

Damodar Datta Kancharla

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INTRODUCTION

Enthusiastic and driven master's student interested in robotics and artificial intelligence. Skilled in C++, Python, ROS2, and PyTorch. Proficient with tools like git, Simulink, and SolidWorks. Hardware expertise includes manipulators, Pixhawk, and single-board computers. Currently seeking opportunities where I can apply and further develop my skills in machine learning and robotics for practical applications.

EDUCATION

Chalmers University of Technology

M.Sc, Complex Adaptive Systems

Subjects: Artificial neural nets, Mobile robots, Simulation of complex systems

Aug 2023 - Ongoing

SRM Institute of Science and Technology, Kattankulathur

B.Tech: Mechatronics Engineering (First Class with Distinction)

Subjects: Mobile robotics, Machine vision, Linear and digital control systems

Jun 2016 - May 2020

EXPERIENCE

Fraunhofer IPM

Thesis worker

Freiburg im Breisgau

Mar 2025 - Aug 2025

- **3D reconstruction of railway infrastructure:**

- * Using a Monocular camera setup, generate metrologically consistent 3D point clouds.
- * The generated data will be fused with the Lidar point cloud for additional objects into the point cloud and fill missing data.

Chalmers University Technology

Project assistant

Gothenberg, Sweden

Jul 2024 - Oct 2024

- **Cloud operated penudulum:**

- * Designed and installed single and double pendulum setups with BLDC motor.
- * Created proof of concept for cloud operated pendulum units, which could be used for online classrooms.

Volvo Technology AB

Summer Worker

Gothenberg, Sweden

Jun 2024 - Jul 2024

- **Battery cell testing and simulation:**

- * Conducted battery chamber thermal analysis for various configurations of battery stacking and chamber sizes.
- * Simulation of LiFP batteries using PyBamm for data generation and inducing failure cases.

OSPO, UC Santa Cruz

Open source contributor under the mentorship of Carlos Espinosa

Chennai, India

Jun 2023 - Aug 2023

- **High Fidelity simulation using Unreal engine:**

- * Tested simulation using Unreal engine based simulation for testing a custom propeller based balancing bot.
- * Analysed the difficulties of increasing parts leading to complicated animation blueprints and programs.

Robotics Research Center (RRC), IIIT-H

Research Assistant under the guidance of Dr. Harikumar Kandath

Hyderabad, India

Jul 2022 - May 2023

- **Identification of Salient Structural Elements in Buildings:**

- * Created Datasets of Building pipes and cracks using a Custom Drone and DJI Mavic, for validating the automation of civil structure assessment on drone collected real-world data.
- * Implemented real-time pipe detection using LEDNet and utilized colour processing for achieved 88% accuracy.
- * Developed an open-source software library (UVRsABI) for the community. Collaborating with the Central Road Research Institute (CRRI), Govt. of India, for its real-world deployment.

- **UWB-based indoor navigation of drones inside closed surfaces (sponsored by Airbus Group):**

- * Benchmarked stability of different drones with inertial odometry under GPS-denied navigation using Motion Capture.
- * Conducted experiments to validate the usage of NLOS UWB-based localization in closed spaces and also tried sensor fusion with IMU for better localization.

Hero MotoCorp Ltd

Assistant Manager - Maintenance Department

Madanapalem, India

Aug 2020 - Apr 2022

- **Machine Shop - Shift Incharge:**

- * Worked on breakdown and preventive maintenance of Fanuc CNC machining centres, Manipulators, and Special purpose machines with SAP ERP.
- * Part of a cross-functional team for commissioning industrial IOT with existing machinery in the machine shop.

- **Paint and Weld Shop - Line Incharge:**

- * Worked on breakdown and preventive maintenance of Paint and Weld shop equipment. Machines like Manipulators, Paint kitchen and treatment equipment, Welding stations, Fine boring and brazing stations.
- * Handled the planning of annual maintenance activities and spare management for the Weld shop for the Fuel tank and Frame body Lines.
- * Part of a cross-functional team for conducting a feasibility study for the operation of industrial IOT with existing machinery in the Paint and weld shop.

Corporate Technology Center, Tubes Investment of India Ltd

Engineering Intern

Chennai, India

Jun 2019 - Jun 2019

- **Fatigue Testing of orbital welded tubes:**

- * Designed a resonant fatigue testing setup for ERW steel tubes(SAE 1010).
- * Conducted experiments on the changes in fatigue due to variations of Tungsten inert gas (TIG) welding parameters like voltage, current, filler material diameter and flux material.

TECHNICAL SKILLS

Languages: C,C++, Python, MATLAB, PLC ladder logic(Mitsubishi and Siemens)

Frameworks: ROS, PyTorch, Tensorflow, OpenCV, PX4, NumPy

Tools: GIT, Simulink, L^AT_EX, VS Code, SolidWorks, Gazebo, Airsim, Docker

Hardware: Manipulators (ABB, Fanuc, OTC, Durr, Panasonic), Pixhawk, SBC (Raspberry Pi, Jetson Nano), Actuators, Pneumatics, Hydraulics, Motion Capture System(Optitrack), 3-D Printing(Ultimaker, Flashforge)

PROJECTS

Foam cutting humanoid using MoveIt2

Aug 2024 - Oct 2024

- Made a proof of concept of foam cutting for 4 dof humanoid with stepper motors.
- Implemented the Trajectory planner (MoveIt2) and MicroROS based communication architecture for the robot using Arduino Due. (ROS2)

Keywords : ROS2, Control

PID based Motor position control

Jul 2022 - Aug 2022

- Designed a compact housing for holding the motor and encoder together. Used a sleeve coupler for coupling the shafts (designed in SolidWorks).
- Implemented the control program (PID) on Raspberry Pi and provided logging for power shutdown fail case. (Python)
- Deployed PID-based motor position control experiment over the cloud for Remote Triggered Labs (Using blynk).

Keywords : Control

Machine learning based vision servoing of a quadrotor aerial vehicle (Bachelor Thesis)

Oct 2019 - Apr 2020

- Designed a Person Detection pipeline using deep learning inferences(SSD MobileNet) with visual servoing using Centroid tracking of the inference
- Simulated drone's response to live camera feed using Gazebo and tested a two-controller Strategy (Pixhawk and Jetson Nano), for SITL testing and HIL testing.

Keywords : Deep Learning, Computer Vision, Drone

PUBLICATION

- Vedant Mundheda, **Damodar Datta K**, and Harikumar Kandath. "Control Barrier Function-based Predictive Control for Close Proximity operation of UAVs inside a tunnel". *arXiv preprint arXiv:2212.16177*, 2023
- Himanshu Kumar, **Damodar Datta K**, Jinraj V Pushpangathan, Harikumar Kandath, and Ashwin Dhabale. "AGVO: Adaptive Geometry-based Velocity Obstacle for heterogenous uavs collision avoidance in UTM". *IECON 2023-49th Annual Conference of the IEEE Industrial Electronics Society*, 2023
- Kushagra Srivastava, **Kancharla, Damodar Datta**, Rizvi Tahereen, Pradeep Kumar Ramancharla, Ravi Kiran Sarvadevabhatla, and Harikumar Kandath. Crackuda: Incremental unsupervised domain adaptation for improved crack segmentation in civil structures. In *International Conference on Pattern Recognition*, pages 74–89. Springer, 2025

Reference will be given upon request