

Niladri Das

CONTACT	Intelligent Systems Research Laboratory, Dept. of Aerospace Engineering, Texas A&M University (TAMU), 575 Ross St, College Station, TX 77843	E-Mail : niladridas@tamu.edu Ph. No. : +1 979-985-7527 GitHub : github.com/niladridas Homepage : www.niladridas.com
RESEARCH	<ul style="list-style-type: none">• Nonlinear estimation• Situational awareness• Optimal sensing and data sharing• Nonlinear control, robotics, and machine learning	
EDUCATION	Doctor of Philosophy in Aerospace Engineering Texas A&M University, USA Dissertation: Optimal sensing for estimation of nonlinear dynamical systems.	Adviser: Dr. R. Bhattacharya 2015 - 2020 GPA: 3.826
	Master of Technology in Electrical Engineering Indian Institute of Technology Kanpur (IIT-K), 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
RESEARCH EXPERIENCE	Graduate Research Assistantship at TAMU — Information filter	Adviser: Dr. K. DeMars, Summer 2020
	Graduate Research Assistantship at TAMU — Worked on optimal sensing for nonlinear filters from utility and privacy perspective — Worked on an AFRL project project: <i>Adaptive Markov Inference Game Optimization for Rapid Discovery of Evasive Satellite Behaviors</i> , in collaboration with Intelligent Fusion Technology, Inc., where I developed an in-house orbit propagator. (2018-2019) — Worked on an AFOSR project: <i>Cloud Computing Based Robust Space Situational Awareness (SSA)</i> , in collaboration with Dept. of Statistics (TAMU), where I developed Optimal Transport filter based framework for SSA. (2015-2018)	Adviser: Dr. R. Bhattacharya
	Project Associate at IIT-K — 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.	PI: Dr. L. Behera, Aug 2014 - Jun 2015
	Graduate Research Assistant at IIT-K — 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.	Adviser: Dr. L. Behera, July 2013-July 2014

- Implemented Symbolic Encoding based skill learning on Barrett WAM.[[video](#)]
- Mentored two Under-Graduate interns.

PUBLICATIONS *Journals*

1. **Privacy-Utility Aware Kalman Filtering for LTI Systems** [preparing, 2020]
2. **Optimal Sensor Precision and Sensor Selection for Kalman Filtering with Bounded Errors** | Signal Processing, Elsevier [under review, 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 [under review, 2019][[arXiv](#)]
4. **Optimal Transport Based Tracking of Space Objects in Cylindrical Manifolds** | Journal of Astronautical Sciences, Springer [2019][[preprint](#)]
5. **Optimal Transport based Tracking of Space Objects using Range Data from a Single Ranging Station** | Journal of Guidance, Control, and Dynamics [2019][[preprint](#)]

Conferences

1. **Utility and Privacy in Object Tracking from Video Stream using Kalman Filter** | International Conference on Information Fusion 2020 [accepted]
2. **Modeling and Optimal Control of Hybrid UAVs with Wind Disturbance** | International Conference on Systems and Control 2020 [second author][accepted]
3. **Eigen Value Analysis in Lower Bounding Uncertainty of Kalman Filter Estimates** | IFAC World Congress 2020 [accepted]
4. **Optimal Transport Based Filtering with Nonlinear State Equality Constraints** | IFAC World Congress 2020 [accepted]
5. **Optimal Sensing Precision in Ensemble and Unscented Kalman Filtering** | IFAC World Congress 2020 [accepted]
6. **On Neural Network Training from Noisy Data using a Novel Filtering Framework** | AIAA SciTech Forum and Exposition 2020 [second author]
7. **Sparse Sensing Architecture For Kalman Filtering With Guaranteed Error Bound.** | IAA Conference on Space Situational Awareness 2017
8. **Control of a 4 DoF Barrett WAM Robot - Modeling, Control Synthesis and Experimental Validation** | IEEE First International Conference on Control, Measurement and Instrumentation 2016 [second author]
9. **Learning Object Manipulation from Demonstration through Vision for the 7-DOF Barrett WAM** | IEEE First International Conference on Control, Measurement and Instrumentation 2016
10. **A probabilistic framework of learning movement primitives from unstructured demonstrations** | IEEE 13th International Conference on Industrial Informatics 2015
11. **Robot Learns from Human Teacher Through Modified Kinesthetic Teaching** | International conference on Advances in Control and Optimization of Dynamic Systems 2014

TEACHING	Graduate Teaching Assistant at TAMU	Aug - Dec 2020
EXPERIENCES	Assisting Raktim Bhattacharya with AERO-310 and AERO-422	

Graduate Teaching Assistant at TAMU	13 Jan - May 2020
Assisting Prof. Kyle DeMars for grading assignments for <i>Advanced Control for Aerospace Vehicles</i>	

Graduate Teaching Fellow at TAMU 26 Aug - 12 Dec 2019
Taught *Advanced Control for Aerospace Vehicles* to senior Aerospace undergrads (72 students).
Taught LTI system, PID, root locus and freq. domain based controller design using Matlab.

Graduate Teaching Assistant at IIT-K July 2012 - July 2014
— Teaching assistant to Dr. L. Behera, Dr. R. Potluri, and Dr. N. K. Verma

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

CURRENT — American Institute of Aeronautics and Astronautics

PROFESSIONAL — Institute of Electrical and Electronics Engineers

AFFILIATIONS — Society for Industrial and Applied Mathematics

— American Astronautical Society

PAST — Student Council member of Aerospace Engineering department at TAMU (2017)

AFFILIATIONS — Graduate and Professional Student Council department delegate at TAMU (2017)

SERVICES **Journal Reviewer:** IEEE Systems Journal

Conference Reviewer: IFAC World Congress, CDC

AWARDS — Winner of A-Hack-of-the-Drones (28-30 Sep 2018)

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. We developed vision based solution for C-SUAS and co-founded AIMS Technologies, LLC

— Awarded Graduate Teaching Fellowship for Fall 2019 at TAMU

— Awarded AERO Graduate Excellence Fellowship for Fall 2019 and Spring 2020 at TAMU

— Awarded AERO Travel Grant for Spring 2019 at TAMU

HONORS Served as a Student Council **Mentor** of Aerospace Engineering Department at TAMU (2018)

WORK PERMIT **F1 Visa** — Eligible to work in the USA for 36 months with Optional Practical Training

PRIMARY — Dr. Raktim Bhattacharya (Dissertation Advisor)

REFEREE Associate Professor, Department of Aerospace Engineering

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— Dr. Srinivas Rao Vadali (PhD Committee Member)

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— Dr. Suman Chakravorty (PhD Committee Member)

Associate Professor, Department of Aerospace Engineering

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— Dr. Vikram Kinra (Director of Teaching Fellows Program)

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