SUGUMAN BANSAL

Assistant Professor
School of Computer Science
Georgia Institute of Technology

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EMPLOYMENT

Assistant Professor in SCHOOL OF COMPUTER SCIENCE **Georgia Institute of Technology**, Atlanta, GA Maternity Leave (Aug. 2024 - July 2025)	Jan. 23 - Present
NSF/CRA Computing Innovation Postdoc. in COMPUTER AND INFORMATION SC. **University of Pennsylvania**, Philadelphia, PA Mentor: Prof. Rajeev Alur	July. 20 - Aug. 22

EDUCATION

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

SELECTED AWARDS AND HONORS

CACM Article: Research and Advances on *Specification-Guided RL* [link]	Feb. 2026, Vol. 69 No. 2.
Amazon Research Award	Fall 2024 Cycle
Best Paper Award, ATVA 2023	2023
Invited Tutorial at 28th Joint Conference on ETAPS 2025	May 25
Keynote Speaker at 44th Conference on FSTTCS 2024	Dec. 24
Keynote Speaker at 29th Symposium of Static Analysis (SAS) 2022	Dec. 22
MIT EECS Rising Star	2021, 2018
CRA Computing Innovation (CI) Fellow Awarded by the CRA and NSF for postdoctoral research	2020

ALL PUBLICATIONS

Underlined names: Papers by students that I advise

[In Preparation] Certification for Reinforcement Learning from Logical Specifications
S Akshay, Suguman Bansal, Gaurav Mahala

[Under Submission] Decoupled Behavior-Cloning for Scalable Inductive Generalization in Reinforcement Learning from Specifications
Vignesh Subramanian, Subhajit Roy, Suguman Bansal

[Under Submission] Certification-Guided Evaluation of Reinforcement Learning Generalization
Vignesh Subramanian, Djordje Zikelic, Suguman Bansal
[GenPlan 25] AAAI 2025 Workshop on Generalization in Planning

[Under Submission] Asymptotic Guarantees in Reinforcement Learning from Logical Specifications
Amogh Palasamudram, Jokub Svoboda, Krishnendu Chatterjee, Suguman Bansal

[CACM 26] Specification-Guided Reinforcement Learning
Kishor Jothimurugan, Suguman Bansal, Osbert Bastani, Rajeev Alur
Communications of the ACM (CACM) 2026, February 2026, Vol. 69 No. 2

[ATVA 25] Inductive Framework for Generalization in Reinforcement Learning for Specifications
Vignesh Subramanian, Rohit Kushwah, Subajit Roy, Suguman Bansal
In Proc. of International Symposium on Automated Technology for Verification and Analysis (ATVA) 2025
[GenPlan 23] NeurIPS 2023 Workshop on Generalization in Planning

[CAV 25] INTERLEAVE: A Faster Symbolic Algorithm for Maximal End-Component Decomposition
Suguman Bansal, Ramneet Singh
In Proc. of International Conference on Computer-Aided Verification (CAV) 2025

[FMCAD 24] DAG-Based Compositional Approaches for LTLf to DFA Conversions
Suguman Bansal, Yash Kankariya, Yong Li
In Proc. of Formal Methods in Computer-Aided Design (FMCAD) 2024

[ICML 24] Reinforcement Learning from Reachability Specifications: PAC Guarantees with Expected Conditional Distance
Jakub Svoboda, Suguman Bansal, Krishnendu Chatterjee
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

Specification-Guided Reinforcement Learning

- ESSAI 2026

- (Invited) ETAPS 2025

- NeuS 2025 (written tutorial with Kishor Jothimuruguan, Suguman Bansal, Osbert Bastani, Rajeev Alur)

- AAAI 23 (co-presented with Rajeev Alur, Osbert Bastani, and Kishor Jothimurugan)

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

Current Students

PhD Students

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

    Thesis Topic: Generalizable Reinforcement Learning from Logical Specifications

Masters Students

[2] Lu-Chin Chang (Georgia Tech)   Jan. 26 - Present

    Project Topic: Model-free learning reachability with asymptotic guarantees

[3] Sankar Gopalkrishna (Georgia Tech)   Jan. 26 - Present

    Thesis Topic: Formalization of RL Proofs

[4] Krishaang Gupta (Georgia Tech)   Jan. 26 - Present

    Project Topic: Natural Language to Formal Specification Conversion

[5] Amogh Palasamudram (Georgia Tech)   Aug. 25 - Present

    Project Topic: Learning reachability with asymptotic guarantees

[6] Gaurav Mahala (IIT Bombay, co-advised with S Akshay)   July 25 - Present

    Project Topic: Certifying Reinforcement Learning

Alumni

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

- Next: Predoctoral Fellow, Microsoft Research India

- (CAV 2025) A Faster Symbolic Algorithm for Maximal End-Component Decomposition

- Master's thesis: SMALLCAPS INTERLEAVE : An Empirically Faster Symbolic Algorithm for Maximal End Component Decomposition of MDPs (pdf)

[8] Yash Kankariya, Undergraduate (Georgia Tech) April 23 - Dec 23
- Next: MS (with Research), Stanford University
- (FMCAD 2024) DAG-Based Compositional Approaches for LTLf to DFA Conversions
- (AAAI 24 Student Abstract) Decompositions in Compositional Translation of LTLf to DFA
- Georgia Tech's President's Undergraduate Research Award (PURA) for Fall 2023

[9] Aryan Saboo, Undergraduate (Georgia Tech) April 25 - Jan. 26
- Georgia Tech's UROP Summer Salary Support Award 2025

[10] Kaushik Arcot, Masters (Georgia Tech) Jan 24 - July 24
- Next: Quantitative Research Associate, JP Morgan Chase (New York City)

[11] Siddharth Meenachi Sundaram, Masters (Georgia Tech) Jan 24 - June 24
- Next: PhD Student, Georgia Tech

TEACHING

CS 8803. Formal Methods in Reinforcement Learning

Fall 25, Georgia Tech   Overall Course Effectiveness 4.8/5, Overall Lecturer Effectiveness 5/5

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

Fall 25, Georgia Tech   Overall Course Effectiveness 4.38/5, Overall Lecturer Effectiveness 4.62/5

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

- "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."
- "The amount of engagement in the class as well. Very open 2-way discussion between the professor and students. This made the course intellectually stimulating."
- "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."
- "The old school lectures were really interesting! Us bouncing back and forth to the teacher and seeing how our questions are reflected on the whiteboard."
- "The lectures were so good. Prof Bansal is a phenomenal lecturer and it was one of the only classes I've taken where I learned pretty much everything in class."

FUNDING

Amazon Research Award   2025
PI: Suguman Bansal **USD 40000** (Cash) + **USD 20000** (AWS Credits)

IIT-Bombay/GaTech Collaboration   Jan. 24 - Dec. 24
PI: S. Akshay, Suguman Bansal, **INR 1000000 ($\sim$ USD 12000)**

CRA/NSF Computing Innovation Fellow Award   Sept. 20 - Aug. 22
PI: Rajeev Alur, **USD 240,910**

AWARDS

Amazon Research Award   2024

Best Paper Award, ATVA 2023   2023

Thank-a-Teacher Certificate
GaTech's official certificate presented by individual students to show their appreciation to a teacher

- CS 4510 (Automata and Complexity)   Fall 2025

- CS 8803 (Logic in Computer Science)   Fall 2023

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 Tutorial at 28th Joint Conference on ETAPS 2025   May 25

Invited Speaker at 44th Conference on FSTTCS 2024   Dec. 24

Keynote Speaker at 29th Symposium of Static Analysis (SAS) 2022   Dec. 22

Invited to **NII Shonan Meeting** on Frontiers of Formal Methods for Prob. Models and Programs   June 26

Invited to **Dagstuhl Seminar** on Knowledge Compilation in AI, Databases, and Formal Methods   May 26

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

Nanyang Technological University (NTU) Singapore June 25 - July 25
Visiting Faculty
Host: Prof. Luke Ong

National University of Singapore (NUS) Singapore May 23
Visiting Faculty
Host: Prof. Umang Mathur

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

Model Checking Finite-Horizon Properties

Simons Workshop on "Synthesis of Models and Systems"	June 24
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. 23
EECS, UC Berekeley	April 23
[KEYNOTE] Static Analysis Symposium (SAS) 2022	Dec. 22

Reinforcement Learning from Logical Specifications

Centaur AI	Feb 26
[INVITED] College of Computing and Data Science, Nanyang Technological University	June 25
[KEYNOTE] Foundations of Software Technology and Theoretical CS (FSTTCS) 2024	Dec. 24
[INVITED] ActSynt@ECAI2024	Oct. 24
Dagstuhl Seminar on "Scalable Analysis of Probabilistic Models and Programs"	June 23
Department of Computer Science - IIT Delhi	Oct. 22

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

<u>RESEARCH COMMUNITY</u>

NSF Panel 2024 │ 2023

Organizing Committee

  Co-Organizer. QuantFormal: Formal Verification and Learning for Quantitative Systems @FSTTCS 2025

  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

  2026. AAAI 2026, CAV 2026, Nasa FM 2026, TACAS 2026

  2025. AISTAT 2025, ATVA 2025, ECAI 2025, ICML 2025, GenPlan 2025

  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