

Mohamed Lamine TAZIR

Ph.D. in Robotics & Computer Vision | Autonomous Systems & AI Engineer

tazir.med@gmail.com | +33 652 534 813 | Valenciennes, France | Open to remote & international opportunities

PROFESSIONAL SUMMARY

Ph.D. in Robotics & Computer Vision with 8+ years developing autonomous systems for aerial and ground robots. Core expertise in SLAM, 3D reconstruction, drone navigation, and multi-sensor fusion (LiDAR, cameras, IMU). Deep learning proficiency with production-deployed models for robotics perception and medical imaging (PyTorch, TensorFlow). Founded AutoAI Robotics, delivering autonomous navigation and AI solutions to industrial and healthcare clients. Strong research-to-production track record with 8 peer-reviewed publications (IEEE RAS, ISPRS, WCSE).

CORE COMPETENCIES

Autonomous Robotics • Drone (UAV) • Visual/LiDAR SLAM • GPS-Denied Navigation • 3D Reconstruction • Point Cloud Processing • Computer Vision • Multi-Sensor Fusion (LiDAR/Camera/IMU) • Path Planning & Obstacle Avoidance • Deep Learning • PyTorch • TensorFlow • ROS/ROS2 • C++ • Python • Real-Time Embedded Systems • Medical Imaging AI

PROFESSIONAL EXPERIENCE

Founder & Freelance AI Consultant | AutoAI Robotics

Lille, France | December 2023 - Present

Client: Velmeni (Orlando, FL, USA) | Remote | June 2024 - Present

- Developed end-to-end deep learning pipeline for dental diagnostics across 2D panoramic and 3D CBCT workflows, improving diagnostic workflow efficiency and detection accuracy
- Architected and deployed 5 production ML models: 2D pathology detection (caries, lesions, restorations), 3D jaw segmentation (Dice > 0.92), periapical lesion detection, multi-modal STL-DICOM registration, and tooth margin line segmentation
- Implemented 3D multi-modal registration system using ICP/CPD algorithms, achieving <2mm alignment accuracy for intraoral-to-CBCT fusion

Tech Stack: Python, PyTorch, TensorFlow/Keras, nnU-Net, 3D U-Net, SimpleITK, NiBabel, pydicom, Open3D/VTK, OpenCV, CUDA

Client: IXSANE (Lille, France) | On-site | December 2023 - June 2024

- Engineered IoT + AI solution optimizing wastewater infrastructure across Northern France, reducing pollutant discharges by 30% through predictive control
- Built time-series forecasting models (LSTM, GRU) predicting water levels with 94% accuracy, enabling proactive overflow prevention
- Developed embedded control system on NVIDIA Jetson Nano with PLC integration (Siemens, Sofrel, Schneider)

Tech Stack: Python, NVIDIA Jetson Nano, PLCs, LSTM/GRU, IoT sensors

Researcher in Robotics & Artificial Intelligence | ISIA LAB - Polytechnic Faculty (University of Mons)

Mons, Belgium | April 2021 - October 2023

- Contributed to €1M+ EU-funded R&D programs focusing on autonomous drones, visual SLAM, and AI for safety-critical applications
- Developed autonomous navigation stack with localization, trajectory planning, and obstacle avoidance for Loki drone (Sky-Hero collaboration)
- Implemented visual SLAM module using OAK-D Lite camera, achieving <5cm localization accuracy in GPS-denied environments
- Built high-accuracy AI models for drone security: object detection (>96% accuracy), event classification (94% accuracy using MMACTION2)

Tech Stack: ROS, PX4, QGroundControl, Gazebo, OAK-D Lite, ZED 2 cameras, PyTorch, TensorFlow, C++, Python

SLAM Specialist | Geown France S.A.S. (Microdrones Group)

Toulouse, France | February 2019 - January 2021

- Designed and deployed localization & 3D mapping algorithms for commercial UAV navigation, transitioning from prototype to flight-ready production modules

- Led feasibility study for SLAM payload using rotational multi-layer LiDAR with performance benchmarking for commercial deployment
- Developed C++ library for altitude control (AGL) enabling stable low-level flight for precision mapping applications

Tech Stack: C++, ROS, Gazebo, Rviz, PCL, OpenCV, LiDAR processing, CloudCompare, Scilab, CMake, CLion, Git

Robotics Researcher - Path Planning | Air-Cobot Project (Akka/Airbus)

Toulouse, France | March - September 2014

- Designed path planning pipeline for autonomous aircraft inspection robot with ROS Navigation stack (global/local planners, obstacle avoidance)
- Implemented collision-free trajectory generation with safety constraints (no-go zones, margins) and validated in simulation and airport field tests

Tech Stack: C++, ROS, Gazebo, RViz, MATLAB

EDUCATION

Ph.D. in Computer Vision and Robotics | Université Clermont Auvergne (Pascal Institute)

Clermont-Ferrand, France | 2014 - 2018

Thesis: *"Precise localization in 3D prior map for autonomous driving"*

- Developed CICP algorithm for sparse-to-dense point cloud registration achieving <1cm accuracy with 3x faster convergence
- Led 3D LiDAR acquisition and processing for ship hull maintenance robotics (ROMAPE project - FUI 17 EU/France co-funded)

Tech Stack: C++, ROS, Gazebo, OpenCV, PCL, Eigen, CMake, 3D reconstruction, SLAM, LiDAR perception, Point-cloud processing

M.Sc. in Intelligent Systems and Robotics | Université Pierre et Marie Curie (Paris 6)

Paris, France | 2012 - 2013

Engineer Diploma in Control and Automation | National Polytechnic School of Algiers

Algiers, Algeria | 2007 - 2012

TECHNICAL SKILLS

Programming Languages: Python (Expert), C++ (Expert), MATLAB (Proficient), Bash/Shell scripting

Robotics & Autonomous Systems: ROS/ROS2, Gazebo, RViz, Visual/LiDAR SLAM, Path Planning & Obstacle Avoidance, Multi-Sensor Fusion (LiDAR/Camera/IMU), Point Cloud Processing (PCL), ICP/GICP/NDT registration, PX4, QGroundControl, MAVLink

Machine Learning & AI: PyTorch, TensorFlow/Keras, nnU-Net, 3D U-Net, YOLO, scikit-learn, NumPy

3D Computer Vision & Processing: Point Cloud Processing (PCL, Open3D), OpenCV, 3D Reconstruction, ICP/CPD Registration, Mesh Generation, CloudCompare, 3DReshaper, VTK, Cyclone

Medical Imaging: DICOM/NIFTI processing (pydicom, NiBabel, SimpleITK), CT/CBCT analysis, 3D Segmentation, Multi-modal Registration, 3D Slicer, STL

Embedded & Real-Time Systems: NVIDIA Jetson, CUDA, Real-time pipelines, PLCs (Siemens, Schneider, Sofrel)

Development Tools & Infrastructure: Git, GitHub, CUDA, CMake, Linux (Ubuntu), Qt, VS Code, CLion

KEY PUBLICATIONS

- "From Words to Flight: Integrating OpenAI ChatGPT with PX4/Gazebo for Natural Language-Based Drone Control" - WCSE 2023
- "Comparison of UAV LiDAR Odometry of rotating and fixed Velodyne platforms" - ISPRS 2020
- "CICP: Cluster Iterative Closest Point for Sparse-Dense Point Cloud Registration" - Robotics and Autonomous Systems Journal (RAS), 2018
- "Precise localization in 3D prior map for autonomous driving" - Ph.D. thesis, Université Clermont Auvergne, 2018
- 9 total peer-reviewed publications in IEEE, ISPRS, IAS conferences and RAS journal

LANGUAGES

French: Fluent | **English:** Fluent (Professional) | **Arabic:** Native

INTERESTS & ACTIVITIES

Active licensed soccer referee (French Football Federation) | Football | Swimming | Chess | Outdoor activities & hiking