

Geospatial Mapping and Visualization of Abia State Polytechnic, Aba, Nigeria: a Total Station-Based Digital Terrain Model Approach

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SUMMARY

This work presents a novel approach to geospatial mapping and visualization of Abia State Polytechnic Campus 1 in Aba, Nigeria, with a particular focus on creating a Digital Terrain Model (DTM) using data acquired from a Total Station survey. The study leverages open-source Geographic Information System (GIS) tools, primarily QGIS, and integrates them with surveying techniques to generate a detailed and accurate representation of the campus topography. This work encompasses the following key components: data acquisition through total station surveys, data processing using QGIS and GRASS tools, and the development of an interactive map using the QGIS2WEB plugin. The interactive map enhances accessibility for students, staff, and visitors, allowing them to navigate the campus efficiently and access information through pictures popup functions. The study also highlights the significant advantages of total station-based DTM creation for accurate elevation modeling and showcases the practicality of open-source GIS software for mapping educational institutions. Additionally, it demonstrates the value of GitHub for hosting and sharing the interactive map and accompanying user guide, ensuring widespread accessibility and usability. Thus, this work is seeking to contribute to the growing body of knowledge in the fields of geospatial technology and provides a valuable case study for institutions seeking to enhance campus mapping, navigation, and information dissemination.

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