**🗺️ University of Ghana Main Campus Mapping Project**

**Author: Aduni Alfred Awoja**

**Project Type:** GIS Mapping & Spatial Data Visualization  
**Tools Used:** Handy GPS, Microsoft Excel, QGIS, OpenStreetMap

**📘 Overview**

This project focuses on the **creation of a detailed map of the University of Ghana Main Campus** using field-collected GPS data and QGIS. The purpose was to help **new students, visitors, and researchers navigate the campus easily** through an accurate and visually clear digital map.

The map captures the **main features** within the campus — including buildings, parks, roads, pitches, and car parks — and was designed entirely from raw GPS data collected during fieldwork.

**🎯 Objectives**

* Collect geographic coordinates of key features on the University of Ghana campus using a **handheld GPS**.
* Organize field data in **Excel** and export as **CSV** for GIS processing.
* Import and digitize data within **QGIS**, replacing OpenStreetMap base layers with custom vector layers.
* Produce a **user-friendly and publishable campus map** complete with legend, title, and scale.
* Provide a **navigation aid** for new students and visitors.

**🧭 Methodology**

**1. Field Data Collection**

Coordinates were captured around the University of Ghana’s main campus using a **handy GPS device**.  
Points were taken for features such as:

* Buildings
* Roads and footpaths
* Car parks
* Parks and pitches

The coordinates were recorded in a field notebook for data entry.

**2. Data Preparation**

* The GPS coordinates were entered into **Microsoft Excel** and organized into columns (Name, Latitude, Longitude, Feature Type).
* The Excel sheet was saved as a **CSV file** for easy import into QGIS.

**3. Data Processing in QGIS**

1. Imported the CSV dataset into QGIS.
2. Displayed the points using their coordinate reference system (CRS).
3. Used **OpenStreetMap** as a temporary basemap to guide **digitization** of:
   * Roads
   * Buildings
   * Parks and pitches
   * Car parks and pathways
4. Removed the OpenStreetMap layer after digitization.
5. Styled each layer:
   * **Buildings** → red polygons
   * **Roads** → grey lines
   * **Footpaths** → dashed lines
   * **Parks & pitches** → green polygons

**4. Map Design**

* Added **legend**, **scale bar**, **north arrow**, and **title** ("UNIVERSITY OF GHANA: MAIN CAMPUS").
* Adjusted layout for professional presentation.
* Included author credit and fieldwork note (“Filed Work 3–5 Final Edit”).

**🧩 Results**

The final output is a **digitized and accurate map** of the University of Ghana Main Campus, designed for:

* **Ease of navigation** for new students and visitors.
* **Spatial understanding** of the university’s infrastructure.
* **Future GIS updates and research applications**.

The project highlights how **GPS and QGIS** can work together to produce high-quality spatial data products from scratch.

**💡 Key Insights**

* Field GPS data provides **more accuracy** than relying solely on web-based maps.
* Digitizing from OSM ensures **spatial precision** while allowing for custom styling.
* GIS tools like QGIS make it possible to **visualize and manage spatial data** in ways that support navigation and campus planning.

**🔍 Recommendations**

* Integrate the final map into a **web-based interactive GIS** for real-time navigation.
* Periodically update the dataset to reflect new buildings or road changes.
* Include **attribute data** (e.g., department names, offices) for more informative use.
* Extend this workflow to other campuses or institutions.

**🗂️ Project Files**

| **File** | **Description** |
| --- | --- |
| university\_of\_ghana\_map.qgz | QGIS project file |
|  |  |
| coordinates.csv | Raw GPS coordinates collected from fieldwork |
| map\_of\_university\_of\_ghana.png | Final map layout (digitized version) |
| README.md | Project documentation (this file) |

The coordinates.csv is not yet available because I lost the pendrive that I had the file in.

**🧠 Skills Demonstrated**

* Field data collection using GPS
* Data organization and transformation (Excel → CSV → QGIS)
* Spatial data visualization and map design
* GIS analysis and cartographic layout
* Geospatial communication and project documentation

**🗺️ Preview**

**🏁 Conclusion**

This project demonstrates how practical GIS and GPS applications can support spatial decision-making, planning, and navigation within a university environment. The final map stands as both a **navigation tool** and a **technical proof of concept** for applying GIS to real-world campus mapping.