

Abstract

The purpose of this project is the design and development of a Real Estate Information Service System for Urban Development and Planning. This includes:

- Collecting and Processing Big Data of Various Types.
- Designing and Building a Semi-structured Database with MongoDB.
- Building a Web Application that Integrates AngularJS, NodeJS, and MongoDB to Visualize Dynamically Analyzed Information in 2D and 3D.

Introduction and Background

Characteristics of Big data: Difficult to Process

- Overwhelmingly enormous data size
- Unorganized: Unstructured, Semi-Structured Text

Objective:

- Create solutions to bridge the gaps by transforming big data to analyze and visualize real estate information in real-time.

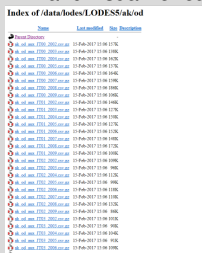


Fig 1: Raw CSV data before transformation

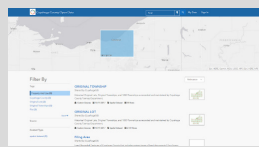


Fig 2: Source of CSV data

Fig 3: Complex JSON data file

System Design

- **Architecture**

- **Model-View-Controller**

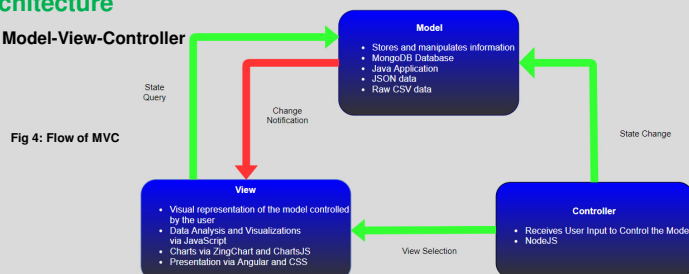


Fig 4: Flow of MVC

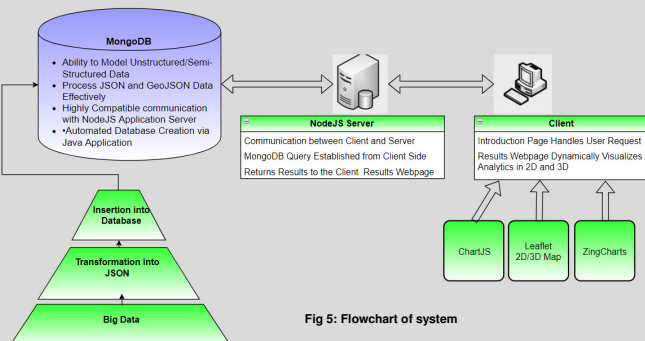


Fig 5: Flowchart of system

Experimental Results

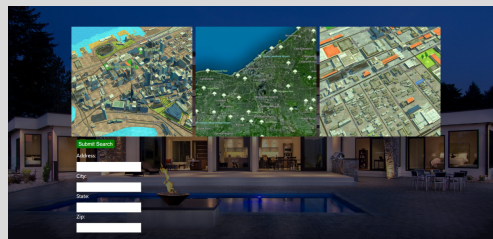


Fig 6: Introduction web page

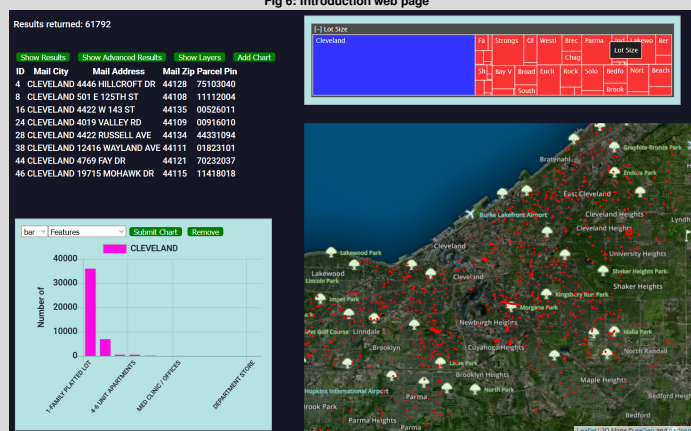


Fig 7: Results web page

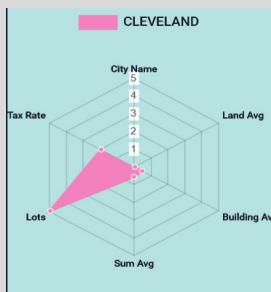


Fig 8: Results web page

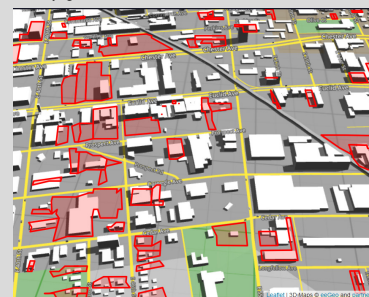


Fig 9: Zoomed in 3D Map

- **Problems Encountered**

- Performance issue with too many lots plotted on the map
 - Reduction to the max number allowed of lots per zoom
- Many entries have incorrect information
 - Fragments data in multiple pieces

Conclusion and Future Recommendations

Conclusion

The team met its project objectives as:

- System design performed well for working with and analyzing Big Data
- Can be used in the future for more advanced real-time data analytics

Future Upgrades & Recommendations

- Angular is too Complex for a Team of this Size, a Simpler Framework is Recommended
- Increase Depth of the Current Dataset by Adding More Complex Data
- Extend Descriptive and Predictive Data Analysis
- Improve Homepage Search Functionality
- Extend Visualizations for More Advanced Analytics