

System Requirements

Functional Requirements (FR-)

- FR-01: The system shall allow users to select a barangay in Leon, Iloilo for evacuation planning.
- FR-02: The system shall load evacuation route geometries from KML files.
- FR-03: The system shall load travel data (slope, travel time, curvature) for road segments from Excel files.
- FR-04: The system shall incorporate predefined blocked paths that cannot be used for routing.
- FR-05: The system shall compute fuzzy costs from slope, travel time, and curvature per segment.
- FR-06: The system shall use the A* algorithm to find the safest and most efficient evacuation path that excludes blocked paths.
- FR-07: The system shall display all barangays and evacuation routes on an interactive satellite map within the UI.
- FR-08: The system shall visually distinguish between blocked paths, alternative paths, and the optimal route on the map.
- FR-09: The system shall show evacuation metrics like distance and estimated travel time for user-selected routes.
- FR-10: The system shall support user access via desktop browsers and mobile devices, ensuring responsive design and usability.
- FR-11: The system shall handle missing or corrupted input data gracefully with notification messages to users.

Hardware and Platform Requirements (HR-)

- HR-01: The system shall support deployment on desktop and mobile devices via Streamlit's responsive web interface.
- HR-02: Minimum recommended desktop environment: Dual-core CPU, 4 GB RAM, 500 MB storage, and display resolution of at least 1280x720.
- HR-03: Recommended higher-performance desktop: Quad-core CPU, 8 GB RAM, SSD storage, and Full HD (1920x1080) resolution.
- HR-04: Mobile device support includes modern smartphones and tablets running iOS or Android with browsers supporting HTML5 and JavaScript.
- HR-05: The system requires stable network connectivity for map tile loading and web app functionality on mobile devices.

- HR-06: GPU acceleration is optional; system rendering is primarily CPU- and browser-based.