ege.sarac@cispa.de
egesarac.github.io
Google Scholar profile
DBLP profile

N. Ege Saraç – Curriculum Vitae

November 17, 2025

Research Areas

Foundations of scalable formal methods in *quantitative verification*, *runtime monitoring*, and *hyperproperties*, with applications to security-critical and AI-enabled systems

Education

2019–2025 **PhD** in Computer Science, *Institute of Science and Technology Austria (ISTA)*, Klosterneuburg
Thesis: *A Monitoring-oriented Theory and Classification of Quantitative Specifications*
Supervisor: Thomas A. Henzinger

2014–2019 **BSc** in Computer Science (Minor: Mathematics), *Sabancı University*, Istanbul
Rank: 1st out of 544

Employment

2025–now **Postdoctoral researcher**, *CISPA Helmholtz Center for Information Security*, Saarbrücken
Supervisor: Bernd Finkbeiner

Research Visits and Experience

Jul-Oct 2023 *Austrian Institute of Technology (AIT)* with Dejan Ničković

Jun-Sep 2017 *Institute of Science and Technology Austria (ISTA)* with Thomas A. Henzinger

2018–2019 *Sabancı University* with Kamer Kaya and Hüsnü Yenigün

Awards and Recognition

2025 Research paper selected for post-conference journal special issue, *CONCUR 2025*

2025 Chosen as one of 24 participants from 10 Helmholtz Centers, *COMPASS Mentoring Program*

2025 Shortlisted for the ISTA Outstanding PhD Thesis Award (awarded to top 8% of all theses), *ISTA*

2024 Research paper selected for post-conference journal special issue, *RV 2024*

2023 Research paper selected for post-conference journal special issue, *CONCUR 2023*

2019 Sakıp Sabancı Award for the Highest Ranking Student, *Sabancı University*

2018 Logic Mentoring Workshop Student Travel Grant, *ACM SIGLOG*

2017 Scholarship for Student Researchers, *Österreichischer Austauschdienst (OeAD)*

2014 Merit-based full scholarship for BSc studies, *Sabancı University*

Publications (*: first or corresponding author)

Summary 14 publications in total (12 conference + 2 journal)
12 as a first or corresponding author, 3 selected for journal specials issues,
and 2 papers co-authored with mentees

Journal Articles

[LMCS'25] **Safety and Liveness of Quantitative Properties and Automata**. Udi Boker, Thomas A. Henzinger, Nicolas Mazzocchi, N. Ege Saraç*. *Logical Methods in Computer Science*, Volume 21, Issue 2, 2025.

[ESWA'21] **Boosting Expensive Synchronizing Heuristics**. N. Ege Saraç*, Ö. Faruk Altun, K. Tolga Atam, Sertaç Karahoda, Kamer Kaya, Hüsnü Yenigün. *Expert Systems with Applications*, Volume 167, 2021.

Conference Proceedings

[CONCUR'25] **Quantitative Language Automata**. Thomas A. Henzinger, Pavol Kebis, Nicolas Mazzocchi, N. Ege Saraç*. *36th Intl. Conf. on Concurrency Theory*, 2025. Selected for LMCS special issue.

[TACAS'25] **Automating the Analysis of Quantitative Automata with QuAK**. Marek Chalupa, Thomas A. Henzinger, Nicolas Mazzocchi, N. Ege Saraç*. *31st Intl. Conf. on Tools and Algorithms for the Construction and Analysis of Systems*, 2025.

[ISoLA'24] **QuAK: Quantitative Automata Kit** (invited paper). Marek Chalupa, Thomas A. Henzinger, Nicolas Mazzocchi, N. Ege Saraç*. *12th Intl. Symp. on Leveraging Applications of Formal Methods*, 2024.

[RV'24] **Approximate Distributed Monitoring Under Partial Synchrony**. Borzoo Bonakdarpour, Anik Momtaz, Dejan Ničković, N. Ege Saraç*. *24th Intl. Conf. on Runtime Verification*, 2024. Selected for STTT special issue.

[CONCUR'24] **Strategic Dominance: A New Preorder for Nondeterministic Processes**. Thomas A. Henzinger, Nicolas Mazzocchi, N. Ege Saraç*. *35th Intl. Conf. on Concurrency Theory*, 2024.

[CONCUR'23] **Safety and Liveness of Quantitative Automata**. Udi Boker, Thomas A. Henzinger, Nicolas Mazzocchi, N. Ege Saraç*. *34th Intl. Conf. on Concurrency Theory*, 2023. Selected for LMCS special issue.

[ICALP'23] **Regular Methods for Operator Precedence Languages**. Thomas A. Henzinger, Pavol Kebis, Nicolas Mazzocchi, N. Ege Saraç. *50th Intl. Coll. on Automata, Languages and Programming*, 2023.

[FoSSaCS'23] **Quantitative Safety and Liveness**. Thomas A. Henzinger, Nicolas Mazzocchi, N. Ege Saraç*. *26th Intl. Conf. on Foundations of Software Science and Computation Structures*, 2023.

[RV'22] **Abstract Monitors for Quantitative Specifications**. Thomas A. Henzinger, Nicolas Mazzocchi, N. Ege Saraç*. *22nd Intl. Conf. on Runtime Verification*, 2022.

[LICS'21] **Quantitative and Approximate Monitoring**. Thomas A. Henzinger, N. Ege Saraç*. *36th Ann. ACM/IEEE Symp. on Logic in Computer Science*, 2021.

[RV'20] **Monitorability Under Assumptions** (invited paper). Thomas A. Henzinger, N. Ege Saraç*. *20th Intl. Conf. on Runtime Verification*, 2020.

[LICS'18] **A Theory of Register Monitors**. Thomas Ferrère, Thomas A. Henzinger, N. Ege Saraç. *33rd Ann. ACM/IEEE Symp. on Logic in Computer Science*, 2018.

Scientific Talks

Quantitative Language Automata

Oct 2025 19th Intl. Conf. on Reachability Problems (RP)

Aug 2025 36th Intl. Conf. on Concurrency Theory (CONCUR)

Approximate Distributed Monitoring under Partial Synchrony

Oct 2024 24th Intl. Conf. on Runtime Verification (RV)

Oct 2024 AIT Dependable Systems Engineering Seminar Series

Safety and Liveness of Quantitative Properties and Automata

Mar 2025 RWTH Aachen Software Modeling and Verification Group Seminar Series

Feb 2025 CISPA Reactive Systems Group Seminar Series

Jan 2025 TU Dresden Algebraic and Logic Foundations of Computer Science Seminar Series

Sep 2024 18th Intl. Conf. on Reachability Problems (RP)

Sep 2024 TU Wien CPS Research Unit Seminar Series

Sep 2024 16th Alpine Verification Meeting (AVM)

Jun 2024 DEVINE Research Team (Inria and IRISA) Formal Methods Seminar

Oct 2023 AIT Dependable Systems Engineering Seminar Series

Apr 2023 26th Intl. Conf. on Foundations of Software Science and Computation Structures (FoSSaCS)

Advancing the Theory of Quantitative Algorithmic Monitoring

Sep 2022 FBK Embedded Systems Seminar Series

Apr 2022 IMT Lucca It-Matters Seminar Series

Quantitative and Approximate Monitoring

Jul 2021 36th Ann. ACM/IEEE Symp. on Logic in Computer Science (LICS)

Jun 2021 ISTA & TU Wien FORSYTE Joint Seminar Series

Monitorability Under Assumptions

Dec 2020 ISTA & TU Wien FORSYTE Joint Seminar Series

Teaching Experience

TU Munich **Functional Programming & Verification** (Head Teaching Assistant): Spring 2026 (planned)

ISTA **Formalisms Every Computer Scientist Should Know** (Teaching Assistant): Fall 2023
Foundations of Model Checking (Guest Lecturer): Spring 2023
Formal Methods: Algorithmic Approaches (Teaching Assistant): Spring 2022

Sabancı Univ. **Algorithms** (Teaching Assistant): Fall 2018–Spring 2019
Mathematics & Natural Sciences (Workshop & Study Moderator): Spring 2015–Spring 2018

Mentoring Experience

Mentored Students

2025 **Harun Yılmaz**, *ISTA*: Supervising a project for a conference submission

2024, 2022 **Pavol Kebis**, *ISTA*: Co-authored two conference publications, one selected for special issue

Additional Experience

2025 **Alumni Speaker** at the Graduate School Welcome Event, *ISTA*

2023, 2020 **Student Mentor** for incoming PhD students, *ISTA*

Professional Service

Organizer HYPER 2026 Workshop (co-located with FLoC/CAV 2026)

Program committee CONCUR 2026, VMCAI 2026 (AEC), CAV 2025 (AEC), CAV 2024 (AEC)

Reviewer *Conferences:* CONCUR 2025, RV 2024 (x2), MFCS 2024, FSTTCS 2023, ATVA 2023, CONCUR 2023
Journals: Innovations in Systems and Software Engineering
Books: Principles of Systems Design (Thomas A. Henzinger Festschrift)

Pre-screener for PhD applications, *ISTA* (2024, 2023)

Maintainer of the publication database for the T. A. Henzinger Group, *ISTA* (2020–2025)

Professional Development

2026–2027 COMPASS Mentoring Program, *Helmholtz Association*

2025 ProLehre Onboarding – Effective Teaching, *TU Munich*

2022 Basics in Didactics – Teaching and Learning in Higher Education, *ISTA*

2019 Science Research Writing – A Technical Introduction, *ISTA*

Open-Source Software

2025–now **QuAK**: C++ library and CLI tool for quantitative automata analysis and monitoring

2023–2024 **ApxDistMon**: Prototype for novel approximate monitoring algorithms for distributed systems

2019 **SyncBoost**: GPU-accelerated implementations of finite-automata synchronizing heuristics

Miscellaneous

Languages English (fluent), German (intermediate), Turkish (native)