

# Umang Mathur

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EDUCATION **University of Illinois at Urbana-Champaign**, Urbana-Champaign, IL, USA  
Ph.D., Department of Computer Science Aug 2015 – Present

**Indian Institute of Technology - Bombay**, Mumbai, India  
B.Tech. (Hons.), Department of Computer Science and Engineering Jul 2010 – Aug 2014  
Minor degree in Physics

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

PUBLICATIONS **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	<b>Senior Quantitative Researcher, WorldQuant Research, India</b> 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.	Jul 2014 – Jul 2015
INTERNSHIPS	<b>Research Internship, SRI International</b> <i>Efficient Program Synthesis Via Proof Search</i>	May 2016 – Aug 2016
	<b>Research Internship, LaBRI, France</b> <i>Non-Zeno strategies for Timed Games</i>	May 2013 – Jul 2013
	<b>Research Internship, LSV, ENS Cachan France</b> <i>Verification of Probabilistic Recursive Programs</i>	May 2012 – Jul 2013
AWARDS	Secured 28 <sup>th</sup> rank amongst more than 450000 students in IIT-JEE 2010 Silver Medal at the 5 <sup>th</sup> <b>International Junior Science Olympiad</b> , 2008 held in Republic of Korea Represented India at the 11 <sup>th</sup> <b>Asian Physics Olympiad</b> , 2010 held in Taipei, Taiwan Gold Medals at the <b>Indian National Physics and Chemistry Olympiads</b> , 2010 Awarded the prestigious <b>KVPY</b> fellowship and <b>NTSE</b> scholarship by the Government of India, <b>SSTSE</b> scholarship the Government of Rajasthan in 2008	
TRAVEL GRANTS	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).	
TEACHING EXPERIENCE	Algorithms and Models of Computation, UIUC Programming Languages and Compilers, UIUC Theory of Computation, IIT Bombay Teaching Assistant - CS Labs, IIT Bombay Teaching Assistant - Modern Physics, IIT Bombay	Spring 2018 Summer 2017 Spring 2014 Autumn 2013 Spring 2012
SERVICE	Served on the repeatability evaluation committee of HSCC 2017 Reviewed articles for peer-reviewed conferences : CAV (2016 - 2018), FM 2018, ICALP 2017, HSCC 2017, FORTE (2016 & 2018), FSTTCS (2014 & 2017), and FORMATS 2016. Head, Department Academic Mentorship Program, IIT Bombay (2013-2014)	
TOOLS	<b>RAPiD</b> – <a href="https://publish.illinois.edu/race-prediction/">https://publish.illinois.edu/race-prediction/</a> Tool for detecting Data Races in Java Programs <b>RATIONALSEARCH</b> – <a href="https://publish.illinois.edu/rationalmodelchecker/">https://publish.illinois.edu/rationalmodelchecker/</a> Tool for Exact Quantitative Model Checking of probabilistic systems <b>MOPEDQLEAK</b> – <a href="https://sites.google.com/site/mopedqleak/">https://sites.google.com/site/mopedqleak/</a> Tool for Computing Information Leakage in Probabilistic Recursive Programs	
TECHNICAL SKILLS	<b>Programming Languages</b> C, C++, Java, Python, Haskell, Perl, OcaML <b>Miscellaneous</b> MySQL, HTML, CSS, L <sup>A</sup> T <sub>E</sub> X Scheme, Prolog	