

Shabnam Ghasemirad

✉ shabnam.ghasemirad@inf.ethz.ch | 🏠 shabnamrad.github.io

Research Interests and Areas of Expertise

Verification, Formal Methods & Foundations of Programming

Databases, Data Management & Distributed Systems

Education

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

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

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

- 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

- 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

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