



# MOHAMED SADIQ IKBAL

Researcher and Developer of Autonomous Systems

## SKILLS

C++

Python

Linux

Docker

ROS

GIT

Typescript

## CONTACT

📍 Schwere-Reiter-Str. 27, Apt 61,  
München, 80797 Deutschland

📞 +49 162 3162926

✉️ sadiq.ikbal@gmail.com

🔗 msihub.github.io

🗨️ MSIhub

🌐 Mohamed sadiq Ikbal



## PROFILE

Researcher and Developer of Autonomous Systems with a deep passion for advancing robotics and artificial intelligence. My expertise lies in seamlessly blending research with practical development, creating cutting-edge solutions in the dynamic field of autonomous technology. Committed to quality and efficiency, I thrive in dynamic environments, consistently pushing the boundaries of technology to enhance robotic capabilities. With a background that merges industry experience with academic insight, I am well-prepared to contribute meaningfully to any team focused on the future of AI and robotics.

## WORK EXPERIENCE

**Researcher and Developer of Autonomous System**  
STTech GmbH, Munich, Germany

Nov 2022 - Now

Main responsibilities include researching, integrating, and validating advanced solutions for both mobile robotics and AI applications. My role encompasses the full-stack development and deployment of features, ensuring high-quality and efficient functionality across our robotics and AI systems.

- **Feature Development for Market-Deployed Mobile Robot:** Responsible for developing and implementing new features and behaviors for a mobile robot. Conducted in-depth research and collaborated with colleagues to find innovative solutions. Employed unit tests and simulation testing during development, followed by intensive on-site testing with test robots. Tech stack *C++, ROS, MQTT, docker, and Vue.js*.
- **Full Stack AI Application Development:** Actively involved in a greenfield AI project, focusing on full-stack development with technologies such as *Maven with Spring Boot, Kotlin, Kafka, Docker, NextJs with TypeScript, Python, and databases like Postgres, MongoDB, and ChromaDB*. Collaborated in a team to design, implement, and deploy an AI-based application, managing various aspects from backend logic to frontend interface and database integration. Emphasized on scalable, efficient solutions.
- **Algorithm Integration and Validation:** Researching, integrated and validated various local planners (MPPI, MPC, TEB, DWB) and AI LLM agents planner (Semantic Kernels, Autogen), enhancing system capabilities.
- **Code Quality Assurance:** Upheld high code standards through regular reviews and test-driven development.

**Research Assistant**  
University of Genoa, Italy

Dec 2020 - Oct 2022

Part of Regione Liguria Research Grant (RLOF18ASSRIC/85/1) for 'Virtual reality to increase awareness of driving risk'

- **Motion Cueing Algorithm Development:** Researched and developed motion cueing algorithms in C++ for a Linux-based controller on a motion platform (Parallel robot).

## LANGUAGES

### English

German A 1.1

French A 2

Italian A 1

### Tamil

## STRENGTH

Teamwork and communication

Task ownership

Constant learning

Knowledge sharing

Solution oriented

Code reliability

## MISC

### Hardware integration:

Intel RealSense D435

### LUA scripting with CoppeliaSim

### VR development:

Unity3D

Unreal Engine

Code Optimization

### MOCAP:

Optitrack (Motive)

Vive Trackers

### Matlab and Simulink

### CAD: Creo, OnShape

## HOBBIES

Hiking

Badminton

Travel for Culture and Food

Game development

- **Driving Simulation Customization in Unreal Engine:** Adapted a car driving simulation for experimental use with the motion simulator, incorporating feedback for iterative improvements.
- **Unity3D Visualization Projects:** Created various visual demonstration scenarios for clients using Unity3D.
- **Research and Project Management:** Independently managed research projects, including supervision of Master's theses and providing robotics simulation teaching for Master's in Robotics Engineering.
- **Stakeholder Communication:** Regularly reported project progress and findings to government officials and other industrial stakeholders.

### Assistant System Engineer

Sep 2014 - Jun 2015

#### Tata Consultancy Services, India

Played an active role in the support and maintenance of the Java-based applications and SQL databases for the supply chain management team of The Home Depot, USA.

## EDUCATION

### Ph.D. Mechanics, Measurement and Robotics

Nov 2017 - Oct 2020

#### PMAR Robotics Group, University of Genoa, Italy

Motion Generation and Planning System for a Virtual Reality Motion Simulator: Development, Integration, and Analysis.

Thesis available at: <http://hdl.handle.net/11567/1046138>

### European Master on Advanced Robotics (Erasmus+ double degree masters)

Sep 2015 - July 2017

#### Ecole Centrale de Nantes, France & University of Genoa, Italy

Awarded EMARO+ Consortium Scholarship. Received Master in Control and Robotics - Advanced Robotics from Ecole Centrale de Nantes and Master in Robotics Engineering (Laurea Magistrale in Robotica) from University of Genoa. Master thesis on motion cueing algorithm and minor project on cable robot workspace determination.

### B.Tech Mechanical Engineering

Aug 2010 - May 2014

#### Sri Manakula Vinayagar College of Engineering, India

Graduated as Valedictorian. Participated in many robotics symposiums and lead/guided a team for two years to participate in robotics related events. Our thesis project was recognised by Confederation of Indian Industries (CII) as the Best Innovation Award.

## PUBLICATIONS

- **M.S. Ikbal**, V. Ramadoss and M. Zoppi, "Dynamic Pose Tracking Performance Evaluation of HTC Vive Virtual Reality System," in IEEE Access, vol. 9, pp. 3798-3815, 2021.
- A. Sharma, **M. S. Ikbal** and M. Zoppi, "Acausal Approach to Motion Cueing," in IEEE Robotics and Automation Letters, vol. 4, no. 2, pp. 1013-1020, April 2019.
- V. Ramadoss, K. Sagar, **M.S. Ikbal**, D. Zlatanov and M. Zoppi, "Modeling and Stiffness Evaluation Of Tendon-Driven Robot For Collaborative Human-Robot Interaction," 2021 IEEE International Conference on Intelligence and Safety for Robotics (ISR), 2021, pp. 233-238.