Venkata Ramana Makkapati

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https://vrmakkapati.github.io/

EDUCATION

Doctor of Philosophy, Aerospace Engineering — Aug' 2016 - *Present*
Georgia Institute of Technology
Focus: Optimal control under uncertainties, Autonomous vehicles, Cognitive hierarchy theory, Pursuit-evasion games
Advisor: Prof. Panagiotis Tsiotras

Master of Science, Computational Science and Engineering — Aug' 2017 - *Present*
Georgia Institute of Technology
Focus: Machine Learning

Master of Technology, Aerospace Engineering — July 2014 - May 2016
Indian Institute of Technology Kanpur
Focus: Flight Dynamics and Control
Advisor: Dr. Mangal Kothari

Bachelor of Technology, Aerospace Engineering — July 2010 - May 2014
Indian Institute of Technology Madras
Minor: Industrial Engineering

EXPERIENCE

Research Intern — May 2019 - Aug' 2019
Foresight AI Inc, San Jose, CA
Topic: Research and development of motion planning and driving decision algorithms & software
Mentor: Dr. Matheen Siddiqui

Summer Intern — May 2013 - July 2013
Vehicle Integration Department, Mahindra & Mahindra, Chennai
Topic: Approximation methods for the modal analysis of an exhaust system
Mentor: David Neihguk

Summer Intern — May 2012 - July 2012
Flight Mechanics and Control Division, CSIR-NAL, Bangalore
Topic: Evaluation of free-to-roll test technique to study unsteady motions of an aircraft
Mentor: Dr. Mallesh Bommanahal

ARTICLES

Covariance Steering for Discrete-Time Linear-Quadratic Stochastic Dynamic Games
V. R. Makkapati, K. Okamoto, T. Rajpurohit and P. Tsiotras
(in preparation)

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

PROCEEDINGS & TALKS

DOC based Safe Path Planning under Parametric Uncertainties
V. R. Makkapati, H. Sarabu, V. Comandur, P. Tsiotras, and S. Hutchinson
(in preparation)

C-DOC: Co-State Desensitized Optimal Control
V. R. Makkapati, D. Maity, M. Dor, and P. Tsiotras
American Control Conference (ACC), 2020 (submitted)

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

Optimal Strategies and Task Allocation in Multi-Pursuer Single-Evader Problems
V. R. Makkapati and P. Tsiotras
International Symposium on Dynamic Games and Applications, 2018 (Invited Talk)

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

TEACHING

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

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

SERVICE

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

Reviewer
IEEE Transaction on Automatic Control
IEEE Robotics and Automation Letters
Dynamics Games and Applications
Journal of Aerospace Information Systems
Journal of Air Transportation
International Conference on Robotics and Automation (ICRA 2020)
IEEE Conference on Decision and Control (CDC 2019)
American Control Conference (ACC 2020, 2018)
AIAA Scitech Forum (GNC 2019, 2018)
Advances in Control and Optimization of Dynamical Systems (ACODS 2016)

EXTRA-CURRICULAR ACTIVITIES

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