

# Venkata Ramana Makkapati

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mvramana@gatech.edu  
<https://vrakkapati.github.io/>

EDUCATION	<i>Doctor of Philosophy</i> , Aerospace Engineering Georgia Institute of Technology Focus: Differential games, Optimal control under uncertainties, Autonomous vehicles, Hypersonic vehicles Advisor: Prof. Panagiotis Tsiotras	Aug' 2016 - <i>Present</i>
	<i>Master of Science</i> , Computational Science and Engineering Georgia Institute of Technology Focus: Machine Learning	Aug' 2017 - Dec' 2019
	<i>Master of Technology</i> , Aerospace Engineering Indian Institute of Technology Kanpur Focus: Flight Dynamics and Control Advisor: Dr. Mangal Kothari	July 2014 - May 2016
	<i>Bachelor of Technology</i> , Aerospace Engineering Indian Institute of Technology Madras Minor: Industrial Engineering	July 2010 - May 2014
EXPERIENCE	<i>Graduate Research Assistant</i> Dynamics and Control Systems Laboratory, Georgia Tech Projects: · Sensitivity-based analysis to mitigate for control design of hypersonic vehicles · Safe, resilient and efficient operation of autonomous aerial and ground vehicles · Optimal strategies for uncertain differential games with applications Mentor: Prof. Panagiotis Tsiotras	Aug' 2016 - <i>Present</i>
	<i>Research Intern</i> Foresight AI Inc, San Jose, CA Project: POMDPs and RL based motion planning and driving decision algorithms & software Mentor: Dr. Matheen Siddiqui	May 2019 - Aug' 2019
	<i>Summer Intern</i> Vehicle Integration Department, Mahindra & Mahindra, Chennai Project: Approximation methods for the modal analysis of an exhaust system	May 2013 - July 2013
	<i>Summer Intern</i> Flight Mechanics and Control Division, CSIR-NAL, Bangalore Project: Evaluation of free-to-roll test technique to study unsteady motions of an aircraft. Mentor: Dr. Mallesh Bommanahal	May 2012 - July 2012
ARTICLES	<i>Safe Optimal Control under Parametric Uncertainties</i> V. R. Makkapati, H. Sarabu, V. Comandur, P. Tsiotras, and S. Hutchinson IEEE Robotics and Automation Letters (RA-L), 2020	

*Optimal Evading Strategies and Task Allocation in Multi-Player Pursuit-Evasion Problems*

*V. R. Makkapati* and P. Tsiotras

Dynamic Games and Applications, 2019

*Nested Saturation based Guidance Law for Unmanned Aerial Vehicles*

J. Patrikar, *V. R. Makkapati*, A. Pattanaik, H. Parwana, and M. Kothari

ASME Journal of Dynamic Systems, Measurement, and Control, 2019

*Optimal Evading Strategies for Two-Pursuer/One-Evader Problems*

*V. R. Makkapati*, W. Sun, and P. Tsiotras

Journal of Guidance, Control, and Dynamics (JGCD), 2018

*A Comprehensive Differential Game Theoretic Solution to a Game of Two Cars*

R. Bera, *V. R. Makkapati*, and M. Kothari

Journal of Optimization Theory and Applications (JOTA), 2017

*Pursuit-Evasion Games of High Speed Evader*

*M. V. Ramana* and M. Kothari

Journal of Intelligent & Robotic Systems (JINT), 2017

*Pursuit Strategy to Capture High-Speed Evaders Using Multiple Pursuers*

*M. V. Ramana* and M. Kothari

Journal of Guidance, Control, and Dynamics (JGCD), 2016

**CONFERENCE  
PROCEEDINGS**

*Desensitized Trajectory Optimization for Hypersonic Vehicles*

*V. R. Makkapati*, J. Ridderhof, P. Tsiotras, J. Hart, and B. van Bloemen Waanders

2021 IEEE Aerospace Conference (Abstract is accepted)

*Covariance Steering for Discrete-Time Linear-Quadratic Stochastic Dynamic Games*

*V. R. Makkapati*, T. Rajpurohit, K. Okamoto, and P. Tsiotras

IEEE Conference on Decision and Control (CDC), 2020

*C-DOC: Co-State Desensitized Optimal Control*

*V. R. Makkapati*, D. Maity, M. Dor, and P. Tsiotras

American Control Conference (ACC), 2020

*Sequential Auto-Landing of Multiple UAVs using Control Constrained Path Following*

J. Patrikar, *V. R. Makkapati*, and M. Kothari

AIAA Guidance, Navigation, and Control Conference (GNC), SciTech, 2019

*Trajectory Desensitization in Optimal Control Problems*

*V. R. Makkapati*, M. Dor, and P. Tsiotras

IEEE Conference on Decision and Control (CDC), 2018

*Pursuit-Evasion Problems Involving Two Pursuers and One Evader*

*V. R. Makkapati*, W. Sun, and P. Tsiotras

AIAA Guidance, Navigation, and Control Conference (GNC), SciTech, 2018

*Motion Planning for a Fixed-Wing UAV in Urban Environments*

*M. V. Ramana*, S. A. Varma, and M. Kothari

IFAC Conference on Advances in Control and Optimization of Dynamical Systems (ACODS), 2016

*A Cooperative Pursuit-Evasion Game of a High Speed Evader*  
M. V. Ramana and M. Kothari  
AIAA Guidance, Navigation, and Control Conference (GNC), SciTech, 2016

*A Cooperative Pursuit-Evasion Game of a High Speed Evader*  
M. V. Ramana and M. Kothari  
IEEE Conference on Decision and Control (CDC), 2015

## **TALKS**

*Apollonius Allocation Algorithm for Heterogeneous Pursuers to Capture Multiple Evaders*  
Workshop on Heterogeneous Multi-Robot Task Allocation and Coordination, Robotics: Science and Systems (RSS), 2020

*Optimal Strategies and Task Allocation in Multi-Pursuer Single-Evader Problems*  
International Symposium on Dynamic Games and Applications, 2018

## **SKILLS**

Python, MATLAB, Simulink

## **SERVICE**

*Graduate Representative* Jan' 2020 - *Present*  
School of Aerospace Engineering Student Advisory Council, Georgia Tech

*Consultative Group* June 2019 - *Present*  
Office of Principal Scientific Adviser, Government of India

*Senator, Aerospace Engineering* Jan' 2020 - Aug' 2020  
Graduate Student Government Association, Georgia Tech

*Reviewer*  
Automatica  
IEEE Transactions on Automatic Control  
IEEE Transactions on Robotics  
IEEE Robotics and Automation Letters  
Dynamics Games and Applications  
Journal of Aerospace Information Systems  
Journal of Air Transportation  
International Conference on Robotics and Automation  
IEEE Conference on Decision and Control  
American Control Conference  
AIAA Scitech Forum  
Advances in Control and Optimization of Dynamical Systems

## **TEACHING**

*Graduate Teaching Assistant* Aug' 2018 - May 2019  
Optimal Guidance & Control, Multi-variable Linear Systems and Control

*Teaching Assistant* Aug' 2013 - May 2014  
Flight Dynamics, Flight Stability & Control

## **EXTRA-CURRICULAR ACTIVITIES**

*Flying*  
Hold the *FAA Private Pilot* Certification (Aircraft Single Engine Land)  
*Long Distance Running*  
*Bronze medal* in the Dean's Trophy Road Race 2014 at IIT Madras

*Team record* for running the longest distance of 87 km on a treadmill in 6 hours at Treadathon 2014, Chennai.

*National Cadet Corps (NCC)*

*Leading Flight Cadet* with *B Certificate* in the NCC examination