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Arkajyoti Basak

Software Engineer - Autonomous Driving/Robotics

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EXPERIENCE

SOFTWARE ENGINEER | **KPIT INDIA** **Jan 2023 - Present**

- Contributed to **Adaptive AUTOSAR** , implementing IPC stack within communication management team.
- Reduced communication time by 40%, by replacing legacy APIs with semaphore and shared memory.
- Implemented a tool to simplify functional testing, which is widely adopted by other teams.
- Worked on C++, Python, TCP/IP, UDP, QNX RTOS, R-Car S4/H3 boards, QEMU emulator.

Achievements: Received multiple **High Flyer** awards for leading and early delivering the testing tool.

EXECUTIVE ENGINEER | **ELEKTROBIT INDIA** **Jan 2022 - Dec 2022**

- Developed a C++ code generator tool used by mulitple **ADAS** platforms.
- Reduced developer overhead by automating GTest generation using Python.

Achievements: Received **H1 Maverick Team Award** for optimizing tool performance.

DESIGN ENGINEER INTERN | **DASSAULT SYSTÈMES** **Feb 2021 - Aug 2021**

- Designed a foldable helmet, achieving a 32% volume reduction compared to traditional designs.
- **Achievements:** Top 4 at **ConnectNext 2021** and secured full sponsorship to build the physical prototype.

OPEN-SOURCE

MEMBER | **JDEROBOT** **May 2021 - Present**

- Participated in **Google Summer of Code 2021** as a student, webifying the existing ROS infrastructure.
- Mentored new contributors and maintained the drone section of RoboticsAcademy.
- Assisted in achieving hardware acceleration support to enhance framework performance.
- Worked on ROS, Gazebo, PX4, Python, Docker.

Achievements: Presented my GSoC work at ROS World 2021 as Lightning Talk.
Achievements: Received scholarship by Open Robotics to attend ROSCon 2022 in Kyoto, Japan.

SKILLS

C++ | Python | CMake | Bash | ROS | Gazebo | Rviz | OpenCV | Ubuntu | Docker
Robot Localization | Kalman Filters | Sensor Fusion | SLAM | Communication Protocols

PROJECTS

ROBOTICS CONSULTANT | **Fiverr** **2023**

- Collaborated with multiple **startups** and small businesses to provide them with robotics solutions.
- Worked closely with cross-functional teams to ensure seamless integration of autonomous functionalities.
- Played a key role in the growth of a husbandry startup by leading the development of a cleaning robot.
- Designed a juice-dispensing robotic arm and provided the base to a food service startup.
- Worked with a drone-based startup to improve localization estimation in a non-GPS environment.

PARTICLE FILTERS | **GitHub** **2023**

- Developed a ROS package to **fuse** LiDAR and odometry sensor data using particle filter for state estimation.
- Explored **Gaussian process** for improved state estimation and reduced computational power.

KALMAN FILTERS | **Blog** **2021**

- Developed a ROS package - awesome slam for SLAM using Kalman filters.
- Utilized odometry and LiDAR sensor data for robot and obstacle **pose estimation** .
- Analyzed the performance using the KITTI dataset based on algorithmic complexity and execution time.

AI LEARNS TO PARK | **Blog** **2020**

- Developed an AI-powered 3D simulation of a self-parking car.
- Established a communication link between the simulator and controller using a networking interface.
- Explored various **reinforcement learning** algorithms and trained multiple artificial neural network.

EDUCATION

Thapar Institute of Engineering & Technology, India | Bachelor's in Mechanical Engineering **2018 - 2022**