Curriculum Vitae

Kaushik Mallik

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Area of Research

- Verification and control of hybrid system (with a focus on scalable abstraction mechanisms for the purpose of controller synthesis).
- Theory and application of reactive systems.

Education

July 2016-present	Doctoral student (Computer Science), Max Planck Institute for Software Systems, Germany. Advisor: Prof. Rupak Majumdar.	
June 2015	M.Tech in System and Control, (in First division with distinction), Department of Electrical Engineering, Indian Institute of Technology Roorkee, Roorkee, India.	CGPA: 9.692 (maximum grade 10).
July 2012	B.Tech in Electrical Engineering, Meghnad Saha Institute of Technology, (under West Bengal University of Technology), Kolkata, India.	CGPA: 8.62 (maximum grade 10).

Academic Internships

August to November, 2019	With Claire Tomlin, University of California, Berkeley, USA. Worked on abstraction-based controller synthesis for black-box systems.
October to December, 2015	With Rupak Majumdar, MPI-SWS, Germany. Worked on compositional abstraction-based techniques for synthesis of controllers for continuous systems.

Awards and Scholarships

1. IIT Roorkee, Late Smt. Uma Goyal W/O Sri Uday Shankar Goyal Memorial cash prize for obtaining highest CGPA in M.Tech. in Electrical Engineering Department, 2015.
2. Deutscher Akademischer Austausch Dienst (DAAD) Germany, IIT Master Sandwich Scholarships for carrying out M.Tech dissertation in TU-Berlin, September 2014-March 2015.
3. Ministry of Human Resource Development (MHRD) India, for pursuing M.Tech, 2013-2015.
4. Ministry of Human Resource Development (MHRD) India, for outstanding result in Higher Secondary Examination, 2008.

List of Publications:

Journals and Book Chapters:

1. "Abstraction-Based Control Design (Lecture Notes)" with Rupak Majumdar and Anne-Kathrin Schmuck, Engineering Secure and Dependable Software Systems 53 (2019): 117.

2. "Compositional Synthesis of Finite-State Abstractions" with Rupak Majumdar, Anne-Kathrin Schmuck and Sadegh Soudjani, IEEE Transactions on Automatic Control, 2018.

3. "Efficiency and cost optimized design of an induction motor using genetic algorithm" with Srikumar Mallik, Amal Barman, Dipten Maiti, Sujit K Biswas, Nirmal K Deb, and Sujay Basu, IEEE Transactions on Industrial Electronics, 2017.

Invited Papers:

1. "Lazy Abstraction-Based Controller Synthesis" with Kyle Hsu, Rupak Majumdar, and Anne-Kathrin Schmuck, ATVA '19.

Peer-reviewed conferences and workshops:

1. "Symbolic Controller Synthesis for Büchi Specifications on Stochastic Systems" with Rupak Majumdar and Sadegh Soudjani, HSCC '20 (was nominated for the ACM SIGBED Best Paper Award).

2. "Incremental Abstraction Computation for Symbolic Controller Synthesis in a Changing Environment" with Yunjun Bai, Anne-Kathrin Schmuck, Damien Zufferey, and Rupak Majumdar, CDC '19.

3. "Lazy Abstraction-Based Control for Safety Specifications" with Kyle Hsu, Rupak Majumdar and Anne-Kathrin Schmuck, CDC '18.

4. "Lazy Abstraction-Based Control for Reachability" with Kyle Hsu, Rupak Majumdar and Anne-Kathrin Schmuck.

5. "Multi-Layered Abstraction-Based Controller Synthesis for Continuous-Time Systems" with Kyle Hsu, Rupak Majumdar and Anne-Kathrin Schmuck, HSCC '18.

6. "Compositional Construction of Finite State Abstractions for Stochastic Control Systems" with Rupak Majumdar, Sadegh Esmaeil Zadeh Soudjani and Anne-Kathrin Schmuck, CDC '17.

7. "Supervisory controller synthesis for decomposable deterministic context free specification languages" with Anne-Kathrin Schmuck, WODES '16.

Preprints:

1. "Accurate Abstractions for Controller Synthesis with Non-uniform Disturbances" with Yunjun Bai, Anne-Kathrin Schmuck, Damien Zufferey, and Rupak Majumdar, 2019.

Service to Profession:

- **Review activity in conferences:** CDC {'17, '18, '19, '20}, ACC '19, ECC '19, HSCC {'18, '19}, ATVA '19, CAV '19.
- **Review activity in journals:** IEEE TAC, IEEE L-CSS, SIAM SICON, Springer DEDS, Elsevier NAHS.

References: available upon request.