



Beta Presentation

Modeling Michigan's Energy Future

The Capstone Experience

Team Anthropocene Institute

Tommy Maceri

Quinn Fransen

Raama Katragadda

Chad Hildwein

Navya Bhardwaj

Ishraj Singh Yadav

Department of Computer Science and Engineering

Michigan State University

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*From Students...
...to Professionals*

Project Overview

- Single source of truth for Michigan energy. Consolidates EIA data into one validated, citable dashboard with consistent definitions.
- Swap major coal units and test clean-firm/renewables/storage replacements—see instant deltas for cost, emissions, and health.
- Interactive plant map + gamified planner that lets users tweak the generation mix and visualize grid and air-quality impacts statewide.



Team Member's Technical Tasks

Technical Tasks Assigned

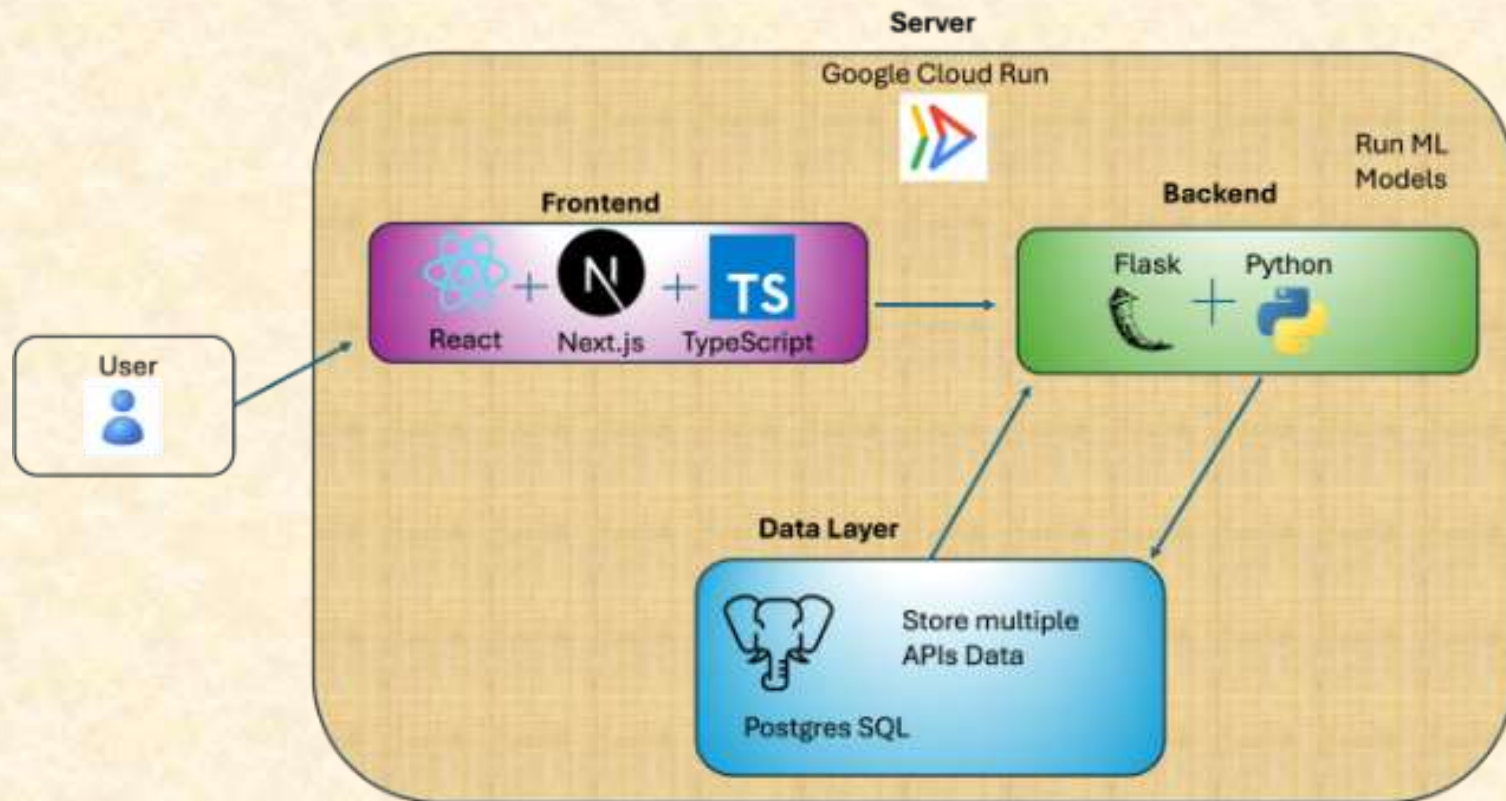
- Quinn Fransen
 - Create base for drawing interactive map and underlying roads
 - Add charts for pollution and interactive map changes
 - County zoom-in on map
 - Add plant with map selectable latitude and longitude
- Navya Bhardwaj
 - Create swap simulation endpoint and frontend
 - Create plant add/remove feature endpoint
 - Setup data ingestion pipeline and conduct EDA
 - Facts and Fiction image slider
- Raama Katragadda
 - Calculation and modeling of health impact
 - Utility price of electricity and export modeling
 - Job, Radiation, cost calculation for plants
- Chad Hildwein
 - Create and display plant information on landing page map
 - Add predefined plant swap scenarios to the interactive map
 - Dialog box to allow the user to swap plant types on map
 - UI work (mobile friendly, animate landing page, plant filters, etc.)
- Ishraj Yadav
 - Configure the backend and connect it with the frontend
 - Organize and display county specific data integrated with map.
 - Created endpoints to fetch data to display in the frontend
 - Create the facts and fiction page with a quiz section
- Thomas Maceri
 - Import data from database into generator objects
 - Create Factory, County, and State Objects
 - Extrapolate missing data from existing data using ML Models
 - Calculate Emission Data

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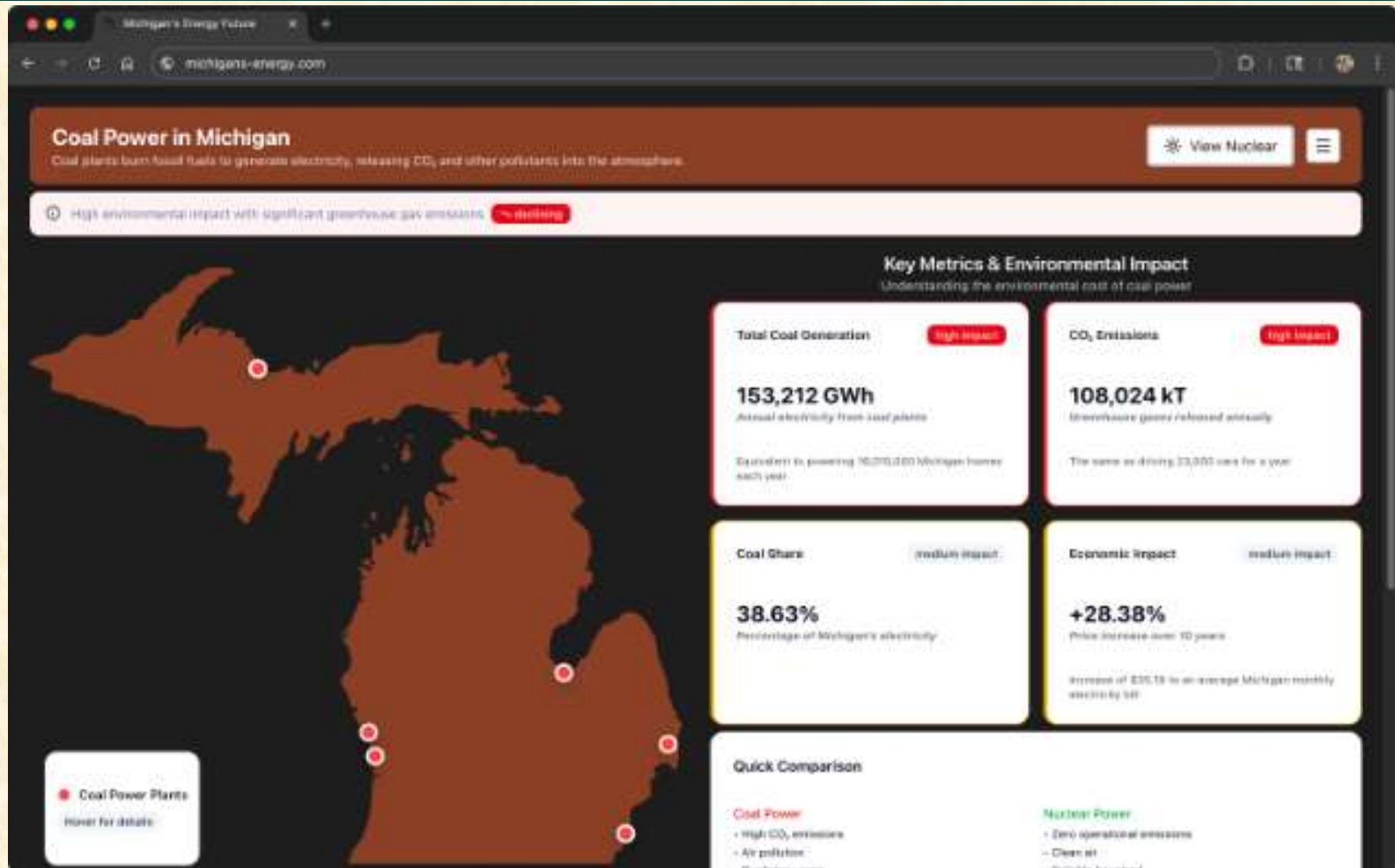
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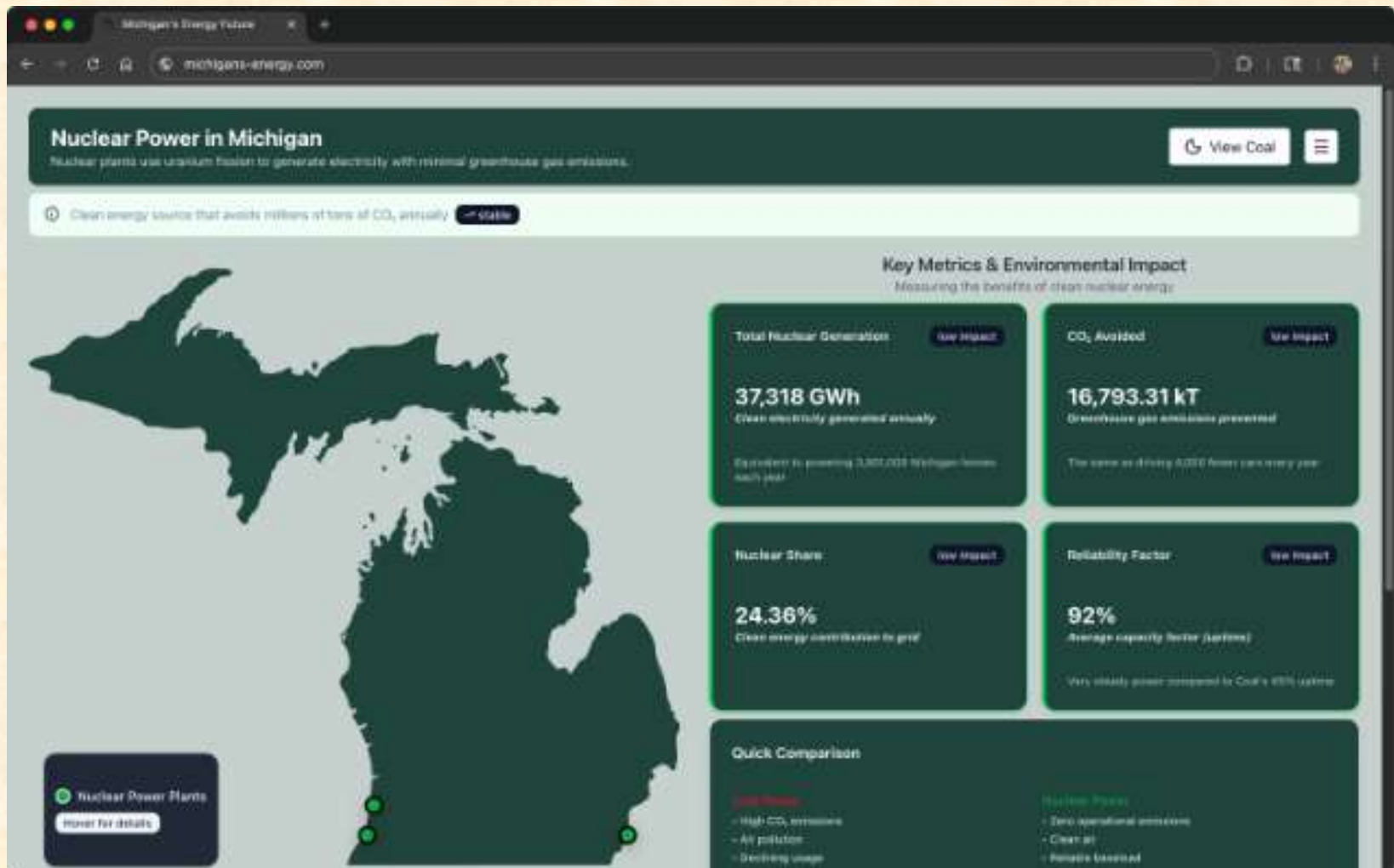
System Architecture



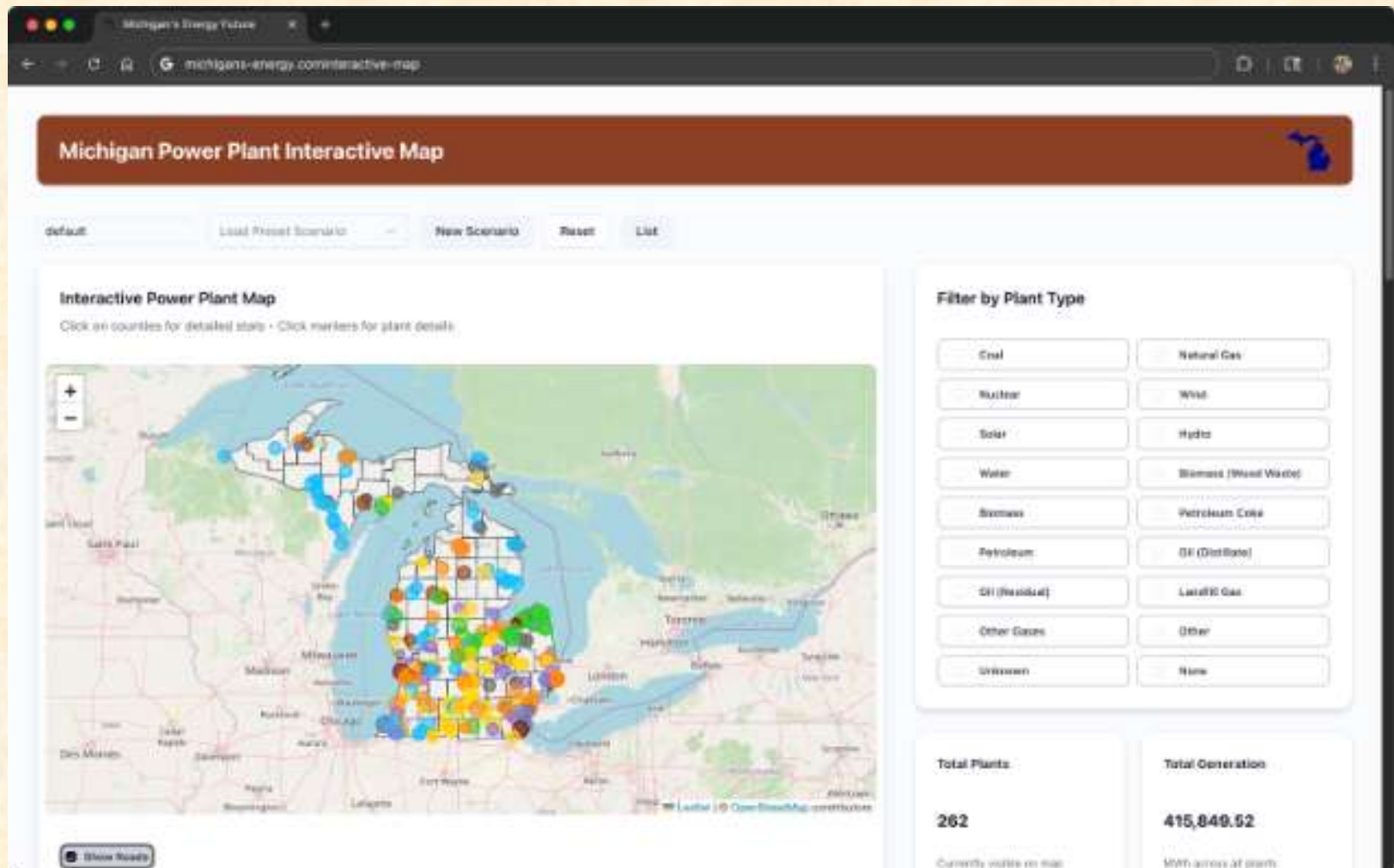
Coal Stats – Dark Mode



Nuclear Stats – Light Mode



Interactive Map



Fact or Fiction



What's left to do?

- Features
- Stretch Goals
 - Add an automated ETL pipeline to update the data stored dynamically
 - Add frontend generator data display/editing
- Other Tasks
 - Upload production web application with help of sponsors
 - Check website accessibility and improve color contrast
 - Improve the interactive map page design to have a better user comprehension and flow



Questions?

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