**Project Title:**

RWGAI - Geospatial AI for High-Resolution Satellite Imagery Annotation and Mapping

**Project Description:**

This internship project is in collaboration with RWGAI (https://rwgai.com/), focusing on developing AI-driven solutions for geospatial intelligence and satellite imagery analysis. The primary objective is to build a semi-automated pipeline for annotating high-resolution satellite imagery by leveraging OpenStreetMap (OSM) data.

Interns will work on mapping the geolocation of privately collected high-resolution images to OSM layers, aligning spatial coordinates, and building tools to extract and refine geographic features. The project will also involve using deep learning models to automatically detect, annotate, and label objects such as buildings, roads, vehicles, land-use regions, and other infrastructure elements within the imagery.

The work combines geospatial data engineering, computer vision, API integration, and applied deep learning to support scalable and accurate satellite image annotation workflows.

**Project Type:** Research

**Internship Batch**:
- **Batch 1:** May 10 to July 9, suitable for Education City students, i.e., CMUQ, TAMUQ and HBKU students

**Duties/Activities:**

- Georeferencing and aligning high-resolution satellite imagery with OSM datasets
- Developing scripts and APIs to retrieve, process, and integrate OSM geospatial data
- Designing annotation workflows for satellite imagery
- Using deep learning models (e.g., CNNs, object detection, and segmentation networks) for automated object detection and labeling
- Data preprocessing, augmentation, and quality validation
- Documenting code, APIs, and research findings
- Collaborating with the RWGAI team

**Required Skills:**

- Strong programming skills in Python
- Experience with geospatial libraries (e.g., GeoPandas, GDAL, rasterio)
- Familiarity with APIs and data pipelines
- Knowledge of machine learning and deep learning frameworks (e.g., PyTorch or TensorFlow)

- Understanding of computer vision fundamentals
- Basic knowledge of GIS concepts and coordinate reference systems

**Preferred Intern Academic Level:**

MSc or PhD student in Computer Science, Data Science, Electrical Engineering, Geomatics, or related fields.
Exceptional undergraduate students with relevant experience will also be considered.

**Learning Opportunities:**

- Hands-on experience in geospatial AI and satellite imagery analysis
- Practical implementation of deep learning for real-world remote sensing applications
- Experience integrating OSM data with private high-resolution imagery
- Exposure to scalable AI pipelines and production-level APIs
- Opportunity to contribute to research publications or technical reports

**Expected Team Size:**

1–2 interns

**Mentors**

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