Vaishnav Tadiparthi

Contact Information

Intelligent Systems Research Laboratory, Dept. of Aerospace Engineering, Texas A&M University
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Current Position

Ph.D. student working on:
• Data-driven Modeling • Stochastic Systems • Multibody Dynamics • Tensegrity Systems • Robotics

Education

• Ph.D. in **Aerospace Engineering**, TAMU, USA Adviser: Dr. R. Bhattacharya (2017 - Present)

• B.Tech and M.Tech. in **Aerospace Engineering**, IIT Kharagpur, India (2012 - 2017)

Recent Publications

• V.Tadiparthi, S.C. Hsu, & R. Bhattacharya, "STEDY: Software for Tensegrity Dynamics", *Journal of Open Source Software (2019)*
• S.C. Hsu, V. Tadiparthi, & R. Bhattacharya, "A Lagrangian Formulation for Constrained Dynamics in Tensegrity Systems with Compressible Bars" *(in preparation)*
• V. Tadiparthi, R. Bhattacharya, "Robust LQR for Uncertain Discrete-Time Systems using Polynomial Chaos", *ACC (2020)*
• V. Deshpande, N. Das, V. Tadiparthi, & R. Bhattacharya, "On Neural Network Training from Noisy Data using a Novel Filtering Framework", *AIAA SciTech Forum (2020)*
• S. Kim, V. Tadiparthi, & R. Bhattacharya, "$\mathcal{H}_2$ Optimal Attitude Estimation of UAVs using Sensor Fusion", *AIAA SciTech Forum (2020)*
• S. Kim, V. Tadiparthi, R. Bhattacharya, "Nonlinear Attitude Estimation for Small UAVs with Low Power Microprocessors", *ACC (2020)*
• S. Kim, V. Tadiparthi, R. Bhattacharya, "Extended $\mathcal{H}_2$ Filtering for Attitude Estimation in Low Power Microprocessors", *(in preparation)*

Experiences

Winners of **A-Hack-of-the-Drones** competition in Austin, Texas Sept 2018
Developed vision based solutions for C-SUAS.

Graduate Research Assistant at TAMU Adviser: Dr. R. Bhattacharya
• Polynomial Chaos Approach to Data-driven Robust Control
• Udwadia-Kalaba Formulation for Constrained Multibody Dynamics in Generic Robotic Systems
• Lagrangian Formulation for Constrained Multibody Dynamics in Tensegrity Systems
• STEDY: Software for Tensegrity Dynamics

Boeing Project at IIT Kharargpur Adviser: Dr. N. K. Peyada
• Designed, built, and flew a fixed-wing RC-aircraft with VTOL capabilites. July 2016 - Jun 2017
• Developed a controller to automate transition from VTOL to cruise flight.

Master's Thesis at IIT Kharagpur Adviser: Dr. D. K. Maiti
• Modeled fuel slosh in spacecraft propellant tanks computationally. July 2016 - May 2017
• Tested control algorithms to stabilise sloshing motion.

Research Intern at National University of Singapore Adviser: Dr. R. Jaiman
• Developed interface coupling algorithm in C for in-house CFD and FEM solvers. May - July 2016
• Studied VIV of coupled mooring-riser systems.

Bachelor's Thesis at IIT Kharagpur Adviser: Dr. D. K. Maiti
• Performed structural optimisation of an aircraft wing. July 2015 - May 2016
• Conducted computational structural analyses of an aircraft wing in MSC-Nastran.

EID Intern at General Electric, Bengaluru Adviser: Ms. V. Shenoy
• Developed a post-processor prototype for blade design using Qt. May - July 2015
• Built GUI to support plotting of the Campbell diagram.

Skills

Programming Languages & Packages: Matlab | Julia | C++ | C