M. Farhan **Ahmed**

Profile

Robotics researcher and embedded systems engineer specializing in mapping, sensor data integration, and autonomous navigation for robots. Experienced in designing embedded control systems for industrial automation

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G Muhammad Farhan Ahmed
✉ Nantes, France

Personal information

Citizenship: **Pakistani**

Visa: **Passeport Talent, France**

Languages: **French** (B1), **English** (Professional)

Skills

- Python, C++, ROS1/2, Matlab, Git, Docker, PyTorch, Gazebo, Bash
- Computer Vision, SLAM, Path Planning, Deep Learning, Sensor Fusion, MPC, Mapping
- PIC32/24, ATmega2650, I^2C, SPI, CAN, MPLAB X, AVR Studio
- Communication and team collaboration

Courses & Workshops

- Research Ethics, NU, 2023, France
- Interval Analysis, ENSTA, 2022, France
- Basic Management, 2017, Pakistan
- Engineers as Managers, 2009, Pakistan

Experience

Postdoctoral Researcher at *LS2N, ECN (France).*   **2025.03–pres.**
◇ PerCoMa project (ANR): collaborative perception with drone fleets for marine environment monitoring, using sensor fusion, swarm navigation, and YOLO-based obstacle detection

Ph.D Candidate at *LS2N, ECN (France).*   **2021.10–2024.12**
◇ Heterogeneous multi-robot active autonomous navigation and mapping (Active SLAM) for efficient environment exploration and mapping. Publications here

Principal Engineer at *SmartPCBs (Pakistan).*   **2019.12–2021.07**
◇ Led a team of 2 engineers and 4 technicians. Implemented QMS and 5S (ISO-9001), managed project planning, audits, and training. Supervised automation solutions for process efficiency and safety

Senior Engineer at *SmartPCBs (Pakistan).*   **2012.12–2019.11**
◇ Designed and developed PIC32-based embedded systems for process control. Implemented inverter-based power distribution, remote monitoring for HVAC and fuel tanks, and interlock verification systems

Assistant Engineer at *SmartPCBs (Pakistan).*   **2007.07–2012.11**
◇ Developed preventive maintenance schedules, conducted safety inspections and risk assessments, and maintained technical documentation for plant control systems

Education

Ph.D Robotics. *École Centrale de Nantes (ECN), France.*   **2021–2024**
◇ Thesis title: *Collaborative active SLAM and distributive navigation strategies for high precision relative localization in heterogeneous fleets of ground and aerial vehicles*

Masters Advance Robotics. *ECN, France.*   **2014–2015**
◇ Erasmus Mundus joint Master Scholarship.

Masters Robotics Engineering. *University of Genoa, Italy.* **2013–2014**
◇ Erasmus Mundus joint Master Scholarship.

B.E Electronics Engineering. *Mehran University, Pakistan.* **2002–2006**

Teaching & Supervision

Undergraduate Project Supervision *ECN, France.*   **2024**
◇ Comparative study of ORB-SLAM2 and CCM-SLAM

Master M2 Thesis Co-supervision *ECN, France.*   **2023**
◇ Synchronous and Asynchronous Coordination in Collaborative Active SLAM

Master M1 Project Supervision *ECN, France.*   **2022**
◇ Deep Learning based Distributed UAV Target Detection

Master M2 Lab Teaching *ECN, France.*   **2022**
◇ Implementation ICP on nuScenes dataset

Hobbies

Cycling: City cycling on weekends with my kids
Travelling: Making travel Vlogs of European cities
Music: listening to classical Indian music