





# Mehrdad Karrabi

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## Education

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**Ph.D. in Computer Science** **Sep. 2021 - Expected Aug. 2026**  
**Institute of Science and Technology Austria (ISTA)** *Klosterneuburg, Austria*

- Ph.D. candidate, working under supervision of Prof. Krishnendu Chatterjee.

**B.Sc. in Computer Engineering** **Sep. 2016 - Jul. 2021**  
**Sharif University of Technology** *Tehran, Iran*

- Sharif is the top university in Iran and the most competitive. The acceptance rate is  $< 0.1\%$ .
- GPA: 18.26/20 (The GPA average of students in the university and the department are 15.41 and 16.24, respectively.)

**Diploma in Mathematics and Physics** **Sep. 2012 - May 2016**  
**Allameh Helli 2 High School** *Malard, Iran*

- Diploma GPA: 19.80/20

## Research Interests

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Formal Methods, Blockchain Security, AI Safety, Algorithms, Game Theory, Program Verification

## Publications\*

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### Quantified Linear and Polynomial Arithmetic Satisfiability via Template-based Skolemization

Krishnendu Chatterjee, Ehsan Kafshdar Goharshady, Mehrdad Karrabi, Harshit J Motwani, Maximilian Seeliger, Đorđe Žikelić  
*in AAAI'25* ([arxiv](#))

### Fully Automated Selfish Mining Analysis in Efficient Proof Systems Blockchains

Krishnendu Chatterjee, Amirali Ebrahimzadeh, Mehrdad Karrabi, Krzysztof Pietrzak, Michelle Yeo, Đorđe Žikelić  
*in PODC'24* ([arxiv](#))

### Solving Robust Long-run Average Reward MDPs via Stochastic Games

Krishnendu Chatterjee, Ehsan Kafshdar Goharshady, Mehrdad Karrabi, Petr Novotný, Đorđe Žikelić  
*in IJCAI'24* ([arxiv](#))

### Fully Automated Selfish Mining Analysis in Efficient Proof Systems Blockchains

Krishnendu Chatterjee, Amirali Ebrahimzadeh, Mehrdad Karrabi, Krzysztof Pietrzak, Michelle Yeo, Đorđe Žikelić  
*in PODC'24* ([arxiv](#))

### Game Dynamics and Equilibrium Computation in the Population Protocol Model

Dan Alistarh, Krishnendu Chatterjee, Mehrdad Karrabi, John Lazarsfeld  
*in PODC'24* ([arxiv](#))

### Sound and Complete Witnesses for Template-based Verification of LTL Properties on Polynomial Programs

Krishnendu Chatterjee, Amir Kafshdar Goharshady, Ehsan Kafshdar Goharshady, Mehrdad Karrabi, Đorđe Žikelić  
*in FM'24* ([arxiv](#))

### PolyHorn: A Polynomial Horn Clause Solver

Krishnendu Chatterjee, Amir Kafshdar Goharshady, Ehsan Kafshdar Goharshady, Mehrdad Karrabi, Milad Saadat, Đorđe Žikelić ([arxiv](#))

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\* Alphabetic order

## Honors and Awards

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- **Distinguished paper award** in FM'24 for paper "*Sound and Complete Witnesses for Template-based Verification of LTL Properties on Polynomial Programs*". **Sep. 2024**
- **Ranked 7<sup>th</sup>** among 34 000+ in the Iranian National University Entrance Examination (Concours) **Sep. 2016**
- **Iran's National Elite Foundation Fellowship** **2016 - present**

## Internships

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**Institute of Science and Technology Austria (ISTA)**, Klosterneuburg, Austria **Jun. 2020 - Aug. 2020**  
Supervisors: Prof. Krishnendu Chatterjee and Prof. Amir Kafshdar Goharshady

The aim of the project was to solve the Buchi objective on linear and polynomial programs using algebraic geometry theorems. This project was continued during my Ph.D. at ISTA.

## Professional Activities

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- Mathematical Foundations of Computer Science 2024 (MFCS'24) PC member
- Formal Methods 2024 (FM'24) Artifact Evaluation PC member

## Skills

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- **Programming Skills:**
  - Advanced: Python, Java, C-sharp
  - Intermediate: Racket, C, Android
  - Familiar: C++, Verilog
- **Formal Method tools:** PRISM, STORM, SMT-LIB
- **Operating Systems:** Advanced: Windows, Linux (Ubuntu)
- **General Skills:** Git,  $\LaTeX$ , SQL

## Languages

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- **Persian** [Native]
- **English** [Proficient]
- **German** [Basic] - A1