

Niladri Das

POSITION	A Ph.D. candidate in Aerospace Engineering at Texas A&M University. Graduating in August 1, 2020	
CONTACT	Intelligent Systems Research Laboratory , Dept. of Aerospace Engineering, Texas A&M, 575 Ross St, College Station, TX 77843	E-Mail : niladridas@tamu.edu GitHub : github.com/niladridas Homepage : www.niladridas.com
RESEARCH	<ul style="list-style-type: none">• Non-Linear estimation• Situational awareness• Optimal sensing and data sharing• Non-linear control, robotics, and machine learning	
EDUCATION	Doctor of Philosophy in Aerospace Engineering Texas A&M University, USA Dissertation: Optimal Transport Based Filtering and Sensing for Space Situational Awareness.	Adviser: Dr. R. Bhattacharya 2015 - 2020 GPA: 3.826/4
	Master of Technology in Electrical Engineering Indian Institute of Technology Kanpur, India Dissertation: Learning to Grasp & Programming by Demonstration Using a 7-DOF Barrett WAM .	Adviser: Dr. L. Behera 2012 - 2014 GPA : 7.91/10
	Bachelor of Engineering in Electrical Engineering Jadavpur University, Kolkata, India Project: Image Processing Based Object Detection.	Adviser: Dr. A. Chatterjee 2008 - 2012 GPA : 7.84/10
EXPERIENCES	Graduate Teaching Assistant Assisting Prof. Kyle DeMars for <i>Advanced Control for Aerospace Vehicles</i> to senior Aerospace undergrads.	13 Jan - Present, 2020.
	Graduate Teaching Fellow Teaching <i>Advanced Control for Aerospace Vehicles</i> to senior Aerospace undergrads (72 students). <ul style="list-style-type: none">• Linear Systems, PID control, Root Locus, Freq. Domain design• Teaching Matlab to design linear controller	26 Aug - 12 Dec, 2019.
	Winner of A-Hack-of-the-Drones Member of the A-Team from Texas A&M that won the A-Hack-of-the-Drones competition (Sponsor: USArmy Futures Command and MD5) in Austin, Texas. <ul style="list-style-type: none">• Developed vision based solution for C-SUAS.• Co-founded AIMS Technologies, LLC	28-30 Sep, 2018.
	Graduate Research I Dept. of Aerospace Engineering, Texas A&M.	Adviser: Dr. R. Bhattacharya Sep 2015-Present

- Worked on an [AFRL](#) project project, *Adaptive Markov Inference Game Optimization for Rapid Discovery of Evasive Satellite Behaviors*, in collaboration with Intelligent Fusion Technology, Inc (2018-Present)
- Worked on an AFOSR project, *Cloud Computing Based Robust Space Situational Awareness*, in collaboration with Dept. of Statistics, TAMU (2015-2018)
 - Developed Optimal Transport filter based framework for SSA.
 - Developed Orbit Propagator.

Project Associate

PI: Dr. L. Behera

Dept. of Electrical Engineering, IIT Kanpur

Aug 2014 - Jun 2015

- Developed Gaussian Mixture based model to compensate the unknown non-linearities of 7 degree of freedom [Barrett WAM](#).
- Collaborated in implementing a inverse kinematic model and higher order Sliding Mode Control for 7 degree of freedom Barrett WAM. [\[C++ codes\]](#)[\[video\]](#)
- Developed dynamical system based trajectory learning for Barrett WAM.
- Served as a Thesis mentor for a master's student.
- Taught ROS to two Master's student.

Graduate Research II

Adviser: Dr. L. Behera

Dept. of Electrical Engineering, IIT Kanpur

July 2013-July 2014

- Developed Inverse Kinematic model for Barrett WAM.
- Implemented Kinect based Object segmentation for grasping using **Deep Learning**.
- Developed a hand-eye autonomous calibration technique for Barrett WAM.
- Implemented Symbolic Encoding based skill learning on Barrett WAM.[\[video1\]](#)[\[video2\]](#)
- Mentored two Under-Graduate interns.

PUBLICATIONS *Journals*

1. *Optimal Precision for Multi-Rate Sensor Fusion with Bounded Errors in a Kalman Filtering Framework* [preparing, 2020]
2. *Privacy-Utility Aware Kalman Filtering for LTI Systems* [preparing, 2020]
3. *Privacy and Utility Aware Data Sharing for Space Situational Awareness from Ensemble and Unscented Kalman Filtering Perspective*
IEEE Transactions on Aerospace and Electronic Systems [Submitted, 2019][\[arXiv\]](#)
4. *Optimal Transport Based Tracking of Space Objects in Cylindrical Manifolds.*
Journal of Astronautical Sciences (Springer) [accepted, 2019][\[preprint\]](#)
5. *Optimal Transport based Tracking of Space Objects using Range Data from a Single Ranging Station.*
Journal of Guidance, Control, and Dynamics [accepted, 2019][\[preprint\]](#)

Conferences

1. *Privacy and Utility in Multi-object Tracking using Kalman Filter*
International Conference on Information Fusion 2020 [abstract submitted]
2. *Optimal Sensing Precision for Multi-Rate Kalman Filters with Guaranteed Error Bounds*
IFAC World Congress 2020 [submitted]

3. *Optimal Transport Based Filtering with Nonlinear State Equality Constraints*
IFAC World Congress 2020 [submitted]
4. *Optimal Sensing Precision in Ensemble and Unscented Kalman Filtering*
IFAC World Congress 2020 [submitted]
5. *Combining Visible and Infrared Spectrum Imagery using Machine Learning for Small Unmanned Aerial System Detection*
SPIE Automatic Target Recognition 2020 [Accepted]
6. *Sparse Sensing Architecture For Kalman Filtering With Guaranteed Error Bound.*
IAA Conference on Space Situational Awareness 2017 .
7. *Control of a 4 DoF Barrett WAM Robot - Modeling, Control Synthesis and Experimental Validation.*
IEEE First International Conference on Control, Measurement and Instrumentation 2016
8. *Learning Object Manipulation from Demonstration through Vision for the 7-DOF Barrett WAM.*
IEEE First International Conference on Control, Measurement and Instrumentation 2016
9. *A probabilistic framework of learning movement primitives from unstructured demonstrations.*
IEEE 13th International Conference on Industrial Informatics 2015
10. *Robot Learns from Human Teacher Through Modified Kinesthetic Teaching.*
International conference on Advances in Control and Optimization of Dynamic Systems 2014

SKILLS *Programming Languages and Packages:* C | C++ | Python | Julia | Matlab | ROS.

AFFILIATIONS

- Student Council **Mentor** of Aerospace Engineering Department at Texas A&M University. (Academic Year 2018)
- Student Council **Member** of Aerospace Engineering Department at Texas A&M University. (Academic Year 2017)
- GPSC: Graduate and Professional Student Council **Delegate** of Aerospace Department. (Academic Year 2017)
- American Institute of Aeronautics and Astronautics (Student Member)
- Institute of Electrical and Electronics Engineers (Student Member)
- Society for Industrial and Applied Mathematics (Student Member)
- American Astronautical Society (Student Member)

Journal Reviewer: IEEE Systems Journal.

Conference Reviewer: IFAC World Congress