

# SUGUMAN BANSAL (she/her/hers)

(Incoming) Assistant Professor  
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## EMPLOYMENT

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<b>Assistant Professor</b> in SCHOOL OF COMPUTING <b>Georgia Institute of Technology</b> , Atlanta, GA	Jan. 23 onward
<b>NSF/CRA Computing Innovation Postdoc.</b> in COMPUTER AND INFORMATION SC. <b>University of Pennsylvania</b> , Philadelphia, PA Mentor: Prof. Rajeev Alur	July. 20 - Aug. 22

## EDUCATION

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

## ALL PUBLICATIONS

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**[Under Review]** [Model Checking LTL over the Finite Horizon](#)  
Suguman Bansal, Yong Li, Lucas M. Tabajara, Moshe Y. Vardi, and Andrew Wells

**[Under Review]** [Multi-Agent Systems with Quantitative Satisficing Goals](#)  
Senthil Rajasekaran, Suguman Bansal, and Moshe Vardi

### Invited Contributions

**[Invited]** [A Framework for Transforming Specifications in Reinforcement Learning](#)  
Rajeev Alur, Suguman Bansal, Osbert Bastani, and Kishor Jothimurugan  
(To appear) Special Journal Issue Henzinger-60

**[SAS 22]** [Specification-Guided Reinforcement Learning](#)  
Suguman Bansal  
(To appear) In Proc. of Static Analysis Symposium (SAS) 2022

### Refereed Conference Publications

9/12 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

Awarded **Artifact Evaluation Badge - Functional**

**[AAAI 22]** [On Synthesis from Satisficing and Temporal Goals](#)

Suguman Bansal, Lydia Kavradi, Moshe Y. Vardi, and Andrew Wells  
In Proc. of AAAI Conference on AI (AAAI) 2022

**[VSTTE 22]** [Compositional Safety LTL Synthesis](#)

Suguman Bansal, Giuseppe De Giacomo, Antonio Di Stasio, Yong Li, Moshe Vardi, and Shufang Zhu  
In Proc. of International Conference on Verified Software: Theories, Tools, and Experiments (VSTTE) 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]** [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 (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/LMCS 22]** [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  
(Extended Version) In Journal of Logical Methods in Computer Science (LMCS) 2022

**(Selected) Refereed Workshop Papers and Posters**

## Reasoning about Incentive Compatibility

Suguman Bansal

ACM Student Research Competition 2016 at POPL 2016

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

## TUTORIALS

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### [AAAI 23] [Specification-Guided Reinforcement Learning](#)

(To be) Co-presented with Rajeev Alur, Osbert Bastani, and Kishor Jothimurugan at AAAI 23

## OPEN SOURCE TOOLS

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**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

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**CRA/NSF Computing Innovation Fellow Award**

Sept. 20 - Aug. 22

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

## AWARDS

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**MIT EECS Rising Star**

2021, 2018

**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

**Rice Engineering Alumni Graduate Grant**

2017

Awarded by the Rice Engineering Alumni 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

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<b>Keynote Speaker</b> at Symposium of Static Analysis (SAS) 2022	Dec. 22
Invited to <b>Dagstuhl Seminar</b> on Scalable Analysis of Probabilistic Models and Programs	June 23
Invited to <b>Simons Institute</b> for program on Real-Time Decision Making	Spring 18
Invited to <b>Google Student Research Summit 2017</b>	Sept. 17
Invited to <b>Dagstuhl Seminar</b> on Game Theory, AI, Logic and Algorithms	March 17
Invited to <b>MSR Faculty Summit 2016</b>	July 16

## RESEARCH VISITS

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<b>NOKIA Bell Labs</b> , Murray Hill, New Jersey, USA Research Intern Mentor: Dr. Kedar S. Namjoshi	June 18 - July 18
<b>Simons Institute, University of California - Berkeley</b> , California, USA Visiting Graduate Student Spring 2018 program on Real-Time Decision Making	March 18 - May 18
<b>NOKIA Bell Labs</b> , Murray Hill, New Jersey, USA Research Intern Mentors: Dr. Kedar S. Namjoshi and Dr. Michael Emmi	June 17 - Aug. 17

## RESEARCH TALKS

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### Reinforcement Learning from Logical Specifications

[KEYNOTE] Static Analysis Symposium (SAS) 2022	Dec. 22
Department of Computer Science - IIT Delhi	Oct. 22
[INVITED] Workshop on Open Problems in Learning and Verification of Neural Networks	Aug. 22

### Specification-Guided Policy Synthesis

[INVITED] Carnegie Mellon University, CISPA Saarland, ETH Zurich, Georgia Institute of Technology, IST Austria, Max Plank Institute - SWS, National University of Singapore, New York University, Pennsylvania State University, Purdue University, Tufts University, TU Graz, University of Illinois - Chicago, University of Southern California, University of Toronto, University of Waterloo (ECE), Washington University at St. Louis, Yale University

### 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

[INVITED] Simons Institute (UC Berkeley): Workshop on Synthesis of Models and Systems	March 21
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### 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
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## Reasoning About Incentive Compatibility

[INVITED] Google Student Research Summit, YouTube Headquarters, San Bruno	Sept. 17
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## Conference and Workshop Presentations (from publications)

AAAI 2022, NeurIPS 2021, Highlights of Logic, Games, and Automata 2021, SYNT 2021, TACAS 2021, Highlights of Logic, Games, and Automata 2020, AAI 2020, POPL 2020, CAV 2019, SYNT 2019, CAV 2018 (a), CAV 2018 (b), FoSSaCS 2018, Off the Beaten Track 2016, ACM Student Research Competition at POPL 2016

## TEACHING EXPERIENCE

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### Guest Lecturer

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

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## Graduate Student Mentoring

Kishor Jothimurugan, PhD Student, University of Pennsylvania  
Topic: Reinforcement Learning from Formal Specifications

Sept. 20-Present

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

Jan. 21-Present

## 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

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### RESEARCH COMMUNITY

#### Program Committee

**2023.** AAAI 2023, CAV 2023, CONCUR 2023, ESOP 2023, Highlights of Automata, Logic, and Games 2023, Nasa FM 2023

**2022.** GandALF 2022, SYNT 2022

**2021.** IJCAI 2021, LAMAS&SR 2021, SPLASH SRC 2021, SYNT 2021

#### Thesis Committee

Guy Hefetz (ITC Herzila). Master's Degree. April 2020

Thesis title: Discounted-sum automata with multiple discount factors

#### Journal Reviewer

**2022.** Foundations and Trends in TCS, 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

**Artifact Evaluation Committee 2021.** CAV 2021, SAS 2021

### 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)