

SUGUMAN BANSAL (she/her/hers)

NSF/CRA CI Postdoctoral Fellow
Dept. of Computer and Information Sciences
University of Pennsylvania

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EMPLOYMENT

Postdoctoral Researcher in COMPUTER AND INFORMATION SCIENCES	July 20 - Present
NSF/CRA Computing Innovation (CI) Fellow	Sept. 20 - Present
University of Pennsylvania , Philadelphia, PA	
Mentor: Prof. Rajeev Alur	

EDUCATION

PhD in COMPUTER SCIENCE, Rice University , Houston, TX	Sept. 16 - June 20
Thesis: Automata-Based Quantitative Verification	
Advisor: Prof. Moshe Y. Vardi	
MS in COMPUTER SCIENCE, Rice University , Houston, TX	Aug. 14 - Sept. 16
Thesis: Algorithmic Analysis of Regular Repeated Games	
Advisor: Prof. Swarat Chaudhuri	
BSc (with Honors) in MATHEMATICS and COMPUTER SCIENCE	Aug. 11 - May 14
Chennai Mathematical Institute (CMI) , Chennai, India	

ALL PUBLICATIONS

[Under Review] [A Framework for Transforming Specifications in Reinforcement Learning](#)
Rajeev Alur, Suguman Bansal, Osbert Bastani, and Kishor Jothimurugan

Refereed Conference Publications

9/11 accepted publications at premier venues identified by CSRankings with adjusted author score of 2.65

[CAV 22] [Specification-Guided Learning of Nash Equilibria with High Social Welfare](#)
Kishor Jothimurugan, Suguman Bansal, Osbert Bastani, and Rajeev Alur
In Proc. of International Conference on Computer-Aided Verification (CAV) 2022

[AAAI 22] [On Synthesis from Satisficing and Temporal Goals](#)
Suguman Bansal, Lydia Kavraki, Moshe Y. Vardi, and Andrew Wells
In Proc. of AAAI Conference on AI (AAAI) 2022

[NeurIPS 21] [Compositional Reinforcement Learning from Logical Specifications](#)
Kishor Jothimurugan, Suguman Bansal, Osbert Bastani, and Rajeev Alur
In Proc. of Advances in Neural Information Processing Systems (NeurIPS) 2021

[CAV 21] [Adapting Behaviors via Reactive Synthesis](#)
Gal Araman, Suguman Bansal, Dror Fried, Lucas M. Tabajara, Moshe Y. Vardi, and Gera Wiess
In Proc. of International Conference on Computer-Aided Verification (CAV) 2021
Awarded [Artifact Evaluation Badge - Available, Functional, and Reusable](#)

[TACAS 21] [On Satisficing in Quantitative Games](#)

Suguman Bansal, Krishnendu Chatterjee, and Moshe Y. Vardi

In Proc. of International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS) 2021

[AAAI 20] [Hybrid Compositional Reasoning for Reactive Synthesis from Finite-Horizon Specifications](#)

Suguman Bansal, Yong Li, Lucas M. Tabajara, and Moshe Y. Vardi

In Proc. of AAAI Conference on AI (AAAI) 2020

[POPL 20/PACML 20] [Synthesis of Coordination Programs from Linear Temporal Specifications](#)

Suguman Bansal, Kedar S. Namjoshi, and Yaniv Sa'ar

In Proc. of the ACM on Programming Languages (PACMPL), Issue POPL, 2020

Awarded **ACM Artifact Evaluated Badge - Functional**

[CAV 19] [Safety and Co-safety Comparator Automata for Discounted-Sum Inclusion](#)

Suguman Bansal and Moshe Y. Vardi

In Proc. of International Conference on Computer-Aided Verification (CAV) 2019

[CAV 18] [Automata vs Linear-Programming Discounted-Sum Inclusion](#)

Suguman Bansal, Swarat Chaudhuri, and Moshe Y. Vardi

In Proc. of International Conference on Computer-Aided Verification (CAV) 2018

[CAV 18] [Synthesis of Asynchronous Reactive Programs from Temporal Specifications](#)

Suguman Bansal, Kedar S. Namjoshi, and Yaniv Sa'ar

In Proc. of International Conference on Computer-Aided Verification (CAV) 2018

[FoSSaCS 18] [Comparator Automata in Quantitative Verification](#)

Suguman Bansal, Swarat Chaudhuri, and Moshe Y. Vardi

In Proc. of International Conference on Foundations of Software Science and Computation Structures (FoSSaCS) 2018

(Selected) Refereed Workshop Papers and Posters

[Specification-Guided Learning of Nash Equilibria with High Social Welfare](#)

Kishor Jothimurugan, Suguman Bansal, Osbert Bastani, and Rajeev Alur

Workshop on Safe and Robust Control of Uncertain Systems (SafeRL) 2021 at NeurIPS 2021

[Co-ordination Synthesis](#)

Suguman Bansal, Kedar S. Namjoshi, and Yaniv Sa'ar

Workshop on Synthesis (SYNT) 2019 co-located with CAV 2019

[Reasoning about Incentive Compatibility](#)

Suguman Bansal

ACM Student Research Competition 2016 at POPL 2016

Awarded **Gold Medal at the ACM SRC at POPL 2016**

OPEN SOURCE TOOLS

Lisa | Github Link

Reactive synthesis for finite-horizon tasks and efficient DFA generation from logical formulas

DiRL | Github Link

Compositional reinforcement learning from temporal specifications

GRANT WRITING EXPERIENCE

CRA/NSF Computing Innovation Fellow Award

Sept. 20 - Aug. 22

PI: Rajeev Alur, **USD 240,910**

AWARDS

MIT EECS Rising Star

2021

CRA Computing Innovation (CI) Fellow

2020

Awarded by the CRA and NSF for postdoctoral research

Future Faculty Fellow

2019

Awarded by the School of Engineering, Rice University

MIT EECS Rising Star

2018

Awarded to ~50 women graduate students in electrical engineering and computer science

Rice Engineering Alumni Graduate Grant

2017

Awarded by the Rice Engineering Alumni (REA) to one graduate student each year

Gold Medal at the **ACM Student Research Competition** at **POPL 2016**

2016

Andrew Ladd Graduate Fellowship

2015

Awarded by the Rice CS Department and Ken Kennedy Institute for excellence in CS

CMI Undergraduate Scholarship

2011 - 2014

Awarded by CMI to undergraduate students for excellence in academics

KVPY Science Fellowship (Govt. of India)

2008

Awarded by the Ministry of Science and Technology, Govt. of India, for excellence in Basic Sciences

Travel grants

AAAI Scholarship (2020), SIGPLAN PAC Travel Grant POPL (2020), CAV Student Travel Fellowship (2019), Rice Dean's Travel Award (2019), WiL SIGLOG/VCLA Travel Award (2019, declined), MIT EECS Rising Stars Travel Grant (2018), NSF-CAV/VMW Travel Grant (2015, 2018), ETAPS Student Scholarship (2018), Google Student Research Summit Travel Grant (2017), LMW-LICS Scholarship (2017, declined), CRA-W Grad Cohort Graduate Grant (2017), ACM SRC (POPL) Travel Grant (2016), MSR Faculty Summit Travel Grant (2016), Off The Beaten Track Travel Grant (2016), MSR Summer School Travel Grant (2012)

HONORS

Invited to **Simons Institute** for program on Real-Time Decision Making

Spring 18

Invited to **Google Student Research Summit 2017**

Sept. 17

Invited to **Dagstuhl Seminar** on Game Theory, AI, Logic and Algorithms

March 17

Invited to **MSR Faculty Summit 2016**

July 16

RESEARCH VISITS

NOKIA Bell Labs, Murray Hill, New Jersey, USA

June 18 - July 18

Research Intern

Mentor: Dr. Kedar S. Namjoshi

Simons Institute, University of California - Berkeley, California, USA

March 18 - May 18

Visiting Graduate Student
Spring 2018 program on Real-Time Decision Making

NOKIA Bell Labs, Murray Hill, New Jersey, USA
Research Intern
Mentors: Dr. Kedar S. Namjoshi and Dr. Michael Emmi

June 17 - Aug. 17

RESEARCH TALKS

Specification-Guided Policy Synthesis

[INVITED] Purdue University	April 22
[INVITED] Georgia Institute of Technology	April 22
[INVITED] University of Toronto	April 22
[INVITED] New York University	April 22
[INVITED] University of Southern California	April 22
[INVITED] Carnegie Mellon University	March 22
[INVITED] CISPAA Saarland	March 22
[INVITED] Washington University at St. Louis	March 22
[INVITED] ETH Zurich	March 22
[INVITED] Yale University	March 22
[INVITED] National University of Singapore	March 22
[INVITED] Max Planck Institute - SWS	Feb. 22
[INVITED] University of Waterloo	Feb. 22
[INVITED] Pennsylvania State University	Feb. 22
[INVITED] IST Austria	Feb. 22
[INVITED] Tufts University	Feb. 22
[INVITED] University of Illinois, Chicago	Feb. 22
[INVITED] TU Graz	Feb. 22

Reactive Synthesis from Quantitative Constraints: An Automata Approach

[INVITED] IARCS Verification Seminar Series	Oct. 21
[INVITED] Workshop on Continuity, Computability, Constructivity: From Logic to Algorithms	Sep. 21

Compositional Reinforcement Learning from Logical Specifications

[INVITED] Sapienza University of Rome	June 21
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Reactive Synthesis for Coordination

PL Club, University of Pennsylvania	April 21
[INVITED] Simons Institute (UC Berkeley): Workshop on Synthesis of Models and Systems	March 21

On Satisficing in Quantitative Games

Hebrew University	June 21
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[INVITED] Formal Methods Seminar, Ben Gurion University	March 21
Designing Intelligent Machines Via Reactive Synthesis	
[INVITED] Machine Learning Seminar Series, Rice University	March 20
[INVITED] ICES, University of Texas at Austin	Feb. 20
Nokia Bell Labs, Murray Hill	Feb. 20
Department of Computer Science - IIT Delhi	April 19
School of Computing, National University of Singapore	April 19
Automata-Based Quantitative Reasoning	
[INVITED] Department of Computer Science, University of Pennsylvania	Jan. 20
Verification Seminar Series, University of Oxford	Nov. 19
[INVITED] RiSE Seminar, IST Austria	April 18
Comparators for Quantitative Verification	
University of California, Berkeley	April 18
Student Spotlight, Winter School in CS and Eng.on Formal Methods, IIAS, Jerusalem	Dec. 17
[INVITED] Saarland University	March 17
[INVITED] Dagstuhl Seminar on Game Theory in AI, Logic and Algorithms,	March 17
Asynchronous synthesis: The Ugly, the Bad and the ?	
Application Platforms and Software Systems Group, Nokia Bell Labs, Murray Hill	July 17
Reasoning About Incentive Compatibility	
[INVITED] Google Student Research Summit, YouTube Headquarters, San Bruno	Sept. 17
Conference/Workshop Presentations (from publications)	
NeurIPS 2021, <i>Virtual</i>	Dec. 21
Highlights of Logic, Games, and Automata, <i>Virtual</i>	Sept. 21
SYNT 2021, <i>Virtual</i>	July 21
TACAS 2021, <i>Virtual</i>	April 21
Highlights of Logic, Games, and Automata, <i>Virtual</i>	Sept. 20
AAAI 2020, <i>New York City, USA</i>	Feb. 20
POPL 2020, <i>New Orleans, USA</i>	Jan. 20
CAV 2019, <i>New York City, USA</i>	July 19
SYNT 2019, <i>New York City, USA</i>	July 19
CAV 2018 (a), <i>Oxford, UK</i>	July 18
CAV 2018 (b), <i>Oxford, UK</i>	July 18
FoSSaCS 2018, <i>Thessaloniki, Greece</i>	April 18
Off the Beaten Track 2016, <i>St. Petersburg, USA</i>	Jan. 16
ACM Student Research Competition at POPL 2016, <i>St. Petersburg, USA</i>	Jan. 16

TEACHING EXPERIENCE

Guest Lecturer

Logic in Computer Science (Moshe Y. Vardi, COMP 409/509) Fall 18, Fall 19

Teaching Assistant

Statistical Machine Learning (Devika Subramanian, COMP 540, ~100 students) Spring 17

Reasoning about Algorithms (Swarat Chaudhuri, COMP 382, ~50 students) Fall 16

Design and Analysis of Algorithms (Krishna Palem, COMP 582, ~80 students) Fall 15

Automata, Formal Languages, and Computability (Michael Burke, COMP 481) Spring 15, Spring 16

MENTORING EXPERIENCE

Graduate Student Mentoring

Kishor Jothimurugan, PhD Student, University of Pennsylvania Sept. 20-Present
Topic: Reinforcement Learning from Formal Specifications

Senthil Rajasekaran, PhD Student, Rice University Jan. 21-Present
Topic: Multi-Agent Games with Quantitative Objectives

Outreach and Mentoring

Co-Organizer, Verification Mentoring Workshop @ CAV 2021

VMW provided mentorship to ~**100 students** worldwide through a series of technical and mentoring talks by domain experts, interactive panels, one-on-one mentorship, and scholarship to attend VMW and CAV (the flagship conference in Formal Methods)

Attracted participation from ~**30% female** and ~**30% undergraduate** students

PROFESSIONAL SERVICE

RESEARCH COMMUNITY

Program Committee

2022. GandALF 2022, SYNT 2022 **2021.** ACM SPLASH SRC 2021, IJCAI 2021, LAMAS&SR 2021, SYNT 2021

Artifact Evaluation Committee

2021. CAV 2021, SAS 2021

Thesis Committee

Guy Hefetz (ITC Herzila). Master's Degree. April 2020
Thesis title: Discounted-sum automata with multiple discount factors

Journal Reviewer

2022. Henzinger-60 **2021.** ACM ToCL, FMSD, JACM, LMCS **2020.** Acta Informatica

Conference Reviewer

2022. FoSSaCS 2022 **2021.** FMCAD 2021, FOCS 2021 **2020.** CONCUR 2020, ICALP 2020, IJCAI 2020
2019. ISAAC 2019 **2018.** FSTTCS 2018, LPAR 2018 **2017.** CP 2017, TACAS 2017 **2016.** IJCAI 2016

DEPARTMENT LEVEL

- Colloquium Coordinator, Dept. of Computer Science, Rice University (2015-2016)

- Academic Coordinator, Rice Computer Science Graduate Student Association (2015-2016)

UNIVERSITY/INSTITUTE LEVEL

- Judge, Rice Undergraduate Research Symposium, Rice University (2016)
- Publicity Coordinator, Indian Students at Rice (ISAR) (2015-2016)