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Autism Searches: A Modern Search Engine for ASD Related Topics

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Autism Searches

A modern search engine for ASD related topics

The Team

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Project Lead - Developer

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Full Stack developer

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Back-end developer and Machine Learning implementation

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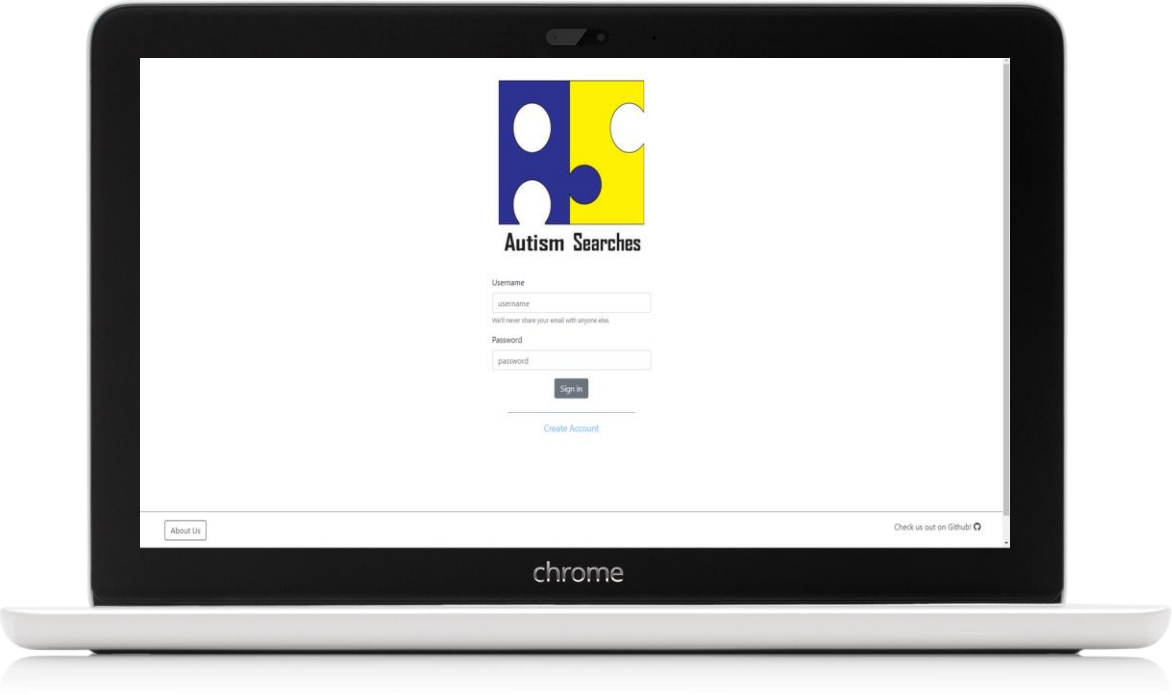
Logo creation and database engineering, UI design

Application Overview

- Recommendation system for ASD-related articles
- Single page application(SPA)
- Hope to enrich the public’s knowledge about Autism
- Hope to enhance research ability within the field



Autism Searches

Username

username

We'll never share your email with anyone else.

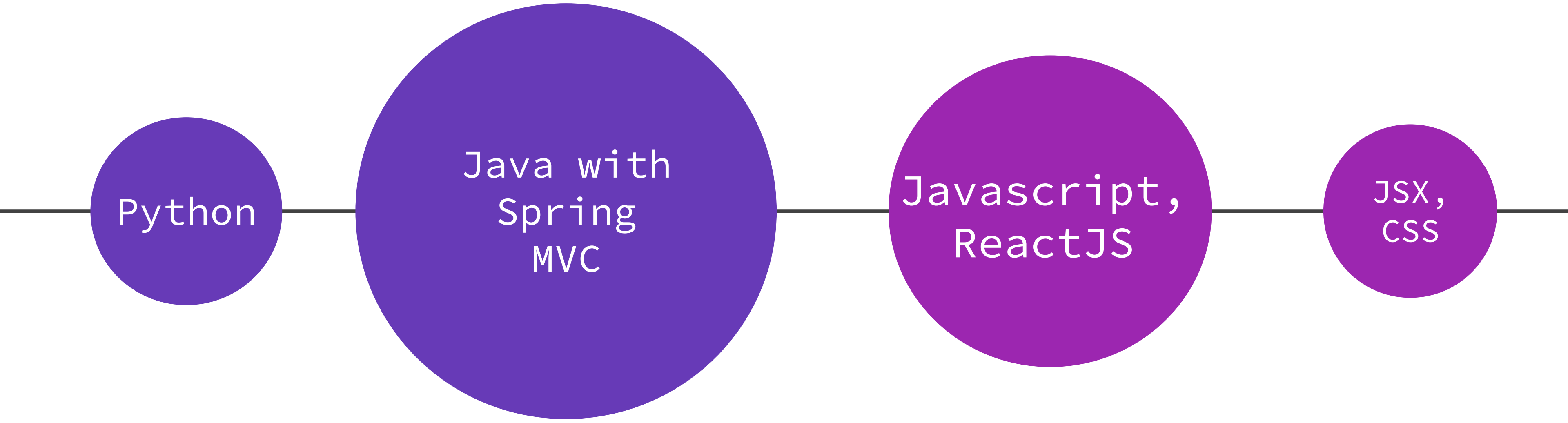
Password

password

The Layered Architecture Approach

- 4 main layers to the application
  - Controller
  - Business
  - Data Access
  - Common
- Layers are loosely coupled
  - Allows for easy updating
  - Allows to swap layers or create new layers with ease
- Scalability, to an extent
- Readability

Technical Stack



Python

Java with Spring MVC

Javascript, ReactJS

JSX, CSS

Back End

Front End

Back-End Server

- Built in Java using the Spring MVC
- Each service within the business layer extends an interface
  - Scalable
  - New layers easily buildable
- Aspect-oriented programming (AOP) to connect all layers
- Jackson framework for serialization and deserialization of JSON files
- OOP design best practices
  - Favoring composition over inheritance whenever possible
- Design Patterns
  - Factory pattern
  - Visitor pattern
  - Adapter pattern

Machine Learning

- Machine learning is accomplished using a periodically updating python script
    - Data is pulled from APIs , then accessed by Python
    - TFIDF vectorization with Cosine scoring generates recommendations for each article
    - Results of recommendations are returned to the back end to display to user

Testing with mockito

- Test driven development was a core design principle
- Each layer uses stubbing and object mocking to allow for unit testing across layer
- Mocks are injected into each layer to allow testing without disrupting the data

Application Demo

Concluding Remarks/Future Work

- Java gave the team the ability to fully realize the layered architecture approach
- However, on review, the JVM is not utilized to its full potential
- Other languages excel at I/O bound tasks, which could have provided us another option