Gunjan Giri

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Education

- **Birla Institute of Technology And Science, Pilani** — Pilani, India
  M.Tech in Software Systems — *July 2024 - Ongoing*
- **Odisha University of Technology and Research** — Bhubaneswar, India
  B.Tech in Electronics and Instrumentation Engineering; CGPA: 9.11 — *Aug 2018 - May 2022*
  Technical Co-ordinator of Zairza: The Technical Society of OUTR College
- **Dr. A.N.K DAV Public School** — Rourkela, India
  Higher Secondary in PCMB; Percentage: 82.4 — *June 2016 - April 2018*
- **Chinmaya Vidyalaya(E.M)** — Rourkela, India
  Secondary in Science; Percentage: 90.2 — *April 2015 - Feb 2016*

Skills Summary

- **Languages**: C++, C++14, C++17, Python, Embedded C, Unix scripting, MATLAB
- **Frameworks and Tools**: ROS, Pytorch, Tensorflow, Onnx, TensorRT, Arduino, OpenCV, Keras, Embedded Systems, CUDA, GIT, JIRA, BitBucket, XCode, VsCode, Carla, UnrealEngine, DOORS, Kafka, Agile, DevOps, Autosar
- **Algorithms**: Mapping, Localization, Planner, Behaviour, Controller, SLAM, Perception, Sensor Fusion, Path Planning, Intention Prediction
- **Learning Based Approaches**: Deep Learning, Machine Learning, Computer Vision
- **Sensors and Development Boards Used**: Monocular Camera, Stereo Camera, Pinhole Camera, Fisheye Camera, Lidar, Ultrasonic Sensor, Depth Camera, IMU, Wheel Encoders, Automotive Sensor, Arduino Uno, Arduino Mega, ESP32, Raspberry Pi, Jetson Nano, Eagle One-O-One, Tensor Boards, Cuda Drivers

Experience

- **Bosch Global Software Technologies** — Bengaluru, India
  Software Engineer — *Jan 2024 - Current*
  - **Working on the Buggy Autonomous Vehicle mainly Catering to ADAS and Parking Features and Functions**:
    - Implementing different algorithms using ROS Platform to the Buggy with team so as to make the vehicle in L3 and L4 level automation. The Vehicle has lidar and camera sensors which takes data and helps the vehicle to move autonomously. Had worked on the Hardware Verticle too, in NRCS chip for parking and still continuing the same.
    - Worked on monocular per pixel depth estimation for both pinhole and fisheye camera using learning based approaches.
    - Worked on Zed Camera SDK for perception, mapping and relocalization. Enhanced the accuracy of Object Detection and Custom Object Detection in Zed Perception.
    - Worked on designing and Implementation of Adaptive Cruise Control on a Vehicle for Low Speed operation using cameras.
    - Worked on adas sensor callibration and debugging, mainly camera, lidar and steering.
    - Worked on Creating Surround Image System using surround NRCS cameras so as to determine Parking slot for parking functions and Creating a 360 degree map around parking space and localize around it.
    - Working on Parking Slot detection in an Normal Image and in a Surround Camera System Image.
    - Involved on various complex tasks and helping team to figure out solutions for it mainly catering to ADAS and Parking Features and Functions

  Associate Software Engineer — July 2022 - Dec 2023

  - **Working on the Buggy Autonomous Vehicle mainly Catering to ADAS and Parking Features and Functions**:
    - Worked on creating ros packages for wheel based odometry.
    - Worked on fusion of IMU and wheel odometry to get wheel imu odometry.
    - Worked on Fusion for Visual Slam, Visual Odometry and localization.

- Worked extensively on Carla to generate trajectories and simulations and ground truth for AD operations.
- Worked on creating packages for obstacle avoidance and creating visualization package for objects in my region of interest.
- Working extensively on Lidar Preprocessing i.e Upsampling, downsampling and other things for generating ground truth and for other AD call of actions.
- Working on Mono-Nrcs camera based perception pipeline, i.e Camera Pre-processing, Distortion Correction, Bird Eye View, 2D and 3D object Detection, Image and Semantic Segmentation.

- **Quin** Hyderabad, India
  Embedded Software Developer Intern *March 2022 - June 2022*
  - **Schematic Design**: Worked on their Schematic of their Motorcycle Helmet and cycling Helmet
  - **SDK and Protocol**: Worked on ESP SDK and integrating BLE Protocol to read and write from a service
  - **Sensor**: Worked on different Motion Sensors i.e MPU9250 and MPU6050 and NFC Chipsets
- **Accio Robotics** Bengaluru, India
  Robotics Software Developer Intern *Aug 2021 - Feb 2022*
  - **Worked on their existing product i.e Bot Alpha and ideation of new product**:
    - Involved in research and betterment of existing algorithms and making it robust for their existing and new product.
    - Was in a team of Implementing Docking and planner techniques for smooth docking of robot. Here used different algorithm for the same and had implemented mapping and localization to get an idea for the robot before docking
    - Had worked on Embedded side and implemented code in microcontrollers and worked with different sensors.
- **TechnoYantra** Remote, India
  Robotics Developer Intern *Sep 2020 - Dec 2020*
  - **Worked on their existing product and implemented new functionalities for their client**:
    - Worked on Docking part of Robots.
    - Created a pipeline between docking and robots.
    - Worked on AWS Robomaker and it's tools and did a data storage in AWS for automated annotation.

Academic Projects

- **Visual Follow Line exercise of Robotics Academy by JdeRobot Organization**: This was a Project done for the GSoC Program for the year 2021. I had implemented PID algorithm in it for the Robot to follow up line and Cover the Path.
- **Home Service Robot**: This project was created to move our bot autonomously between the environments and do the specified tasks with ease. Here the SLAM algorithm and path planning method are used.
- **Amazon Robotics Challenge(2016)**: Integrating a Complete Robotic System i.e Pick and Place of an object for a Factory Environment using State Machines.
- **ROS simulation of a Car with Hokuyo Sensor**: This Project shows the simulation prototype of How the Hokuyo Sensor with the help of Lidar detects the covered path and left out path in a Road
- **ReRo**: This is an Project that took us to the finalist of Smart India Hackathon. This can be used in Disaster Management Scenario to handle the situations. Here SLAM Mapping and OpenCV concepts are used. It can help the Disaster Management Committee to fasten the rescue process.
- **Map My World**: This project was created to make a map of an Unknown Environment and give the Complete map of the Environment. Here Gmapping and RTAB Maps concepts are used.
- **Self Driving Car**: This project consists of several parts in which I have Implemented OpenCV first for detection of Advance lanes in the Highway, then used Deep Learning for behavioural Cloning of the Car, and then PID Controller for detection of Turning and Errors in the path by Car.
- **Sahayak Bot**: This was a Project given by IIT Bombay in which I implemented SLAM Algorithm and Robotic Arm Manipulation in a WareHouse Robot.

Courses and Certifications

- **Computer Vision MasterClass**: Udemy (March '24)
- **Autosar Architecture**: Udemy (Sept '23)
- **Advanced Driver Assistance System(ADAS)**: Udemy (May '23)
- **Automotive Camera**: Udemy (Feb '23)
- **Data Fusion with Linear Kalman Filter**: Udemy (Oct '22)
- **Programming Essential in Python**: Cisco Netacad (March '21)
- **DSA using Python**: NPTEL (December '20)
- **Robotics Specialization**: Coursera (Sept '20)
- **Self-Driving Car Specialization**: Coursera (Sept '20)
- **Deep Learning Specialization**: Coursera (July '20)
- **Flying Car and Autonomous Flight Engineer NanoDegree Program**: Udacity (July '20)
- **Self-Driving Car NanoDegree Program**: Udacity (June '20)
- **Robotics Software Engineer**: Udacity (May '20)
- **Algorithmic Toolbox**: UCSan Diego (April '20)

Honors and Awards

- Received Employee of the Year Award for my work around in Camera Systems.
- 5* coder at HackerRank for c++ and 3* at Problem Solving.
- 2* coder at CodeChef
- Selected in Top 30 Teams in Hacker earth Hackathon-Smart app to control Crowd at Mall organized by Reva University.
- Selected in Top 32 Teams in a Hacker earth Hackathon-Data Scientist at Hospital organized by GE Healthcare.
- Hack-fest 2.0-Winner of Hack Fest 2.0 organized by our College for the Selection of SIH 2020.
- Been in Stage 2 of Eyantra by IIT Bombay.