

# SUGUMAN BANSAL (she/her/hers)

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

Website: [www.sugumanbansal.com](http://www.sugumanbansal.com)  
Email Address: [suguman@seas.upenn.edu](mailto:suguman@seas.upenn.edu)

## EMPLOYMENT

---

<b>Postdoctoral Researcher</b> in COMPUTER AND INFORMATION SCIENCES	July 2020-Present
<b>NSF/CRA Computing Innovation (CI) Fellow</b>	Sept. 2020-Present
University of Pennsylvania, Philadelphia, PA	
Mentor: Prof. Rajeev Alur	

## EDUCATION

---

<b>PhD</b> in COMPUTER SCIENCE, <b>Rice University</b> , Houston, TX	Sept. 2016-June 2020
Thesis: <a href="#">Automata-Based Quantitative Verification</a>	
Advisor: Prof. Moshe Y. Vardi	
<b>MS</b> in COMPUTER SCIENCE, <b>Rice University</b> , Houston, TX	Aug. 2014-Sept. 2016
Thesis: <a href="#">Algorithmic Analysis of Regular Repeated Games</a>	
Advisor: Prof. Swarat Chaudhuri	
<b>BSc (with Honors)</b> in MATHEMATICS and COMPUTER SCIENCE	Aug. 2011-May 2014
<b>Chennai Mathematical Institute (CMI)</b> , Chennai, India	

## PUBLICATIONS

---

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

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

**[Under Submission] [Compositional Reinforcement Learning from Logical Specifications](#)**

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

**[Under Submission] [On Synthesis from Satisficing and Temporal Goals](#)**

Suguman Bansal, Lydia Kavradi, Moshe Y. Vardi, and Andrew Wells

**[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  
Open source tool **Lisa**: <https://github.com/vardigroup/lisa>

**[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**

**[Compositional Reinforcement Learning from Logical Specifications](#)**

Kishor Jothimurugan, Suguman Bansal, Osbert Bastani, and Rajeev Alur  
Workshop on Synthesis (SYNT) 2021 co-located with CAV 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**

**ArXived**

**[Equilibria in Quantitative Concurrent Games](#)**

Shaull Almagor, Rajeev Alur, and Suguman Bansal

**AWARDS**

---

<b>EECS Rising Star</b>	2021
<b>CRA Computing Innovation (CI) Fellow</b>	2020
Awarded by the CRA and NSF for postdoctoral research	

<b>Future Faculty Fellow</b> Awarded by the School of Engineering, Rice University	2019
<b>EECS Rising Star</b> Awarded to ~50 women graduate students in electrical engineering and computer science	2018
<b>Rice Engineering Alumni Graduate Grant</b> Awarded by the Rice Engineering Alumni (REA) to one graduate student each year	2017
<b>Gold Medal at the ACM Student Research Competition at POPL 2016</b>	2016
<b>Andrew Ladd Graduate Fellowship</b> Awarded by the Rice Computer Science Department and Ken Kennedy Institute for excellence in Computer Science	2015
<b>CMI Undergraduate Scholarship</b> Scholarship awarded by CMI to undergraduate students for excellence in academics	2011 - 2014
<b>KVPY Science Fellowship (Govt. of India)</b> Awarded by the Ministry of Science and Technology, Government of India, for excellence in Basic Sciences	2008
<b>Travel grants</b> 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 (March - May 2018)
- Invited to **Google Student Research Summit 2017** (September 2017)
- Invited to **Dagstuhl Seminar** on Game Theory, AI, Logic and Algorithms (March 2017)
- Invited to **MSR Faculty Summit 2016** (July 2016)

## RESEARCH VISITS

---

<b>NOKIA Bell Labs</b> , Murray Hill, New Jersey, USA Research Intern Mentor: Dr. Kedar S. Namjoshi	June 2018 - July 2018
<b>Simons Institute, University of California - Berkeley</b> , California, USA Visiting Graduate Student Spring 2018 program on Real-Time Decision Making	March 2018-May 2018
<b>NOKIA Bell Labs</b> , Murray Hill, New Jersey, USA Research Intern Mentors: Dr. Kedar S. Namjoshi and Dr. Michael Emmi	June 2017 - Aug. 2017

## RESEARCH TALKS

---

### **Compositional Reinforcement Learning from Logical Specifications**

[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**

[INVITED] IARCS Verification Seminar Oct. 21

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)**

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, <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

<b>Logic in Computer Science</b> (Moshe Y. Vardi, COMP 409/509)	Fall 2019
<b>Logic in Computer Science</b> (Moshe Y. Vardi, COMP 409/509)	Fall 2018

### Teaching Assistant

<b>Statistical Machine Learning</b> (Devika Subramanian, COMP 540, ~100 students)	Spring 2017
---	-------------

- Revision classes
  - Initiated, organized, and conducted bi-monthly revision classes on course lectures.
  - Frequency increased to 3-4 times a month on popular student demand.
  - *Lasting impact*: Revision classes are now a permanent feature of the course.
- Course management, assignment grading, weekly TA office hours for students etc.

<b>Reasoning about Algorithms</b> (Swarat Chaudhuri, COMP 382, ~50 students )	Fall 2016
---	-----------

- Conducted weekly Lab sessions for additional problem solving and proof writing practice.
- Assignment and homework grading, weekly TA office hours for students.

<b>Design and Analysis of Algorithms</b> (Krishna Palem, COMP 582, ~80 students)	Fall 2015
--	-----------

- Organize, prepare and proof read course lecture material, assignments, exams etc.
- Conduct assignment and exam solution sessions

<b>Automata, Formal Languages, and Computability</b> (Michael Burke, COMP 481)	Spring 2015-16
--	----------------

- Involved in course creation - structure of lectures and topics, assignments, exams etc.
- Assignment and exam grading, weekly TA office hours for students.
- *Impact*: Increase in student enrollment by ~100% from Spring 15 to Spring 16.

## MENTORING EXPERIENCE

---

### Graduate Student Mentoring

<ul style="list-style-type: none"> <li>• Kishor Jothimurugan, PhD Student, University of Pennsylvania</li> </ul>	Sept. 2020-Present
Topic: Reinforcement Learning from Formal Specifications	

- Senthil Rajasekaran, PhD Student, Rice University

Jan. 2021-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

#### Thesis Committee

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

#### Program Committee

- ACM SIGPLAN Conference on Systems, Programming, Languages, and Applications: Software for Humanity - Student Research Competition (SPLASH SRC) 2021
- International Joint Conference on Artificial Intelligence (IJCAI) 2021
- International Workshop on Logical Aspects in Multi-Agent Systems and Strategic Reasoning (LAMAS&SR) 2021
- Workshop on Synthesis (SYNT) 2021

#### Artifact Evaluation Committee

- Computer Aided Verification Artifact Evaluation (CAV-AE) 2021
- Static Analysis Symposium Artifact Evaluation (SAS-AE) 2021

#### Journal Reviewer

**2021.** ACM Transactions on Computational Logic (ACM ToCL)

Formal Methods and System Design (FMDS)

Journal of the ACM (JACM)

Logical Methods in Computer Science (LMCS)

**2020.** Acta Informatica

#### Conference Reviewer

**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)