ABHISHEK KRIPAL

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Bonn, Germany

Work Experience

- **Ford Pro [🌐]** — *Jul 2023 - Aug 2025*
  MTS 3 - Full Stack Engineer — Bangalore, India
  - Worked on the Charging Station Management System (CSMS) software platform designed to monitor, manage, and control electric vehicle (EV) charging infrastructure.
  - Contributed to achieving the product roadmap by fulfilling both functional and non-functional requirements on schedule.
  - A significant aspect of my work has been enhancing the telematics infrastructure, Geotab integration and substantially increasing the vehicle discovery success rate.
  - Ownership of the vehicle discovery workstream modules in the micro-services architecture.
  - Implemented new internal tools for customer success managers for easier troubleshooting of issues.
  - Accelerating productivity & sustainability by saving time, improving efficiency and reducing energy.
- **Atonarp [🌐]** — *Nov 2021 - Jan 2023*
  Full Stack Software Engineer — Bangalore, India
  - Worked on the backend infrastructure and frontend design of the end product of ATON from scratch for the high-speed laser optical spectroscopy data to quantify molecules for non-invasive measurement of glucose to monitor patients with diabetes.
  - Ensuring software hygiene by developing a process to find memory leaks in various modules and creating exhaustive test cases for performance benchmarking to build a robust system.
  - OS-independent scripts to automate systems and processes.

Education

- **Universität Bonn [🌐]** — *Oct 2025 - Present*
  M.Sc. Geodetic Engineering — Bonn, Germany
  - Major: Mobile Sensing & Robotics; Course Curriculum: 📚
- **International Institute of Information Technology, Naya Raipur [🌐]** — *Jun 2016 - Jun 2020*
  B.Tech Computer Science and Engineering — Naya Raipur, India
  - CGPA: 7.11/10.00; Course Curriculum: 📚
- **Shishu Niketan** — *Jun 2013 - Jun 2015*
  High School & Secondary School — Raipur, India
  - Received 79.6% in 12th grade and 74.4% in 10th grade.

Honors and Awards

- **Best Rope** — *Mar 2023*
  Indian Himalayan Centre for Adventure & Eco-Tourism, Sikkim [⛰]
  - This award is given to the top team that excels in various activities of the Basic Mountaineering Course.
  - The team won the **Best Rope** award with an **A**-grade certification to be a certified mountaineer.
- **Nasscom AI Gamechangers** — *Aug 2021*
  NASSCOM, India [🐦]
  - The organization's objective was to recognize and reward impactful AI implementation stories.
  - The team developed a cataract screening solution that takes vision care to the doorsteps in rural areas.
- **IIGP Award** — *Jan 2019*
  India Innovation Growth Programme (IIGP) 2.0, DST, Govt. of India [📰]
  - Top 20 teams from all over India to win the prestigious award with a research grant of INR 1 million.
  - The team developed a prototype of AI in healthcare diagnostics.

PROJECTS

- **Robot Navigation & Mapping: [Orchard environment simulation]** *[▶]*
  Technology: [ROS2 | Gazebo | OpenCV | RViz | Python | ArUco Markers]
  - Developed an autonomous robotics pipeline for navigation and 3d fruit mapping in a simulated apple orchard environment using ROS2 and Gazebo.
  - Implemented ROS2 publisher and subscriber nodes for robot communication, odometry handling, EKF poses, occupancy grid map, orchard exploration, fruit detection and sensor data processing.
  - Built a marker-based localization setup using ArUco marker detection with OpenCV (PnP algorithm) for robot pose estimation in a 3D simulation environment.
  - Visualized robot pose, coordinate transforms, and detected ArUco landmarks in RViz for real-time debugging and spatial analysis.
  - Generated and visualized 2D occupancy grid maps using simulated LiDAR data for environment representation and navigation. And orchard exploration map from the camera sensor.
  - Implemented path planning (A* and Dijkstra algorithms) and navigation controller.
  - Quality analysis for all stages involved.
- **Application and Evaluation of Kinematic Mobile Sensor Systems** *[▶]*
  Technology: [Python, Emlid Studio, CloudCompare]
  - Generated georeferenced 3D point clouds of the building using both kinematic mobile laser scanner and static terrestrial laser scanner to study the differences.
  - Performed point cloud registration, processing and calibration.
  - Finally comparison and analysis with C2C, C2M and M3C2 algorithms.
- **Atmosphere Monitor: [IoT application for monitoring the environment]** *[⌂]*
  Technology: [C, Python, Django, Javascript, Highcharts]
  - This prototype was capable of monitoring dust, temperature, and humidity of the environment wirelessly.
  - The main components used were Arduino, PM2.5 laser dust sensor, DHT22 temperature-humidity sensor, NodeMCU, LiPo battery, PCB, switch, and connecting wires.
  - NodeMCU transfers the data to a Django server, which stores the data in DB and live-plots the data points in the UI, and emails are sent to selected users when pollution levels reach critical thresholds.
- **Automatic Irrigation: [Automatic plant irrigation based on soil moisture]** *[▶]*
  Technology: [C, Python, Django, Javascript, Highcharts]
  - This prototype was capable of monitoring the soil moisture, temperature, and humidity of the environment, and then, based on certain conditions, it supplied water through a pump for irrigation.
  - The main components used were Arduino, soil moisture sensor, DHT11 temperature-humidity sensor, L298N motor driver, LM393 voltage comparator module, 3V DC water pump, pipe, LEDs, and connecting wires.
  - The Django server uses serial communication to get the data from Arduino collected via sensors and logs the data into a DB. And we were able to observe live statistics in the UI.

SKILLS

- **Programming Languages:** JavaScript, TypeScript, Python, C++, Matlab
- **Web & Mobile Technologies:** Next.js, NestJS, ReactJS, Django, Flutter, React Native
- **Software Framework:** Robot Operating System 2, gRPC
- **Database Systems:** PostgreSQL, MongoDB, DynamoDB, MySQL
- **Data Science & Machine Learning:** TensorFlow, PyTorch, Jupyter Notebook
- **Cloud Technologies:** Amazon Web Services, Google Cloud Platform, Apache Kafka
- **DevOps & Version Control:** Docker, Kubernetes, Terraform, Git, GitLab, GitHub, Slack, Jira
- **Other Tools & Technologies:** VS Code, Bruno, Redis, Datadog, Grafana, LaTeX, QGIS, VieVS, Emlid Studio, CloudCompare
- **Survey Tools:** Terrestrial Laser Scanner, Total Station, GNSS Receiver, Profile Scanner (Leica)

ADDITIONAL INFORMATION

Languages: English (C1), German (A1), Hindi (C2)
Interests: Artificial Intelligence, Robotics, Mobile Sensing, Agriculture, IoT and other emerging technologies.