

# SIDDHANT TANDON

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## SUMMARY

- A competitive and team-oriented engineer working as a Simulation Scenario Engineer at Motional AD, inc
- Published academic work in deep learning/behavior modeling at IEEE CEC 2021
- 15+ courses in computer science, trajectory optimization, motion planning (A\*, D\*, RRT), linear algebra, data structures, nonlinear controls and sensor fusion (LiDAR, Radar, cameras)
- Equipped to solve and collaborate on problems in perception through experience in probability theory, calculus, Kalman and particle filters, data visualization, state estimation and localization, computer vision, linux, git, control theory, and C++/Python programming

## EDUCATION

- **University of Michigan**
  - Master's Degree (M.S), Aerospace Engineering May 2021
- **Udacity**
  - Deep Reinforcement Learning Nanodegree August 2020
  - Flying Car and Autonomous Flight Engineer Nanodegree May 2020
  - Machine Learning Engineer Nanodegree August 2019
- **Purdue University**
  - Bachelor's Degree (B.S.), Aeronautical and Astronautical Engineering May 2019
  - Minor in Earth, Atmospheric and Planetary Sciences May 2019

## INDUSTRY EXPERIENCE

- **Simulation Scenario Engineer, Motional** **Boston, USA**  
*Associate Engineer* December 2021 - Current
  - Testing the capabilities of autonomy system in simulations
  - Developing process oriented simulation test plans and documentation

## RESEARCH EXPERIENCE

- **Gorodetsky Group: Computational Autonomy, University of Michigan** **Ann Arbor, USA**  
*Graduate Research Student* May 2020 - April 2021
  - Conducted data-driven applied research on extracting winning strategies from multi-agent environments (like games' large data sets) using behavior cloning and inverse reinforcement learning
  - Collaborated with a research group on extracting eigenfunctions of expert players
  - Implemented a image processing technique, along with training and optimizing a variational autoencoder(VAE) to extract low dimensional features for cloning expert behavior
  - Created interfaces with Atari games for expert-cloned models to play games and compare performance against experts
  - Developed a high-performance compute framework to train and test model on large-scale using google cloud platform (gcp) product
  - Developing potential ideas for developing higher fidelity VAE model by incorporating computer vision techniques, like object tracking, to mine dynamics information from experts

- **Flight Dynamics & Hybrid Systems Lab, Purdue University** **West Lafayette, USA**  
*Undergraduate Research Student* September 2017 - April 2019
  - Conducted literature research on designing SLAM algorithms for an indoor UAV (GPS denied) prototype from sources like WiFi, gravitational and magnetic signals
  - Assisted in ROS integration on UAV for facilitating indoor experimentation

- **Institute of Space Systems, Technical University of Braunschweig** **Brunswick, Germany**  
*Research Intern* May 2018 - August 2018
  - Title - Design, Installation and Qualification testing of an air-bearing table for Spacecraft Proximity Operations
  - Collaborated research with multiple postdocs for increasing utility of the air-bearing table
  - Developed and designed multiple test procedures for improving the air table environment
  - Used test results to achieve stable motion of mock-satellites

- **Planetary Systems and Surfaces Lab, Purdue University** **West Lafayette, USA**  
*Undergraduate Research Intern* February 2016 - August 2016
  - Title - Validating particle size and mass distribution curves of different accretion rates for Phobos and Deimos
  - Developed numerical simulations while optimizing code in Python to show relation between mass and disk size as a function of accretion rate

## AWARDS

- First Place, AIAA Student Region III Conference April 2019
- Graduate Fellowship 2019, Curadev Pharma Pvt. Ltd. August 2018

- Dean's List
- EPICS 'We Delivered', Purdue University

April 2015 - April 2016, December 2018  
December 2015

## SKILLS

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**Programming Skills** Python, MATLAB, and C/C++ [moderate writing]

**Languages** English: professional proficiency. Hindi: native.

**Other** Tensorflow, Opencv

**Soft** Excellent communication skills, collaborative, experience with leadership and cross-functional teams

## PUBLICATIONS

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B. Chen, S. Tandon et al., "Behavioral Cloning in Atari Games Using a Combined Variational Autoencoder and Predictor Model." IEEE Congress on Evolutionary Computation 2021, Kraków, Poland.

T. Hutchinson, N. Marquand, J. Springer, T. Swedes, S. Tandon, and J. Zyck, "Specialized Terrestrial Rotorcraft Explorer", AIAA Scitech 2020 Forum. January 2020.

## CONFERENCE PRESENTATIONS

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- N. Marquand, S. Tandon, "Specialized Terrestrial Rotorcraft Explorer." AIAA SciTech 2020 Forum, Orlando, FL ,USA. January 2020.
- S. Tandon, "Demonstration of Self Organized Cubesats." iCubesat Workshop, Paris, France. May 2018.