# POSITION DESCRIPTION

## RESEARCH ENGINEER

| | |
|---|---|
| **Job title** | Research engineer |
| **Site / Workplace** | Geomatics Unit of the University of Liege (Belgium) – Prof. Roland Billen |
| **Type of contract** | 1-year fixed-term contract (CDD) with a possible extension of up to 3 years |
| **Date of recruitment** | 01 September 2022 |
| **Required level of study** | Engineering degree/master's in geomatics or computer science |

## Context

The Geomatics Unit (UGEOM) of the University of Liège (ULIÈGE) is composed of twenty academic and scientific members, with a research focus on geographic information systems, cartography, GNSS, geodesy, topography, and 3D data acquisition (laser scanning, airborne LiDAR, photogrammetry, mobile mapping). It's a part of a larger group within the SPHERES research unit (140 researchers).

## Mission

The Geomatics Unit is looking to recruit an engineer whose main objective will be to participate in a specific project with others industrial and academic partners (Transurb Simulation, GIM Wallonie, SIRRIS, LEMA department of ULiège). It is about the **Automation of the 3D production chain in the context of advanced simulations and training for rail and urban mobility solutions**. The objective of this project is the research and development of innovative methods to automate a significant part of the reproduction of the rail transport environments (train, tram, and metro). This project is articulated around the 2 key components below:

1. Research on the implementation of geographic information processing processes (satellite images, Lidar data, mobile mapping images, DSM/DEM, vector data, ...) based on artificial intelligence (computer vision) to create an automated Geo Digital Twin for railway and urban environments.
2. The redefinition of the production chain and the design editors of these environments based on the Geo Digital Twin.

The main tasks of the recruited person will be to develop/participate in:

- New production pipeline and tools to automatically generate simulation environments based on the Geo Digital Twin and its constituent innovations, as well as the generation of photorealistic textures.
- Automatic extraction of objects from heterogeneous data sources consisting of aerial/satellite images, Lidar point clouds and auxiliary vector data and surface and terrain models based on innovative AI architectures.
- Research on the optimization of the 3D production line.
- Develop prototypes and participate in UGEOM's innovation activities (including technical reports and scientific publications).

## Profile required

*Technical skills*

- Hold a master's degree in geomatics, computer science or similar
- Mastering programming environments and languages (e.g Python, Java, JavaScript, C/C++, C#, etc.)
- Demonstrable experience in the implementation of machine learning algorithms and use of data acquired by a wide range of platforms (satellites, UAV, close range) and sensors (RGB, multi-spectral, SAR, Lidar).
- Proficiency in open-source geomatics tools (PostgreSQL/ PostGIS, QGIS, PDAL, PCL, LasTools, etc.).
- Experience in business problem solving is an asset.
- Practice technical and/or scientific English.

*Organisational skills*

- Demonstrate research skills and survey the field of activity.
- Know how to publish and disseminate information in an informative system.

*Interpersonal skills*

- Have a sense of responsibility, autonomy, and initiative.
- Encouraging synergy and sharing knowledge and experience.

## Application form

Send by e-mail to (a.kharroubi@uliege.be and rbillen@uliege.be), a file containing:

- Full CV including a copy of the diploma(s) obtained and portfolio of projects and a full list of publications if present.
- Motivation letter, explaining your background and expertise and list facts and examples that demonstrate that you satisfy the listed requirements.

For further information, please contact Professor Roland Billen (rbillen@uliege.be) or Abderrazzaq Kharroubi (a.kharroubi@uliege.be)