Mayank Bansal

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OBJECTIVE:
Robotics Engineer seeking Internship roles in Robotics, Controls, Planning and Perception to gain practical experience while having an opportunity to positively impact the society.

EDUCATION:
Worcester Polytechnic Institute (WPI), Worcester, MA
Master of Science in Robotics, GPA 4.0/4.0 May 2024
Relevant Courses: Motion Planning, Robot Control, Reinforcement Learning, Robot Dynamics, Legged Robotics

Manipal Institute of Technology, **(MIT),** Manipal, India
Bachelors of Technology in Mechatronics, GPA 8.71/10.0 June 2022

SKILLS:
Programming Languages/ Operating System: Windows, Ubuntu, OOP, Python3, C++, C, Java, Embedded C
Applications/ Software: MATLAB, SimScape, ROS2, Solidworks, Arduino, PyTorch, OpenCV, Gazebo, Unity, NumPy
Languages: German, Hindi

PROJECTS:
Motion Planning for Mobile Robots, WPI January 2023 – Present
- Implemented the path planning algorithm for a mobile robot in a grid like environment using A*, Dijkstra's, PRM and RRT algorithm.
- Developing a coverage path planning algorithm based on cost-based Boustrophedon for a mobile robot (ongoing).

Hexapod Walking Robot, WPI October 2022 – December 2022
- 3D printed and assembled the body of the robot using PLA, Arduino Uno and SG90 servo motors.
- Colloborated in a team of four to develop the inverse kinematics and a tripod gait walking pattern for the robot and used rosserial to communicate between Arduino and the local computer.

Control and planning for three link SCARA manipulator, WPI October 2022 – December 2022
- Generated a three-link robot URDF, implemented PID controller for position set point tracking and implemented planning for a given trajectory.

Control of a Triple Inverted Pendulum based Wheelchair, MIT June 2021 – August 2021
- Developed the dynamic models of the system and visualized it using CAD on MATLAB and Simscape.
- Controlled the system using PID and LQR controllers to stabilize the motion of the links.
- Created a GUI on MATLAB for real-time visualization of the changes occurring in the system.

Computer Vision for Autonomous Cars, MIT April 2021 – May 2021
- Developed and trained a classification model on Tensorflow to classify different models of cars. The model achieved over 90% accuracy.
- Trained a U-Net based semantic segmentation model to distinguish between road-objects on a pixel level.

WORK EXPERIENCE:
Computer Vision Intern, Wastefull Insights, Vadodara, Gujarat, India January 2022 – May 2022
- Developed the training pipeline for waste detection on a conveyor belt using YoLOv5 object detection algorithm and deployed the model on Jetson Nano using TensorRT inference engine and CUDA.
- Created and deployed a ResNet based colour classification model on NVIDIA Jetson Nano using TensorRT inference engine and CUDA.
- Developed the dataset and used AWS S3 services to manage and control the flow of data in the pipeline.

LEADERSHIP AND EXTRA-CURRICULAR ACTIVITIES:
- Led a team of four in the signature robotics competition of India, e-Yantra.
- Organizer of a national Capture the Flag cyber-security competition.