

SUGUMAN BANSAL (she/her/hers)

Assistant Professor
School of Computer Science
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EMPLOYMENT

Assistant Professor in SCHOOL OF COMPUTER SCIENCE Jan. 23 - Present
Georgia Institute of Technology, Atlanta, GA

NSF/CRA Computing Innovation Postdoc. in COMPUTER AND INFORMATION SC. July. 20 - Aug. 22
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

Underlined names: Papers by students that I advise

[Under Submission] [Inductive Framework for Generalization in Reinforcement Learning for Specifications](#)
Vignesh Subramanian, Rohit Kushwah, Suguman Bansal, Subajit Roy
[GenPlan 23] NeurIPS 2023 Workshop on Generalization in Planning

[FMCAD 2024] [DAG-Based Compositional Approaches for LTLf to DFA Conversions](#)
Suguman Bansal, Yong Li, Yash Kankariya
(To appear) Formal Methods in Computer-Aided Design (FMCAD) 2024
[AAAI 24 Poster] Student Poster in AAAI 2024

[ICML 24] [Reinforcement Learning from Reachability Specifications: PAC Guarantees with Expected Conditional Distance](#)
Jakub Svoboda, Suguman Bansal, Krishnendu Chatterjee
(To Appear) In Proc. of International Conference on Machine Learning (ICML) 2024

[ATVA 23] [Model-Checking Strategies From Synthesis over Finite-Horizon Tasks](#)
Suguman Bansal, Yong Li, Lucas M. Tabajara, Moshe Y. Vardi, and Andrew Wells
In Proc. of International Symposium on Automated Technology for Verification and Analysis (ATVA) 2023
Best Paper Award at ATVA 2023

[ACM SIGLOG News 23] [Automata-Based Quantitative Reasoning](#)

Suguman Bansal

In ACM SIGLOG News, Volume 10, Issue 3, July 2023

[IJCAI 23] [Multi-Agent Systems with Quantitative Satisficing Goals](#)

Senthil Rajasekaran, Suguman Bansal, and Moshe Vardi

In Proc. of International Joint Conference on Artificial Intelligence (IJCAI) 2023

[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

[Henzinger-60] [A Framework for Transforming Specifications in Reinforcement Learning](#)

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

In Proc. of Principles of System Design 2022

[SAS 22] [Specification-Guided Reinforcement Learning](#)

Suguman Bansal

In Proc. of Static Analysis Symposium (SAS) 2022

Keynote Speaker Address

[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

[LMCS 22] [Comparator Automata in Quantitative Verification](#)

Suguman Bansal, Swarat Chaudhuri, and Moshe Y. Vardi

In Journal of Logical Methods in Computer Science (LMCS) 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

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

Suguman Bansal, Krishnendu Chatterjee, and Moshe Y. Vardi

In Proc. of Int. Conf. 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

[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 Int. Conf. on Foundations of Software Science and Computation Structures (FoSSaCS) 2018

TUTORIALS

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

Co-presented with Rajeev Alur, Osbert Bastani, and Kishor Jothimurugan at AAAI 23

OPEN SOURCE TOOLS

Lisa | [Github Link](#)

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

3rd place in LTLf Track of SYNTCOMP 2023 [Results]

DiRL | [Github Link](#)

Compositional reinforcement learning from temporal specifications

ADVISING

PhD Students

- [1] Vignesh Subramanian (Georgia Tech) Aug. 23 - Present

Topic: Generalizable Reinforcement Learning from Logical Specifications

Masters Students

- [2] Kaushik Arcot (Georgia Tech) Jan 24 - Present

- [3] Siddharth Meenachi Sundaram (Georgia Tech) Jan 24 - Present

Alumni

- [4] Ramneet Singh, Undergraduate + Masters (IIT Delhi) April 23 - April 24

- Predoctoral Fellow, Microsoft Research India

- [5] Yash Kankariya, Undergraduate (Georgia Tech) April 23 - Dec 23

- MS (with Research), Stanford University
- (AAAI 24 Student Abstract) Decompositions in Compositional Translation of LTLf to DFA
- Georgia Tech's President's Undergraduate Research Award (PURA) for Fall 2023

TEACHING

CS 8803. Logic in Computer Science

Fall 23, Georgia Tech

Overall Course Effectiveness 4.4/5, Overall Lecturer Effectiveness 4.7/5

CS 4510. Automata and Complexity

Spring 24, Georgia Tech

Overall Course Effectiveness 4.5/5, Overall Lecturer Effectiveness 5/5

Spring 23, Georgia Tech (Hon.)

Overall Course Effectiveness 4.7/5, Overall Lecturer Effectiveness 4.7/5

(Anonymous) Student Testimonials

- "Looking back, I remember the automata class quite fondly ... To be honest, at first I resented the structure of the class, with mandatory attendance and no devices. It felt a bit patronizing, like a return to high school to pass the time (I think I can finally admit to this now). I don't know if you noticed, but I would write notes on a sheet of paper. I still have them, and they make me smile when I look at them. I don't have the bandwidth to attend many classes, usually 1-2 per semester these days, but I have to admit being compelled to go to class helps with learning the material."
- "The best part, according to me, is that the instructor encourages participation. We spent as much time on a topic as was required to get the entire class up to speed, not what was allocated."
- "This class was the first time at GT that I've been in a small class and have had this level of professor interaction. Lectures were exceptionally good, maybe the best I've taken here. I really enjoyed how the class took tangents to explore problems from different angles while still staying relevant."

FUNDING

IIT-Bombay/GaTech Collaboration

Jan. 24 - Dec. 24

PI: S. Akshay, Suguman Bansal, **INR 1000000 (~ USD 12000)**

CRA/NSF Computing Innovation Fellow Award

Sept. 20 - Aug. 22

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

AWARDS

Best Paper Award, ATVA 2023

2023

Thank-a-Teacher Certificate

Fall 2023

GaTech's official certificate presented by individual students to show their appreciation to a teacher

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

Invited Speaker at 44th Conference on FSTTCS 2024	Dec. 24
Keynote Speaker at 29th Symposium of Static Analysis (SAS) 2022	Dec. 22
Invited to Dagstuhl Seminar on Automated Synthesis: Functional, Reactive and Beyond	April 24
Invited to Dagstuhl Seminar on Scalable Analysis of Probabilistic Models and Programs	June 23
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

National University of Singapore Visiting Faculty Host: Prof. Umang Mathur	May 23
NOKIA Bell Labs , Murray Hill, New Jersey, USA Research Intern Mentor: Dr. Kedar S. Namjoshi	June 18 - July 18
Simons Institute, University of California - Berkeley , California, USA Visiting Graduate Student Spring 2018 program on Real-Time Decision Making	March 18 - May 18
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

Model Checking Finite-Horizon Properties	
Dagstuhl Seminar on "Automated Synthesis: Functional, Reactive and Beyond"	April 24
PLSE Seminar, National University of Singapore (NUS)	May 23
Formal Reasoning in Reinforcement Learning: A Boon or Bane	
[INVITED] Center of Signal Processing (CSIP), GaTech	Oct. 2023
EECS, UC Berkeley	April 23
[KEYNOTE] Static Analysis Symposium (SAS) 2022	Dec. 22

Reinforcement Learning from Logical Specifications

- Dagstuhl Seminar on “Scalable Analysis of Probabilistic Models and Programs” June 23
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

Jan. 22 - April 22

[\[INVITED\]](#) 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

Reactive Synthesis for Coordination

- [\[INVITED\]](#) 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 ?

Reasoning About Incentive Compatibility

[[INVITED](#)] Google Student Research Summit, YouTube Headquarters, San Bruno

Sept. 17

Conference and Workshop Presentations

AAAI-SSS 2023, ATVA 2023, Highlights of Logic, Games, and Automata 2023, AAAI 2022, NeurIPS 2021, Highlights of Logic, Games, and Automata 2021, SYNT 2021, TACAS 2021, Highlights of Logic, Games, and Automata 2020, AAAI 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

SERVICE

RESEARCH COMMUNITY

NSF Panel 2024 | 2023

Organizing Committee

Co-Chair. AAAI Spring Symposium Series 2023: On the Effectiveness of Temporal Logics on Finite Traces

Co-Organizer. Verification Mentoring Workshop @ CAV 2021

Program Committee

2024. AAAI 2024, CAV 2024, NeurIPS 2024, POPL 2024, TACAS 2024, Women in Logic (WiL) 2024

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

2022. GandALF 2022, SYNT 2022

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

Thesis Committee

Ritam Raha (University of Antwerp, University of Bordeaux). PhD. August 2023

Thesis title: Verification of Complex Systems against Learnt Specifications

Guy Hefetz (ITC Herzila). Masters. April 2020

Thesis title: Discounted-sum automata with multiple discount factors

Journal Reviewer

2023 LMCS

2022. Foundations and Trends in TCS, Henzinger-60

2021. ACM ToCL, FMSD, JACM, LMCS

2020. Acta Informatica

Conference Reviewer

2023. FoSSaCS 2023, L4DC 2023 **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