Gunjan Giri

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Education

- **Birla Institute of Technology And Science, Pilani** — Pilani, India
  M.Tech in Software Systems(Specialization in AI) — *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, ROS2, Pytorch, Tensorflow, Onnx, TensorRT, Arduino, OpenCV, Keras, Embedded Systems, CUDA, GIT, JIRA, BitBucket, XCode, VsCode, Carla, UnrealEngine, DOORS, Kafka, Agile, DevOps, Autosar, AOS, Qualcomm SDK, Model Optimization and Pruning, CodeBeamer, ADTF Simulation
- **Algorithms**: Mapping, Localization, Planner, Behaviour, Controller, SLAM, Perception, Sensor Fusion, Path Planning, Intention Prediction, Visual SLAM
- **Learning Based Approaches**: Deep Learning, Machine Learning, Computer Vision, Artificial Intelligence, LLM's, RAG Models, Multi agent system, Vision Language Models, Vision Language Agents
- **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, Zed Cameras

Experience

- **Cariad** — Bengaluru, India
  Software Engineer — ***March 2025 - Current***
  - **Parking Master**:
    - Developing the interaction and coordination layer between Parking Functions and the HMI Manager.
    - Developing an automation tool to generate artifacts from SUDL (YAML file extension) within AOS components, minimizing manual coding effort.
    - Designing and developing a simulation platform to validate application components prior to integration with the HMI Manager and Parking Master.
    - Utilizing AOS middleware to run the component and enable interaction between different Parking Functions.
  - **In-Cabin Sensing**:
    - Performing model selection and training to achieve optimal outcomes on the SoC.
    - Working extensively with VLM and VLA models to generate high-quality ground truth data for head pose and eye pose detection.
    - Converting code from Python libraries to C++ using ONNX Runtime for execution.
    - Running head pose and eye gaze detection models on a Qualcomm SoC.
- **Bosch Global Software Technologies** — Bengaluru, India
  Worked as a Software Engineer to make roads safer.
  - **Senior Software Engineer** **Jan 2025 - Mar 2025**:
    - Working on learning-based networks for AD stack and end-to-end drivable scenarios.
  - **Software Engineer** **Jan 2024 - Dec 2024**:
    - Developed an autonomous buggy with a focus on parking and ADAS features, implementing L3 and L4 automation using ROS, lidar, and camera sensors.
    - Worked on NRCS parking chip hardware, contributing to vehicle automation and autonomous driving.
    - Designed and implemented adaptive cruise control using camera perception for low-speed operation.

    - Developed scenarios for intention prediction and path planning, including avoidance and nudgeability for L2+ functions.
    - Worked on monocular per-pixel depth estimation for fisheye and pinhole cameras using learning-based techniques.
    - Specialized in Visual SLAM, utilizing learning-based and traditional methods with fisheye, pinhole, and stereo cameras.
    - Enhanced Zed Camera SDK with improved object detection, mapping, and relocalization.
    - Calibrated and debugged ADAS sensors, including cameras, lidar, and steering systems.
    - Developed a 360-degree parking map and implemented a Surround Image System for parking slot detection using NRCS cameras.
    - Contributed to a wide range of ADAS and parking features, assisting the team in overcoming complex challenges.
  - **Associate Software Engineer** **July 2022 - Dec 2023**:
    - Developed ROS packages for wheel-based odometry and integrated IMU data to create wheel-IMU odometry.
    - Contributed to sensor fusion for localization, Visual SLAM, and Visual Odometry.
    - Extensively used Carla to generate ground truth, simulations, and trajectories for AD operations.
    - Developed packages for obstacle avoidance and object visualization within specific areas of interest.
    - Worked on Lidar preprocessing, including upsampling and downsampling, for ground truth generation and AD tasks.
    - Built a perception pipeline using Mono-NRCS cameras for image segmentation, semantic segmentation, distortion correction, bird's-eye view, and 2D/3D object detection.

- **Quin** Hyderabad, India
  Embedded Software Developer Intern ***March 2022 - June 2022***
  - **Schematic Design**:
    - Developed the schematics for their cycling and motorcycle helmets.
  - **SDK and Protocol**:
    - Worked on ESP SDK and integrated BLE Protocol for service read/write functionality.
  - **Sensor**:
    - Designed and implemented motion sensors (MPU9250, MPU6050) and NFC chipsets.

- **Accio Robotics** Bengaluru, India
  Robotics Software Developer Intern ***Aug 2021 - Feb 2022***
  - **Product Development and Algorithm Optimization**:
    - Conducted research to refine algorithms and ensure robustness for both new and existing products.
    - Participated in planning and docking algorithm implementation, utilizing mapping and localization for smooth robot docking.
    - Experienced in working with various sensors and implementing code on microcontrollers for embedded systems.

Academic Projects

- **Visual Follow Line (JdeRobot, GSoC 2021)**: Implemented a PID algorithm for a robot to autonomously follow a line, completed for the Robotics Academy as part of Google Summer of Code.
- **Home Service Robot**: Developed a bot capable of autonomous navigation and task execution using path planning and SLAM algorithms.
- **Amazon Robotics Challenge(2016)**: Integrated a complete robotic system for pick-and-place operations in a factory setting using state machines.
- **ReRo (Smart India Hackathon Finalist)**: Built a disaster management robot using OpenCV and SLAM mapping for accelerated rescue efforts.
- **Self Driving Car**: Applied OpenCV for lane detection, deep learning for behavior cloning, and a PID controller for path correction.
- **Sahayak Bot (IIT Bombay)**: Enabled warehouse robot arm manipulation and SLAM-based navigation for efficient task handling.

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)
- **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

- **Awarded Employee of the Year for innovative contributions in camera systems**
- **Achieved 3 star in Problem Solving and 5 star in C++ on HackerRank; 2 star Coder on CodeChef**
- **Ranked in the top 30 teams at Reva University Hackathon for a smart app managing mall crowds, and in the top 32 teams at the GE Healthcare Hackathon for data science in healthcare**
- **Winner of Hack Fest 2.0, leading to selection for SIH 2020**
- **Participated in multiple national-level hackathons and consistently ranked among the top 5 finalists.**