Niladri Das

POSITION	Ph.D. candidate in Aerospace Engineering at Texas A&M University working since September 1, 2015, employed as a Graduate Assistant Research/Teaching.

CONTACT   [Intelligent Systems Research Laboratory](#),   E-Mail : niladridas@tamu.edu
Dept. of Aerospace Engineering, Texas A&M,   GitHub : github.com/niladridas
575 Ross St, College Station, TX 77843   Homepage : www.niladridas.com

CURRENT RESEARCH

- **Non-Linear filtering**
- **Situational Awareness**

EDUCATION

Doctor of Philosophy in **Aerospace Engineering**   Adviser: [Dr. R. Bhattacharya](#)
Texas A&M University, USA   2015 - Present

Master of Technology in **Electrical Engineering**   Adviser: [Dr. L. Behera](#)
Indian Institute of Technology Kanpur, India   2012 - 2014
Dissertation: Learning to Grasp & Programming by   GPA : 7.91/10
Demonstration Using a 7-DOF [Barrett WAM](#).

Bachelor of Engineering in **Electrical Engineering**   Adviser: Dr. A. Chatterjee
Jadavpur University, Kolkata, India   2008 - 2012
Project: Image Processing Based Object Detection.   GPA : 7.84/10

WORK EXPERIENCES

Graduate Teaching Fellow   26 Aug - 15 Jan, 2020.
Taught *Advanced Control for Aerospace Vehicles* to senior
Aerospace undergrads (72 students).
- Linear Systems, PID control, Root Locus, Freq. Domain design
- Teaching Matlab to design linear controller

Graduate Research I   Adviser: Dr. R. Bhattacharya
Dept. of Aerospace Engineering, Texas A&M.   Sep 2015-Present
- PhD research partially funded by National Science Foundation Grant Award
  No. NSF 1762825 (Present)
- Worked on an [AFRL](#) project project, *Adaptive Markov Inference Game
  Optimization for Rapid Discovery of Evasive Satellite Behaviors*
  (AMIGO), in collaboration with Intelligent Fusion Technology, Inc (2018)
- Worked on an AFOSR project, *Cloud Computing Based Robust Space Situational
  Awareness*, in collaboration with Dept. of Statistics, TAMU (2015-2018)

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 Dynamic 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.

ALL PUBLI-   *Journals*
CATIONS   1. *Privacy-Utility Aware Kalman Filtering for LTI Systems* [First Author, Preparing, 2020]

2. *Privacy and Utility Aware Data Sharing for Space Situational Awareness from Ensemble and Unscented Kalman Filtering Perspective* **IEEE Transactions on Aerospace and Electronic Systems** [First Author, Submitted, 2019][arXiv]

3. *Optimal Transport Based Tracking of Space Objects in Cylindrical Manifolds.* **Journal of Astronautical Sciences** (Springer) [First Author,, Accepted, 2019][preprint]

4. *Optimal Transport based Tracking of Space Objects using Range Data from a Single Ranging Station.* **Journal of Guidance, Control, and Dynamics** [First Author, Accepted, 2019][preprint]

Conferences
1. *Optimal Sensing Precision for Multi-Rate Kalman Filters with Guaranteed Error Bounds* IFAC World Congress 2020 [First Author, Submitted].

2. *Optimal Transport Based Filtering with Nonlinear State Equality Constraints* IFAC World Congress 2020 [First Author, Submitted].

3. *Optimal Sensing Precision in Ensemble and Unscented Kalman Filtering* IFAC World Congress 2020 [First Author, Submitted].

4. *On Neural Network Training from Noisy Data using a Novel Filtering Framework* 2020 AIAA Scitech 2020 Forum [Second Author, Accepted]

5. *Combining Visible and Infrared Spectrum Imagery using Machine Learning for Small Unmanned Aerial System Detection* SPIE Automatic Target Recognition 2020 [Third Author, Accepted].

6. *Sparse Sensing Architecture For Kalman Filtering With Guaranteed Error Bound.* 2017 1st IAA Conference on Space Situational Awareness, Orlando, Florida [First Author].

7. *Control of a 4 DoF Barrett WAM Robot - Modeling, Control Synthesis and Experimental Validation.* 2016 IEEE First International Conference on Control, Measurement and Instrumentation [Second Author].

8. *Learning Object Manipulation from Demonstration through Vision for the 7-DOF Barrett WAM.* 2016 IEEE First International Conference on Control, Measurement and Instrumentation [First Author].

9. *A probabilistic framework of learning movement primitives from unstructured demonstrations.*
   2015 IEEE 13th International Conference on Industrial Informatics [First Author].

10. *Robot Learns from Human Teacher Through Modified Kinesthetic Teaching.*
    2014 International conference on Advances in Control and Optimization of Dynamic Systems [Second Author].

SKILLS   *Programming Languages and Packages:*   C | C++ | Python | Julia | Matlab | Robot Operating System.

ALL AFFILI-ATIONS   *Aerospace Graduate Student Council of Texas A&M University*

- 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)

Other Organisations:
- American Institute of Aeronautics and Astronautics
- Institute of Electrical and Electronics Engineers
- Society for Industrial and Applied Mathematics
- American Astronautical Society.

Journal Reviewer: IEEE Systems Journal.
Conference Reviewer: IFAC World Congress