

Research Position Offer: AI for 2D/3D Imaging and Infrastructure Inspection

Position: Research Engineer – AI-Powered 2D/3D Imaging for Infrastructure Monitoring

Research Unit: [LISA/Image](#) (école polytechnique - Université Libre de Bruxelles)

Location: Brussels, Belgium

Duration: 1-year contract (renewable)

Start Date: 01/10/2025

Level: Master's degree in Computer Science, Engineering, or related field

Project Overview

We are seeking a highly motivated research engineer to contribute to a collaborative project at the intersection of artificial intelligence, computer vision, and infrastructure maintenance. The project aims to develop an AI-powered reporting and visualization tool that streamlines the documentation and monitoring of infrastructure conditions using 360° geolocated images and targeted defect photographs. This innovative system will replace dense and unwieldy 3D datasets such as point clouds with more efficient imaging and data integration techniques.

Research Objectives

The selected candidate will contribute to the following key research goals:

- Design and implement algorithms for automatic defect detection and classification in 2D/360° images
- Develop tools for monitoring changes over time and triggering alerts for maintenance needs
- Improve image registration methods for indoor and outdoor environments, even without GPS data
- Contribute to efficient, privacy-preserving data handling pipelines without reliance on cloud storage
- Collaborate on the integration of structured metadata for professional reporting and analysis

Expected Impact

The system enhances inspection workflows by minimizing manual input, reducing inspection times, and lowering operational costs. It also contributes to proactive maintenance strategies for critical infrastructure—bridges, tunnels, and public facilities—supporting societal resilience in the face of climate change and infrastructure aging, with an initial focus on the Brussels region.

Your Profile

We are looking for candidates with:

- A Master's degree in computer science or engineering
- Strong programming skills in Python (experience with PyTorch or TensorFlow is a plus)
- Solid knowledge of image processing and deep learning methods
- Experience in 2D/3D data registration, photogrammetry, or geospatial analysis is an asset
- Good communication skills and a collaborative mindset
- A good level of both French and English (equivalent to B2 or higher) is expected, both written and spoken.

We Offer

- A dynamic and interdisciplinary research environment
- The opportunity to work on applied AI research with societal and environmental impact
- Access to real-world data and professional infrastructure inspection workflows
- Support for publishing results in top-tier journals and conferences

How to Apply

Please send the following documents in a single PDF to olivier.debeir@ulb.be:

- A motivation letter outlining your interest and fit for the position
- Your detailed CV
- (Optional) Links to relevant publications or projects