

Umang Mathur

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EDUCATION

University of Illinois at Urbana-Champaign, Urbana-Champaign, IL, USA
Ph.D., Department of Computer Science
Cumulative GPA of 3.97/4.0

Aug 2015 – Present

Indian Institute of Technology - Bombay, Mumbai, India
B.Tech. (Hons.), Department of Computer Science and Engineering
Cumulative GPA of 9.18/10.0
Minor degree in Physics

Jul 2010 – Aug 2014

RESEARCH INTERESTS

Formal Methods, Programming Languages, Verification, Concurrency, Program Synthesis, Automata Theory, Logic, Cyber-Physical Systems, Software Engineering, Software Testing

PUBLICATIONS

Decidable Verification of Uninterpreted Programs, POPL 2019
P. Madhusudan, Umang Mathur, Mahesh Viswanathan

Data Race Detection on Compressed Traces, ESEC/FSE 2018
Dileep Kini, Umang Mathur, Mahesh Viswanathan

What Happens After the First Race? Enhancing the Predictive Power of Happens-Before Based Dynamic Race Detection, OOPSLA 2018
Umang Mathur, Dileep Kini, Mahesh Viswanathan

Decidable Fragment of Second Order Logic With Applications to Program Synthesis, CSL 2018
P. Madhusudan, Umang Mathur, Shambwaditya Saha, Mahesh Viswanathan

Controller Synthesis Made Real: Reach-avoid Specifications and Linear Dynamics, CAV 2018
Chuchu Fan, Umang Mathur, Sayan Mitra, Mahesh Viswanathan

Dynamic Race Prediction in Linear Time, PLDI 2017
Dileep Kini, Umang Mathur, Mahesh Viswanathan

Look for the Proof to Find the Program: Decorated-Component-Based Program Synthesis, CAV 2017
Adria Gascon, Ashish Tiwari, Brent Carmer, Umang Mathur

Exact Quantitative Probabilistic Model Checking Through Rational Search*, FMCAD 2017
Matthew S. Bauer, Umang Mathur, Rohit Chadha, A. Prasad Sistla, Mahesh Viswanathan
*Invited to appear in FMSD, special issue

Weak Singular Hybrid Automata, FORMATS 2014
Shankara Narayanan Krishna, Umang Mathur, Ashutosh Trivedi

Computing Information Flow Using Symbolic Model-Checking, FSTTCS 2014
Rohit Chadha, Umang Mathur, Stefan Schwoon

WORK EXPERIENCE	<p>Senior Quantitative Researcher, WorldQuant Research, India Jul 2014 – Jul 2015</p> <p>Responsible for conceptualizing and implementing quantitative strategies resulting in excess returns (<i>alpha</i>). Concentrated mainly on seeking low turnover quality <i>alphas</i> for trading in the currency market based on canonical and alternative forex evaluation models.</p>	
INTERNSHIPS	<p>Software Engineering Internship, Google LLC May 2018 – Aug 2018 <i>Improving Time Series Forecasting for Ads</i></p> <p>Research Internship, SRI International May 2016 – Aug 2016 <i>Efficient Program Synthesis Via Proof Search</i></p> <p>Research Internship, LaBRI, France May 2013 – Jul 2013 <i>Non-Zeno strategies for Timed Games</i></p> <p>Research Internship, LSV, ENS Cachan France May 2012 – Jul 2013 <i>Verification of Probabilistic Recursive Programs</i></p>	
AWARDS	<p>Secured 28th rank amongst more than 450000 students in IIT-JEE 2010</p> <p>Silver Medal at the 5th International Junior Science Olympiad, 2008 held in Republic of Korea</p> <p>Represented India at the 11th Asian Physics Olympiad, 2010 held in Taipei, Taiwan</p> <p>Gold Medals at the Indian National Physics and Chemistry Olympiads, 2010</p> <p>Awarded the prestigious KVPY fellowship and NTSE scholarship by the Government of India, SSTSE scholarship the Government of Rajasthan in 2008</p>	
TRAVEL GRANTS	<p>Travel grants for attending PLDI conference (2017), CAV conference (2016), Verified Trustworthy Software Systems meetings, organized by The Royal Society of London (2016), and Summer School on Formal Techniques, organized by SRI International (2016, 2017).</p>	
TEACHING EXPERIENCE	<p>Algorithms and Models of Computation, UIUC Spring 2018</p> <p>Programming Languages and Compilers, UIUC Summer 2017</p> <p>Theory of Computation, IIT Bombay Spring 2014</p> <p>Teaching Assistant - CS Labs, IIT Bombay Autumn 2013</p> <p>Teaching Assistant - Modern Physics, IIT Bombay Spring 2012</p>	
SERVICE	<p>Served on the repeatability evaluation committee of HSCC 2017</p> <p>Reviewed articles for peer-reviewed conferences : CAV (2016 - 2018), POPL 2018, FM 2018, ICALP 2017, HSCC 2017, FORTE (2016 & 2018), FSTTCS (2014 & 2017), and FORMATS 2016.</p> <p>Head, Department Academic Mentorship Program, IIT Bombay (2013-2014)</p>	
TOOLS	<p>RAPID – https://github.com/umangm/rapid/ Framework for implementing dynamic analysis for concurrent programs</p> <p>RATIONALSEARCH – https://publish.illinois.edu/rationalmodelchecker/ Tool for exact quantitative model checking of probabilistic systems</p> <p>MOPEDQLEAK – https://github.com/umangm/mopedqleak/ Tool for computing information leakage in probabilistic programs</p>	
TECHNICAL SKILLS	<p>Programming Languages C, C++, Java, Python, OcaML</p> <p>Miscellaneous MySQL, HTML, CSS, L^AT_EX Scheme, Prolog</p>	