Indoor visual positioning

About Inria

Inria Grenoble is a research center at the forefront of computer science and digital technology research, driving innovation and breakthroughs in various domains. Our diverse teams of researchers, engineers, and scientists collaborate on projects, spanning artificial intelligence, data science, cybersecurity, and more. With a deep commitment to excellence and a focus on bridging the gap between research and practical applications, Inria Grenoble is dedicated to shaping the future of digital technology and its impact on society.

Internship Overview

Global Navigation Satellite System (GNSS) such as the GPS, offer a positioning service to a great number of applications. However, GNSS are limited to spaces where the sky is free from occlusions. Spaces such as underground or multi-level parkings are not covered by these systems and require other types of sensors for localisation and navigation.

We are seeking a highly motivated and talented intern to join Inria's Experimentation and Development Service (SED). This internship will focus exclusively on the localisation and positioning aspect of autonomous vehicle technology, specifically for navigating vehicles from a parking entrance to a designated parking place within a mapped indoor environment. While the vehicle navigation system is not within the scope of this internship, your work will be crucial in ensuring the vehicle's precise location within this complex indoor environment.

To achieve this goal, you will: (1) study the state of the art in indoor navigation and mapping (visual SLAM, landmark detection, camera pose estimation, optimisation), and (2) test a selected set of algorithms in a simulated environment.

Key Responsibilities

- Collaborate with the SED and the Chroma research engineers to develop and enhance computer-vision based algorithms for precise vehicle localisation within a pre-mapped indoor environment.
- Work on real-time data processing and sensor fusion techniques to optimize positioning accuracy.
- Implement and fine-tune computer vision and machine learning models for robust vehicle positioning, even in cluttered environments with other vehicles and obstacles.
- Conduct experiments and tests in a simulated environment to validate the accuracy and reliability of the positioning system.
- Analyze and interpret data to identify areas for improvement and propose innovative solutions.

Qualifications

- Currently pursuing a M1or master's (M2) degree in computer science, electrical engineering, robotics, or a related field.
- Good programming skills in Python, C++ or similar
- Familiarity with computer vision, machine learning, and sensor fusion concepts.
- Solid understanding of mathematics, especially linear algebra and statistics.
- Strong problem-solving skills and the ability to work both independently and in a collaborative team environment.
- Excellent communication and presentation skills.

What We Offer

- A challenging and rewarding internship experience in a dynamic and innovative environnement.
- Mentorship from industry experts with a wealth of knowledge in autonomous vehicle technology.

- Opportunity to work on cutting-edge projects with real-world applications.
- Potential for a future full-time position.
- Great working conditions in our offices located in Montbonnot
- Internship duration and scope adapted to the time allocated by your school.
- Internship stipend.

How to Apply

Interested candidates are invited to submit their resume, and any relevant work samples (if available) to:
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