CHINTAN DESAI

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SUMMARY:

Robotics enthusiast with 3+ years of experience in hardware design, software simulation, prototyping and integration in an autonomous vehicles startup. Demonstrated ability to lead small agile teams. Looking for a Spring '22 Co-op at the cross-roads of Perception and Planning in a company that isn't afraid to innovate.

EDUCATION:

Master of Science, Robotics Engineering, 4.0/4.0 ***Aug '20 - Present***
Worcester Polytechnic Institute, Worcester, MA, USA

Bachelor of Engineering, Electronics & Telecommunication, 8.2/10 ***Aug '13 - Jun '17***
Savitribai Phule Pune University, Pune, MH, India

SKILLS:

Embedded C, C++, Python ■ MATLAB/Simulink, EAGLE, Multisim, Onshape, X-Plane ■ ROS, Gazebo, Rviz, OpenCV, MoveIt, move_base, Tensorflow, PyTorch, Scikit-Learn, Keras ■ Git, Docker, Scrum

PROFESSIONAL EXPERIENCE:

Mechatronics Engineer (UAVs), Ayaan Autonomous Systems, India **Jun '17 - Sep '20**

- Designed and simulated fixed-wing VTOL UAVs using SIL and HIL simulation tools in X-Plane software
- Developed concept of a Humanitarian Aid and Disaster Relief UAV swarm capable of operating in a GNSS-denied environment for the Mehar Baba Prize organized by Indian Air Force
- Designed OR-ing controller-based battery redundancy and switching system that resulted in flight endurance improvement of 30% in a fixed-wing VTOL UAV
- Interfaced ADS-B In/Out air traffic surveillance module with UAV for Sense and Avoid functionality
- Led a team of 8 engineers to integrate and test UAVs and execute survey missions that involved extensive planning of safe take-off and landing sites, local authority permissions and travels
- Generated 15+ sales leads by representing the company at Defence Expo 2020, Lucknow, India, which attracted a footfall of 100,000+ individuals and 900+ companies
- Visited Shenzhen and Tianjin, China, to evaluate and set up a robust supply chain for hardware

RESEARCH, PROJECTS & COMPETITIONS:

Region Based Planning for Within Hand Manipulation*, Research, MER Lab, WPI* ***Aug '21 - Present***

- Developing a variable friction parallel finger gripper that is capable of 3D manipulation of prismatic objects without the need for regrasping
- Devised a novel planning strategy based on A-star algorithm that results in dexterous manipulation of object to attain finger contact in target regions and a predetermined target pose of the object

NASA Space Robotics Challenge 2021, *Research Assistant, WHRL Lab, WPI* ***Jan '21 - Jul '21***

- Led one of five sub-teams consisting of 8 students and managed the codebase on GitHub
- Developed inverse kinematics of a 4 DoF lunar excavator that collected lunar regolith and deposited them in a hauler using perception techniques such as object detection, visual odometry and tracking
- Tuned PID controller and implemented velocity ramping control for smooth motion of joints in low gravity
- Assisted in development of scheduler and state machine for coordination in a team of 6 mobile rovers
- Contributed in unit and integration testing of diverse robotic behaviors introduced by each subteam

Face Recognition on Olivetti Dataset, *Machine Learning, WPI* ***Aug '21 - Oct '21***

- Performed PCA dimensionality reduction algorithm to reduce the number of features for the Olivetti Faces dataset to reduce the computational cost for clustering the data
- Used K-means clustering algorithm to generate labels for unknown faces and then used them to identify unknown faces with 84% accuracy

FLANN Classifier for Character Recognition, *Machine Learning, WPI* ***Aug '21 - Sep '21***

- Implemented Fast Library for Approximate Nearest Neighbor to classify handwritten letters from the MNIST dataset to achieve a precision score of 94.5% and 1/4th the computation time of a KNN classifier

Holonomic Drive Mobile Manipulator for Warehousing, *WPI* ***Jan '21 - May '21***

- Developed a mobile manipulator that autonomously navigated a simulated warehouse environment to pick and place the letters forming the word WPI using move_base and ROS navigation stack
- Worked with MoveIt library for motion planning of 6 DoF UR10 manipulator

Quadcopter for Airspace Monitoring*, WPI* **Aug '20 - Dec '20**

- Designed a MATLAB simulation for a flight controller based on LQR optimal control strategy that focused on stability while also optimizing battery usage over traditional methods of control in a Quadcopter that guarded an airspace and captured intruding UAVs

Computer Vision Based Pick and Place Robot, *e-Yantra Robotics Competition* ***Sep '16 - Mar '17***

- Developed a wheeled robot which traversed through a gridded path using A* algorithm, identifying fiducial markers with different features like shape, color and size, using OpenCV library and Python

VOLUNTEERING:

National Service Scheme (2014-2017), Center for Citizen Science (2016-2017)

LANGUAGES:

English, Hindi, Marathi, Gujarati (Native), Chinese (Elementary)