

# YASH BANSOD

*An inquisitive artificial intelligence engineer obsessed with autonomous robots.*

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## EDUCATION

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### University of Maryland – College Park, MD, USA

Master of Science in Systems Engineering, Robotics Specialization;

*Aug 2019 – May 2021*

GPA: 4.0/4.0

### Manipal Institute of Technology – Manipal, KA, India

Bachelor of Technology, Mechatronics Engineering, Robotics Specialization

*Aug 2014 – July 2018*

## WORK EXPERIENCE

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### Naval Research Lab Research Group, University of Maryland – College Park, MD, USA

*Graduate Research Assistant (Artificial Intelligence)*

*Jan 2021 – Present*

- Researched an iterative graph traversal based re-entrant Hierarchical Task Network Planner. (AI planning, python)
- Invented an integrated planning and acting algorithm that provides ~20% improvement in planning and ~30% improvement in acting performance. (Integrated AI planning and acting, graph theory)

### Tubaldi Lab, University of Maryland – College Park, MD, USA

*Graduate Research Assistant (Machine Learning)*

*Apr 2020 – Jan 2021*

- Enhanced the speed of finite element analysis dataset generation by ~800% using concepts of distributed computing and process parallelism. (Shell scripting, multi-processing, python)
- Established orders of magnitude speedup in the inverse structural design of meta-materials by architecting an optimization algorithm using generative neural networks. (Deep learning, python, TensorFlow)

### Continental Automotive – Bengaluru, KA, India

*Machine Learning Software Engineer*

*Aug 2018 – July 2019*

*Machine Learning Intern*

*Jan 2018 – June 2018*

*Computer Vision Intern*

*May 2017 – July 2017*

- Demonstrated data-oriented behavior, path, and motion planning by conceptualizing a recurrent neural network-based planner architecture. (Deep learning, planning, python, TensorFlow)
- Established a baseline to compare the neural network planner against conventional path planning algorithms like A\*, ARA\*, D\*lite, and RRT. (Graph theory, python, C++)
- Collaborated in developing a long short-term memory (LSTM) based Kalman filter resulting in ~15% improvement in tracking of vehicles. (Deep learning, Bayesian filtering, python, TensorFlow)
- Collaborated in developing a convolutional neural network-based visual odometry and ego-localization system resulting in ~10% improvement in localization. (Deep learning, localization, python, TensorFlow)
- Prototyped an ARM SoC-based surround view system enabling Continental to market a solution 600% cheaper than existing solutions. (Multi-view computer vision, OpenCV, Eigen, C++, embedded system, multi-threading)

### Project MANAS – Manipal Institute of Technology – Manipal, KA, India

*Automation Head | Sensing and Automation Engineer*

*Sep 2015 – Feb 2018*

- Led a sub-division of 7 undergraduate researchers in the development of:
  - State lattice-based planner for Ackermann steered vehicle. (Robotics, motion planning, ROS, C++)
  - Extended Kalman Filter-based Lidar and Radar sensor-fusion system. (Robotics, sensor fusion, ROS, C++)
  - An embedded distributed control and sensor interfacing system. (Robotics, ROS, embedded C, CAN)

For our prototype autonomous car propelling Project MANAS to the top 13 finalists nationwide (amongst ~260 participants) in Mahindra Rise Prize Driverless Car Challenge.

## ACHIEVEMENTS

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- Secured the first position at Northrop Grumman audio signal processing and classification challenge 2019.
- INCOSE Associate Systems Engineering Professional (One of 1074 ASEPs worldwide).
- Student Ambassador at Maryland Robotics Centre, College Park, MD, USA