

Navigation Database Reverse Engineering Project Documentation

1. Detailed File Analysis

DataAnalyzer2.py

Performs statistical analysis, clustering, and visualization of data.

Maya_Cartesian_Import.py

Imports processed data into Maya for 3D visualization.

cartesianconverter.py

Converts geographical GPS data to Cartesian coordinates.

shaneDumpFile.py

Handles data dumping from binary files for preliminary analysis.

REVERSE ENGINEER PT 1.py

Initial stage of reverse engineering, extracting and analyzing binary data.

REVERSE ENGINEER PT 1.js

Provides a web interface for interacting with the reverse-engineered data.

Binary Plot.py

Visualizes binary data in graphical format.

Binary Plot Test.py

Tests the functionality and accuracy of binary data plotting.

TimeZeroDataAll.py

Extracts and decodes initial GPS data from navigation databases.

TimeZero_v2.py

Enhanced version for extracting and decoding GPS and depth data.

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2. Background

The project aims to reverse engineer navigation databases to extract and decode raw binary data. This involves a series of scripts each handling different aspects of the process, including data extraction, decoding, transformation, analysis, and visualization.

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3. Requirements

Must: Accurately extract data from navigation databases.

Should: Decode binary data into a readable and analyzable format.

Could: Provide mechanisms for statistical and pattern analysis.

Would: Benefit from tools for visualizing and interacting with the data in a 3D environment.

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4. Method

The project is divided into several scripts, each with a specific role:

- DataAnalyzer2.py: Performs statistical analysis and clustering of data.
- Maya_Cartesian_Import.py: Imports data into Maya for 3D visualization.
- cartesianconverter.py: Converts GPS data to Cartesian coordinates.
- shaneDumpFile.py: Manages data dumping and preprocessing.
- REVERSE ENGINEER PT 1.py & .js: Perform initial reverse engineering and web interaction.
- Binary Plot.py & Binary Plot Test.py: Facilitate binary data plotting and testing.
- TimeZeroDataAll.py & TimeZero_v2.py: Extract and decode GPS and depth data.

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5. Implementation

1. Setup environment with necessary software and dependencies.
2. Execute scripts in sequence, starting with data extraction and ending with visualization.
3. Integrate scripts to automate the process from data extraction to visualization.

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6. Milestones

1. Data extraction and initial decoding complete.
2. Data analysis and pattern recognition functional.
3. Integration with Maya for 3D visualization established.
4. Automated pipeline operational.
5. Web interface for data interaction developed.

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7. Gathering Results

Evaluate the system based on data accuracy, analysis effectiveness, visualization quality, and process efficiency, ensuring the project meets its objectives.