

V.R. Sathiyararayanan

Room 606, G-26 Paul-Ehrlich-Straße
67663 Kaiserslautern, Germany
✉ sramesh@mpi-sws.org
📱 sathiyavrs.netlify.app

Education

- Sep 2022– Ongoing **Max Planck Institute for Software Systems (MPI-SWS), Kaiserslautern, Germany,**
*PhD on Reasoning about Liveness of Large-Scale Systems**, Advisor: Prof. Rupak Majumdar.
- Dec 2020– July 2022 **Chennai Mathematical Institute (CMI), Chennai, India,**
Master of Science (Computer Science), GPA – 9.81/10 (🏆).
- June 2013– May 2017 **National Institute of Technology, Trichy, India,**
Bachelor of Technology (Computer Science and Engineering), GPA – 7.98/10.

Research Publications^{1,2}

- POPL 2024 **Positive Almost-Sure Termination: Complexity and Proof Rules,**
Rupak Majumdar and V.R.S.
Established complexity bounds and complete transfinite proof rules for reasoning about expected runtimes of probabilistic programs under nondeterminism.
- L/CSS 2024 & ACC 2025 **Necessary and Sufficient Certificates for Almost-Sure Reachability,**
Rupak Majumdar, Sadegh Soudjani, and V.R.S.
Developed Lyapunov-inspired proof rules for verifying probability-1 reachability in stochastic dynamical systems, with accompanying semi-completeness guarantees
- J-P Katoen's Festschrift **Sound and Complete Techniques for Reasoning about Termination,**
Rupak Majumdar and V.R.S.
Surveyed termination behavior in expressive programming models with nondeterminism and probabilistic choice, providing computability classifications and complete proof systems for reasoning about termination.
- POPL 2025 **Sound and Complete Proof Rules for Probabilistic Termination,**
Rupak Majumdar and V.R.S.
Developed the *first* sound and complete proof rules for establishing probability-1 termination and bounding termination probabilities in probabilistic and nondeterministic software systems.
- POPL 2026 **Verifying Almost-Sure Termination for Randomized Distributed Algorithms,**
Constantin Enea, Rupak Majumdar, Harshit Jitendra Motwani, and V.R.S.
Developed a proof rule to establish probability-1 termination in randomized distributed systems that make fairness assumptions; integrated SMT-based validation of proof certificates for challenging randomized consensus protocols.

Industry Experience

- June 2017– Dec 2020 **Senior Software Engineer, SAMSUNG R&D INSTITUTE, Bangalore, India.**
- Implemented components of an IoT framework interfacing with core Linux daemons in C/C++
 - Maintained Firmware Over-The-Air update scripts for smart watches
 - Developed a lightweight Voice Activity Detection engine in Python
 - Developed web portal facilitating analysis of diagnostic data using HTML5, CanvasJS and Sqlite

Achievements

2017 **ICPC Regionals, ACM India.**
Ranked 26 among 200 teams.

2022 **Gold Medal, CMI, India.**
For Outstanding Academic Performance.

References

Prof. Rupak Majumdar,
Scientific Director, MPI-SWS,
rupak@mpi-sws.org.

Services

2025 *STACS Subreviewer.*
2026 *STACS Subreviewer.*

¹ Author order is alphabetical and does not indicate contribution.
² All conference papers were presented by V.R.S. at their respective venues.

* Working title.