Group
- Research Intern, EPFL (École Polytechnique Fédérale de Lausanne)** *2018*  
 An Improved Materialization Algorithm for DBToaster  
 Supervisor: Prof. Amir Shaikhha, Data Analysis Theory and Applications Lab

## Teaching Experience

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- Information Security (Head TA since 2025, exercises and exam) *Spring 2024 & 2025*
- Security Engineering (exercise sessions & exam creation) *Fall 2023 & 2024*
- Computer-Aided Modeling & Reasoning (exercises & course project) *Spring 2023*
- Data Structures & Algorithms, Compiler Design, Computer Networks, *2017-2020*  
 System Analysis, Game Theory, Probability & Statistics (student TA experiences)

## Honors and Awards

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- SNSF (Swiss National Science Foundation) grant's Employee (PhD Candidate)  
 for the Project "Formal Verification of Isolation Guarantees in Database Systems" *2024*
- Awarded a Direct Doctorate position and scholarship at ETH Zürich *2020*
- Ranked **8th** in Cumulative GPA in the Department of Computer Engineering *2019*  
*Among about 130 B.Sc.students of the department, class of 2019 students*
- Ranked **10th** in National Student Olympiad for Computer Engineering *2019*
- Ranked **81st** in Iranian National University Entrance Exam for B.Sc degree *2015*  
*Among about 300,000 students majoring in Mathematics & Physics program*
- Awarded fellowship of Iran's National Elites Foundation *2015*

## Skills

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- **Languages:** English(C1, TOEFL:109), German(B2), French(A2), Persian(Native)
- **Theorem Provers:** Isabelle/HOL (expert), Tamarin (proficient), Rocq (Intermediate)
- **Database Systems:** SQL & RDBMSs (PostgreSQL, MySQL, SQLite), JSONiq, Spark
- **Programming Languages:** Java, Scala, OCaml, Python, C/C++
- **Web & Tools:** Git, L<sup>A</sup>T<sub>E</sub>X, Django, ReactJs, JavaScript, HTML, CSS/SCSS
- **Arts and Sports:** Professional Classical Violin, Piano, Choir, Ballet