

Manish Goyal

CONTACT INFORMATION	Department of Computer Science University of North Carolina at Chapel Hill 201 S. Columbia St. Room 361. Chapel Hill NC - 27599-3175	Email: manishg@cs.unc.edu Webpage: manishgcs.github.io
EDUCATION	Ph. D., Computer Science Advisor: Parasara Sridhar Duggirala University of North Carolina at Chapel Hill, USA University of Connecticut, Storrs, USA M. Tech, Computer Science and Engineering Indian Institute of Technology Guwahati, India	01/2019 – Exp. 06/2022 01/2017 – 12/2018 07/2008 – 06/2010
EMPLOYMENT	[E.6] Graduate Assistant, Department of Computer Science University of North Carolina, Chapel Hill, USA [E.5] Research Internship, TCS Innovation Labs, Pune, India [E.4] Senior Software Engineer, Synopsys India Pvt. Ltd., NOIDA, India [E.3] Research Engineer, Verimag Research Lab, Grenoble, France [E.2] Associate Software Engineer, IBM India Labs, Bangalore, India [E.1] Research Internship, Verimag Research Lab, Grenoble, France	01/2019 – Present 05/2019 – 07/2019 06/2012 – 12/2016 02/2011 – 05/2012 07/2010 – 01/2011 05/2009 – 07/2009
PEER REVIEWED CONFERENCE/JOURNAL PUBLICATIONS	[RTS'21] C. Nemitz, T. Amert, M. Goyal , J. Anderson, “Concurrency Groups: A New Way to Look at Real-Time Multiprocessor Lock Nesting”, <i>Real-Time Systems</i> , special issue of outstanding papers from the International Conference on Real-Time Networks and Systems 2019, to appear. [ATVA'20] M. Goyal , P. S. Duggirala, “NeuralExplorer: State Space Exploration of Closed Loop Control Systems Using Neural Networks”, <i>International Symposium on Automated Technology for Verification and Analysis</i> , 10/2020. [AUT'20] M. Goyal , P. S. Duggirala, “Extracting Counterexamples Induced by Safety Violation in Linear Hybrid Systems”, <i>Automatica</i> , 07/2020. [ACC'20] M. Goyal , D. Bergman, P. S. Duggirala, “Generating Longest Counterexample: On the Cross-roads of Mixed Integer Linear Programming and SMT”, <i>American Control Conference</i> , 07/2020. [L4DC'20] M. Goyal , P. S. Duggirala, “NeuralExplorer: State Space Exploration of Closed Loop Control Systems Using Neural Networks”, <i>Learning for Dynamics and Control</i> , 06/2020. [RTNS'19] C. Nemitz, T. Amert, M. Goyal , J. Anderson, “Concurrency Groups: A New Way to Look at Real-Time Multiprocessor Lock Nesting”, <i>Real-Time Networks and Systems</i> , 11/2019. Outstanding Paper Award. [ADHS'18] M. Goyal , P. S. Duggirala, “On Generating a variety of unsafe counterexamples for Linear Dynamical Systems”, <i>Analysis and Design of Hybrid Systems</i> , 07/2018. [IJMO'12] M. Goyal , “Reachability Analysis of Hybrid Systems: An Experience Report”. <i>International Journal of Modeling and Optimization</i> , Vol. 2(6), pp 681-686, 12/2012.	
OTHER/WORKSHOP ARTIFACTS	[DARS'19] M. Goyal , P. S. Duggirala, “Learning Robustness of Nonlinear Systems Using Neural Networks”, <i>Design and Analysis of Robust Systems</i> , 07/2019. [CMACS'11] G. Frehse, A. Donzé, S. Cotton, R. Ray, O. Lebeltel, M. Goyal , R. Ripado, T. Dang, O. Maler, C. Le Guernic, A. Girard, “Safety Analysis of Hybrid Systems with SpaceEx”, <i>Computational Modeling and Analysis for Complex Systems</i> , 07/2011. [VER'12] M. Goyal , G. Frehse, “Automata Library: A User Guide”, VERIMAG, France, 04/2012. [MULTP'11] M. Goyal , G. Frehse, “Translation between CIF and SpaceEx/PHAVer”, MULTIFORM Deliverable D1.3.1, VERIMAG, 05/2011.	
TECH SKILLS	Python, C/C++, Matlab/Simulink	

TRAVEL GRANTS/ AWARDS	<p>[F.7] NSF Travel Grant for <i>VMCAI Winter School</i>, New Orleans, Louisiana, 2020.</p> <p>[F.6] John Lof Leadership Academy Fellowship by UConn School of Engineering, 2018.</p> <p>[F.5] UTC-IASE Graduate Fellowship by United Technologies Corporation, 2017 & 2018.</p> <p>[F.4] FLEFF Travel Grant for <i>Finger Lakes Environmental Film Festival</i>, Ithaca, NY, 2018.</p> <p>[F.3] SREB Travel Grant for <i>Institute on Teaching and Mentoring</i>, Atlanta, Georgia, 2017.</p> <p>[F.2] NSF Travel Grant for <i>Computer Aided Verification</i>, Heidelberg, Germany 2017.</p> <p>[F.1] NSF Travel Grant for <i>Hybrid Systems Computation and Control</i>, Pittsburgh, PA, 2017.</p>
OTHER HONOURS	<p>[H.4] TarHeels@UNC secured poll position 1st in F1Tenth, a racing competition for autonomous vehicles, conducted at Cyber-Physical Systems Week (CPSWeek) 2019.</p> <p>[H.3] RacingHuskies secured poll position 2nd in F1Tenth, a racing competition for autonomous vehicles, conducted at Cyber-Physical Systems Week (CPSWeek) 2017.</p> <p>[H.2] <i>Department Rank holder</i> during Master's and Bachelor's degrees.</p> <p>[H.1] <i>KUDOS Award</i> and <i>STAR Award</i> at Synopsys India Pvt. Ltd.</p>
COURSE PROJECTS	<p>[P.5] Voronoi Diagram-based Controller for Autonomous Racing Vehicles</p> <p>[P.4] Sensing and Homography: A different outlook</p> <p>[P.3] Towards Falsification of Nonlinear Dynamical Systems</p> <p>[P.2] Analyzing and implementing the Gale Transformation</p> <p>[P.1] Spam Detection Using Probabilistic Graphical Models</p>
GRADUATE COURSES	Probabilistic Graphical Models, Computational Geometry, Intelligent Embedded Systems, Machine Learning, Formal Methods, Computational Photography, Robotics, Programming Intelligent Physical Systems, Safe Autonomy, Algorithm Analysis
EXTRA CURRICULAR	<p>Member At-large, STEM Pride club, UNC@Chapel Hill, 2019-2020.</p> <p>Treasurer, South Asian cultural group, Tarang, UConn, 2018-2019.</p> <p>Graduate Fellow, John Lof Leadership Board, UConn, 2018-2019.</p> <p>Member, Student Association of Graduate Engineers (SAGE), UConn, 2018-2019.</p>
REFERENCES	Available upon request