

# Stanford

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## Somil Bansal

Assistant Professor of Aeronautics and Astronautics

### Bio

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#### BIO

Somil Bansal is an assistant professor at the Department of Aeronautics and Astronautics at Stanford. Before joining Stanford, he was an assistant professor in the ECE department at the University of Southern California. He received an MS and a Ph.D. in Electrical Engineering and Computer Sciences (EECS) from the University of California at Berkeley in 2014 and 2020, respectively. Before that, he obtained a B.Tech. in Electrical Engineering from the Indian Institute of Technology, Kanpur in 2012. After his PhD, he spent a year as a Research Scientist at Waymo (formerly known as the Google Self-Driving Car project). He has also collaborated closely with companies like Skydio, Google, Boeing, as well as NASA AMES/JPL. Somil is broadly interested in developing mathematical tools and algorithms for the control and analysis of safety-critical autonomous and robotic systems, with a special emphasis on ensuring the safety of learning-enabled systems. Somil has received several awards, most notably the NSF CAREER award, the Eli Jury Award at UC Berkeley for his doctoral research, the RSS Pioneer Award, and the Outstanding Graduate Student Instructor Award.

#### ACADEMIC APPOINTMENTS

- Assistant Professor, Aeronautics and Astronautics

#### HONORS AND AWARDS

- CAREER Award, NSF (2022)
- Eli Jury Award, UC Berkeley (2020)
- RSS Pioneer, RSS (2019)
- Outstanding Graduate Student Instructor Award, UC Berkeley (2019)

#### PROFESSIONAL EDUCATION

- PhD, UC Berkeley , Electrical Engineering and Computer Sciences (2020)
- MS, UC Berkeley , Electrical Engineering and Computer Sciences (2014)
- BTech, IIT Kanpur , Electrical Engineering (2012)

### Teaching

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#### COURSES

##### 2024-25

- Introduction to Control Design Techniques: ENGR 205 (Win)

## STANFORD ADVISEES

### Orals Evaluator

Javier Yu

## Publications

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### PUBLICATIONS

- **Providing Safety Assurances for Systems With Unknown Dynamics** *IEEE CONTROL SYSTEMS LETTERS*  
Wang, H., Borquez, J., Bansal, S.  
2024; 8: 1108-1113
- **On Safety and Liveness Filtering Using Hamilton-Jacobi Reachability Analysis** *IEEE TRANSACTIONS ON ROBOTICS*  
Borquez, J., Chakraborty, K., Wang, H., Bansal, S.  
2024; 40: 4235-4251
- **Provably Safe and Scalable Multivehicle Trajectory Planning** *IEEE TRANSACTIONS ON CONTROL SYSTEMS TECHNOLOGY*  
Bansal, S., Chen, M., Tanabe, K., Tomlin, C. J.  
2021; 29 (6): 2473-2489
- **Visual Navigation Among Humans With Optimal Control as a Supervisor** *IEEE ROBOTICS AND AUTOMATION LETTERS*  
Tolani, V., Bansal, S., Faust, A., Tomlin, C.  
2021; 6 (2): 2288-2295
- **A Hamilton-Jacobi Reachability-Based Framework for Predicting and Analyzing Human Motion for Safe Planning**  
Bansal, S., Bajcsy, A., Ratner, E., Dragan, A. D., Tomlin, C. J., IEEE  
IEEE.2020: 7149-7155
- **Robust Sequential Trajectory Planning Under Disturbances and Adversarial Intruder** *IEEE TRANSACTIONS ON CONTROL SYSTEMS TECHNOLOGY*  
Chen, M., Bansal, S., Fisac, J. F., Tomlin, C. J.  
2019; 27 (4): 1566-82
- **Reachability-Based Safety Guarantees using Efficient Initializations**  
Herbert, S. L., Bansal, S., Ghosh, S., Tomlin, C. J., IEEE  
IEEE.2019: 4810-4816
- **Closed-loop Model Selection for Kernel-based Models using Bayesian Optimization**  
Beckers, T., Bansal, S., Tomlin, C. J., Hirche, S., IEEE  
IEEE.2019: 828-834