FIU Engineering & Computing
School of Computing & Information Sciences

Spring 2019 Senior Design Project

EnvoScholar v2.0

Student: Sheila Alemany, Mentor: Dr. Mark Finlayson, Instructor: Dr. Masoud Sadjadi
Florida International University

Problem

Researchers in the field of environmental science use academic search engines as tools while conducting investigations.

Examples of Academic Search Engines:
- Google Scholar
- Academia.edu
- Springer

Limitations: These contain information in a multitude of fields and it is not field-specific. Therefore, it is difficult for young researchers in the field of environmental science to explore the current work in that specific area.

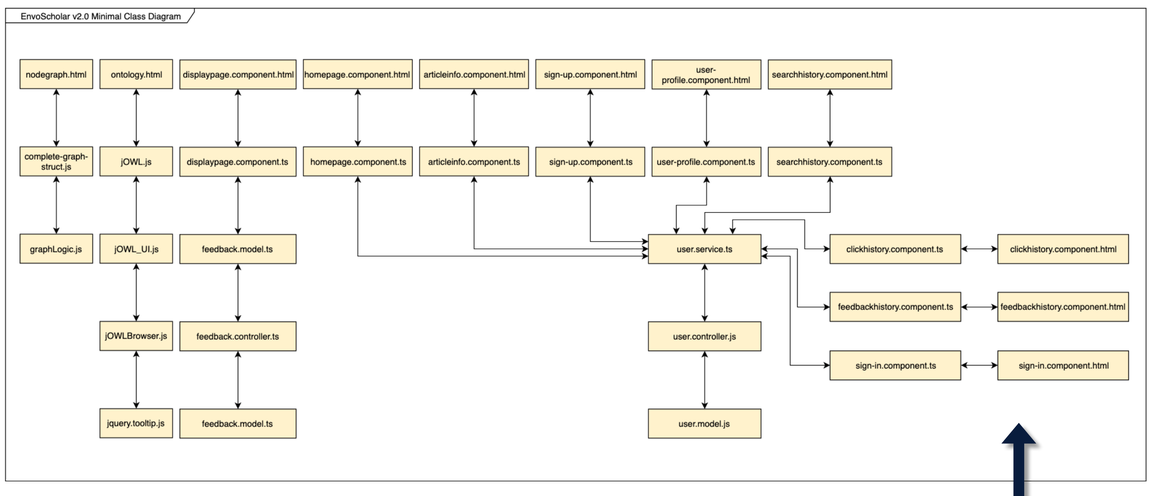
Current System

EnvoScholar v2.0 is a academic search engine in the field of environmental science which contains the following features:
- Autocomplete search with concepts from the ENVO ontology
- Tree structure and node graph structure visualizations of the ENVO ontology
- Display results page with feedback features to rate articles in the search
- Visualization of text to find key terms in article abstracts
- Account login option to access feedback history, click history, and concept search history

Requirements

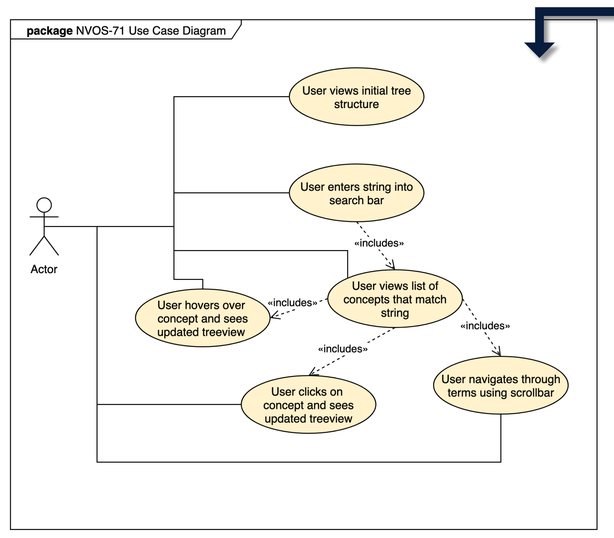
Overall, the UI must be web-based, cross-browser, cross-platform, and interactive for researchers. My specific contributions were implementing the following:
- Tree structure visualization using the most up-to-date ENVO ontology
- Dynamic search capabilities to explore this ENVO ontology
- Autocomplete search on the homepage
- Unification of the tree structure visualization with the node graph
- Visualization of text to find key terms in the article abstracts

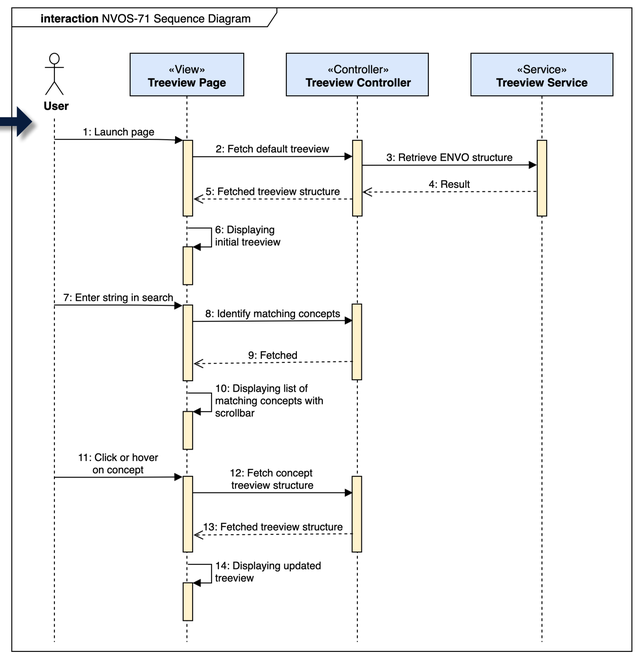
Object Design



Minimal class diagram depicting all models, views, and controllers in the system and their interactions

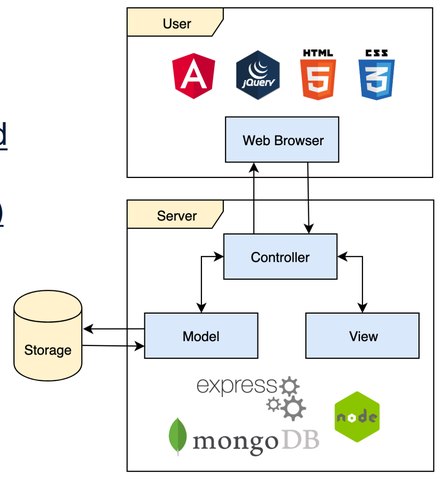
Example Use Case and Sequence Diagrams for NVOS-71 Search for ENVO Ontology





System Design

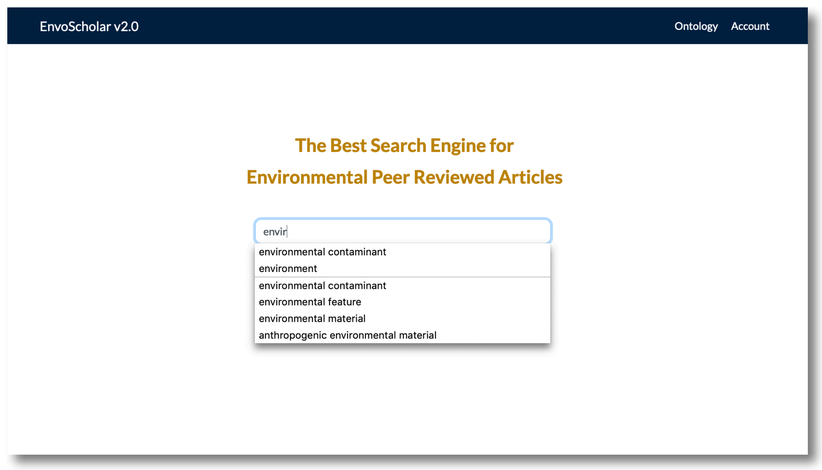
Client-Server and Model View Controller (MVC)



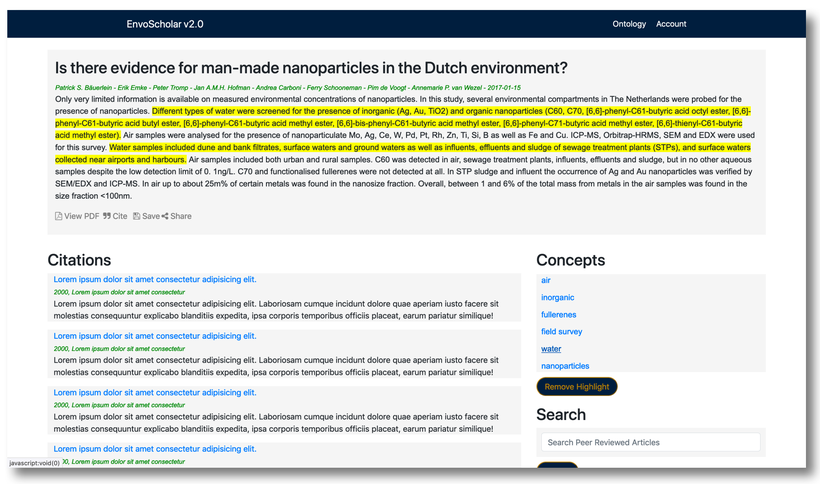
Implementation

- The front end of EnvoScholar v2.0 was created using Angular 6 and jQuery for the functionality. Additionally, HTML5 and CSS for the styling.
- The back end was created using NodeJS and Express and connected to the Mongo Database which stored the user account information and feedback.
- JWT and Passport were used for the user authentication at login.

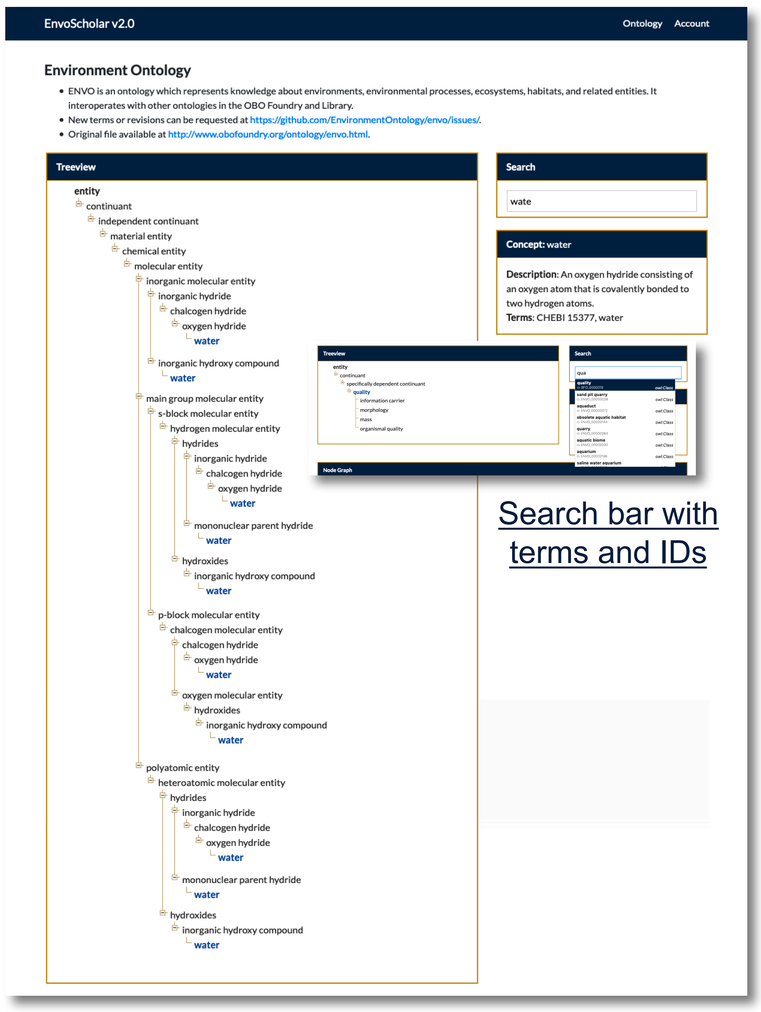
Screenshots



Autocomplete search while user is typing



Highlighted abstract given selected concept



Search bar with terms and IDs

Tree structure showing ENVO concept relationship

Acknowledgements

The material presented in this poster is based upon the work supported by Dr. Mark Finlayson and Dr. Masoud Sadjadi. I thank them along with Carlos Bravo, Maria Presa Reyes, and Deya Banisakher for their assistance, cooperation, and mentorship that I received throughout this process.