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ACADEMIC	Postdoctoral Research Fellow	2019–current
RESEARCH	<i>The University of Texas at Austin</i> , USA	
POSITIONS	Advisor: Dr. Ufuk Topcu Research focus: Data driven constrained autonomy with safety guarantees	
EDUCATION	Doctoral student in Electrical Engineering	2014 – 2018
	<i>The University of New Mexico</i> (UNM), USA	GPA: 4.26/4.0
	Advisor: Dr. Meeko M. K. Oishi PhD Thesis: Scalable Stochastic Reachability: Theory, Computation, & Control Research areas: Optimization (convex, discrete, and stochastic), control theory	
	Bachelor & Master of Technology	2009 – 2014
	<i>Indian Institute of Technology Madras</i> (IITM), India	GPA: 8.59/10
	Major: Electrical Engineering Minor: Biomedical Engineering Master Thesis: Deterministic Attitude Estimation	
LANGUAGES	Proficient — Python, MATLAB Familiar — C, C++, HTML, CSS, Javascript	
RESEARCH	Safe control of systems under sparse data	January, 2019 – Present
PROJECTS	◦ Data-driven constrained control leveraging side information	
	Control of constrained stochastic systems	April 2016 – December, 2018
	◦ Proposed optimization-based (convex and stochastic) for probabilistic safety guarantees in systems controlled by a human and/or autonomous agents	
	◦ Developed SReachTools, a repeatability-evaluated, unit-tested, open-source MATLAB toolbox (8,940 lines of code with 8,240 lines of comments)	
	◦ Used for obstacle avoidance, autonomous surveillance, and space applications	
	Validation of cognitive models	January 2015 – March 2016
	◦ Analyzed a cognitive model for the actions of an average human participant	
	Deterministic attitude estimation for robotics	May 2013 – June 2014
	◦ Designed an algorithm for orientation estimation (hardware validation)	
INTERNSHIPS	Student Intern — R&D (Connected cars)	Summer 2017
	<i>Nissan Research Center — Silicon Valley</i> , Sunnyvale, California, US	
	◦ Developed location estimation techniques using CAN and GPS data for cars	
	◦ Created a Python-based workflow for secure over-the-air updates	
	Interim Engineering Intern	Summer 2012
	<i>Qualcomm Incorporated</i> , Hyderabad, India	
	◦ Analyzed performance of the DRAM with the existing mobile platform builds	
	◦ Created a framework that sped up the debugging process by 30%	
SCHOLASTIC	◦ Finalist for best paper award in the 21st ACM International Conference on	
ACHIEVEMENTS	Hybrid Systems: Computation and Control (HSCC), 2018	
	◦ Best student paper award in the 20th ACM International Conference on	
	Hybrid Systems: Computation and Control (HSCC), 2017	
	◦ Prof. Achim Bopp prize for best student hardware project at IITM, 2014	

SCHOLASTIC ACHIEVEMENTS (CONTD.)	<ul style="list-style-type: none"> ◦ Central Board of Secondary Education scholarship for undergraduate studies ◦ Indian Institute of Technology Joint Entrance Examination All-India Rank of 709, where a total of 384,977 students gave the exam (in top 0.002%) ◦ All India Engineering Entrance Examination All-India Rank 609 and Tamil Nadu State Rank 18, where over 1 million students gave the exam (in top 0.001%)
PUBLICATIONS (SCHOLAR)	<p>Published: 2 peer-reviewed journal and 19 peer-reviewed conference papers</p> <p>In review: 2 journal papers</p> <ul style="list-style-type: none"> ◦ A. Vinod, A. Israel, and U. Topcu, “Convexified contextual optimization for on-the-fly control of smooth systems,” American Control Conference, 2020 ◦ A. Vinod, J. Gleason, and M. Oishi, “SReachTools: A MATLAB Stochastic Reachability Toolbox,” Hybrid Systems: Control and Computation, 2019 ◦ A. Vinod*, V. Sivaramakrishnan*, and M. Oishi, “Piecewise-Affine Approximation-Based Stochastic Optimal Control with Gaussian Joint Chance Constraints,” American Control Conference, 2019 (* equal contrib.) ◦ A. Vinod*, S. Rice*, Y. Mao, M. Oishi, and B. Acikmese, “Stochastic Motion Planning Using Successive Convexification and Probabilistic Occupancy Functions,” Conference on Decision and Control, 2018 (* equal contrib.) ◦ A. Vinod and M. Oishi, “Scalable Underapproximative Verification of Stochastic LTI Systems Using Convexity and Compactness,” Hybrid Systems: Control and Computation, 2018 (Finalist for best paper award) ◦ A. Vinod, B. HomChaudhuri, and M. Oishi, “Forward stochastic reachability analysis for uncontrolled linear systems using Fourier Transforms,” Hybrid Systems: Control and Computation, 2017 (Best paper award) ◦ A. Vinod, A. D. Mahindrakar, S. Bandyopadhyay, and V. Muralidharan, “A Deterministic Attitude Estimation Using a Single Vector Information and Rate Gyros,” IEEE/ASME Transactions on Mechatronics, 2015
RELEVANT COURSES	<p>Online: Machine learning, Optimization (convex and discrete), Game theory</p> <p>UNM: Probability and stochastic processes, Advanced calculus — I & II, Detection and estimation theory, Advanced probability theory, Complex systems theory, Multivariable control theory, Linear systems</p> <p>IITM: Computer Methods in Electrical Engineering, Nonlinear systems, Mechanics of Robotic Manipulators, Fundamentals of Medical Instrumentation</p>
EXTRA- CURRICULAR ACTIVITIES	<p>PhoneGap application May 2015</p> <ul style="list-style-type: none"> ◦ Created a Phonegap application to visualize personal mobility data ◦ Used MQTT and Amazon AWS to complete this project in two weeks <p>TATA EngiNX Innovation Challenge June 2013 – September 2013</p> <ul style="list-style-type: none"> ◦ Collaborated on an Android application to recognize American Sign Language <p>Android Application Development Summer 2013</p> <ul style="list-style-type: none"> ◦ Developed a test-taking application for the placement team of the institute <p>Core member of Institute Electronics Club August 2012 – May 2013</p> <ul style="list-style-type: none"> ◦ Conducted three hands-on training sessions on development boards <p>FIRA Robosoccer World Cup October 2011 – August 2013</p> <ul style="list-style-type: none"> ◦ Led the Indian team in Robosoccer World Cup, 2013, held in Bristol, UK ◦ Implemented efficient control and communication protocols for the robots