SUGUMAN BANSAL (she/her/hers)

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

Website: www.sugumanbansal.com
Email Address: suguman@seas.upenn.edu

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

PUBLICATIONS

[Under Review] On Synthesis from Satisficing and Temporal Goals
Suguman Bansal, Lydia Kavraki, Moshe Y. Vardi, and Andrew Wells

[Under Review] Specification-Guided Learning of Nash Equilibria with High Social Welfare
Kishor Jothimurugan, Suguman Bansal, Osbert Bastani, and Rajeev Alur

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

Refereed Conference Publications

** 7/9 accepted publications at top venues identified by CSRankings with adjusted author score of 2.15

[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 $\sim$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 — June 17 - Aug. 17
Research Intern
Mentors: Dr. Kedar S. Namjoshi and Dr. Michael Emmi

RESEARCH TALKS

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

Kavraki Lab, Rice University — *(Upcoming)* 2022

[INVITED] Sapienza University of Rome — June 21

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

[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, *Virtual*	*(Upcoming)* Dec. 21
Highlights of Logic, Games, and Automata, *Virtual*	Sept. 21
SYNT 2021, *Virtual*	July 21
TACAS 2021, *Virtual*	April 21
Highlights of Logic, Games, and Automata, *Virtual*	Sept. 20
AAAI 2020, *New York City, USA*	Feb. 20
POPL 2020, *New Orleans, USA*	Jan. 20
CAV 2019, *New York City, USA*	July 19
SYNT 2019, *New York City, USA*	July 19
CAV 2018 (a), *Oxford, UK*	July 18
CAV 2018 (b), *Oxford, UK*	July 18
FoSSaCS 2018, *Thessaloniki, Greece*	April 18
Off the Beaten Track 2016, *St. Petersburg, USA*	Jan. 16
ACM Student Research Competition at POPL 2016, *St. Petersburg, USA*	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

@ Rice

- Judge, Rice Undergraduate Research Symposium, Rice University (2016)
- Publicity Coordinator, Indian Students at Rice (ISAR) (2015-2016)
- Advertising Coordinator, 90 Second Thesis Competition, Rice University (2015)