**Abstract**

This research explores the integration of geospatial data from OpenStreetMap (OSM) into Unreal Engine, a prominent platform in modern game development known for its visual fidelity and flexibility. As players increasingly seek immersive experiences in expansive environments, developers are driven to innovate methods for using procedural tools to swiftly create highly detailed assets. The integration process involves extracting information about terrain, roads, buildings, and other geographic features from OSM data using various online services and tools. Procedural software like Houdini aids in processing this data to generate game-ready 3D models of buildings and road networks, which undergo additional steps like retopology to optimize them for real-time applications. Plugins for Unreal Engine further streamline the integration process, enabling developers to efficiently incorporate OSM-derived assets into their projects. Once imported, these assets can be enhanced using Unreal's Niagara system for dynamic visual effects to enhance interactivity. This research demonstrates the potential of this process and showcases its application in creating immersive gameplay.

**Conclusion**

The integration of geospatial data from OpenStreetMap (OSM) into Unreal Engine presents a promising approach for achieving high levels of realism in virtual environments.The wealth of real-world information available through OSM tools can efficiently create expansive and authentic game worlds that meet the increasing demands of players. The multi-step integration process, facilitated by specialized tools and plugins, allows for the extraction and transformation of OSM data into 3D models suitable for real-time applications. While additional steps such as retopology may be necessary to optimize these models, the end result is a seamless integration of real-world elements into virtual environments, enhancing their fidelity and interactivity. Moving forward, further advancements in technology and tools will likely continue to refine and expand immersive gameplay.