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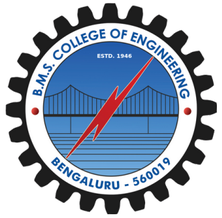

Open Source Finder

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- Problem Statement
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- Implementation of Backend API using Flask
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Abstract

- Open Source Finder is an open-source application that allows users to search for open-source components for their projects.
- It provides a user-friendly interface to discover and explore various open-source repositories based on specific criteria such as license and platform.
- With Open Source Finder, developers can easily find and integrate open-source components into their projects, saving time and effort.

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Problem Statement

- Selecting an open-source software based on specific needs can be challenging due to the lack of efficient and reliable methods to identify open-source software that aligns with the user's requirements. As a result, users often face difficulties in finding the most suitable open-source solution that meets their specific needs and preferences.

- To address this issue the Open Source Finder software is developed. This software aims to provide a systematic and efficient approach for users to discover and select open-source software based on user needs.

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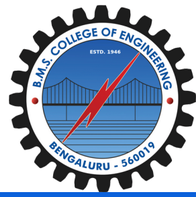

Objectives

- Develop a software tool that enables users to search for open-source components based on specified criteria, covering both internet resources and a local open-source components database.
- Allow users to save the retrieved documents/resources as potential candidates for further evaluation, providing a mechanism to store the results.
- Extract relevant information from the saved documents, including the download repository and source code repository , as well as details related to number of forks,language used, latest updated date and licensing.
- Provide a summarized view of the components, presenting key information in a concise manner to facilitate decision-making and comparison among the candidates.

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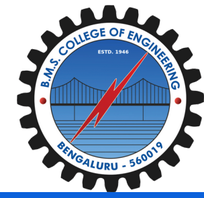

Initial architecture

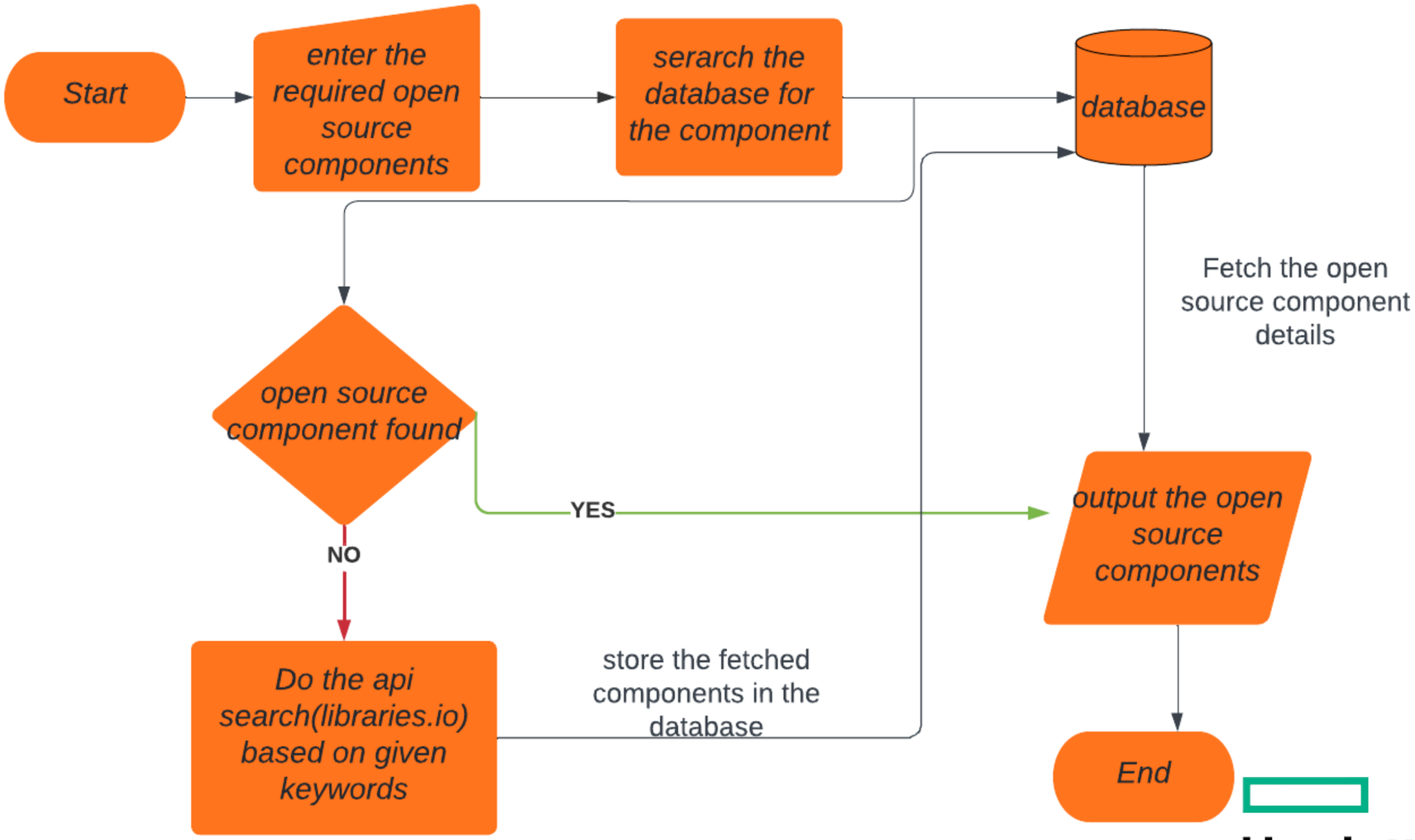

fig 1: Architecture

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API's Libraries.io

The Libraries.io API allows to search for open source components and retrieve information about them. Here is a breakdown of how to use the Libraries.io API:-

- Registration: Create an account and obtain an API key from Libraries.io. The API key will be used to authenticate requests.
- Search for components: Use the search endpoint to find open source components based on various parameters such as keywords,licenses, languages and platform.
- Retrieve required information: Once the required component is obtained, make a request to the API endpoint for retrieving various components information. This may include details like the component's name, description, version, license, repository URL and maintainers.

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Implementation of backend API using Flask

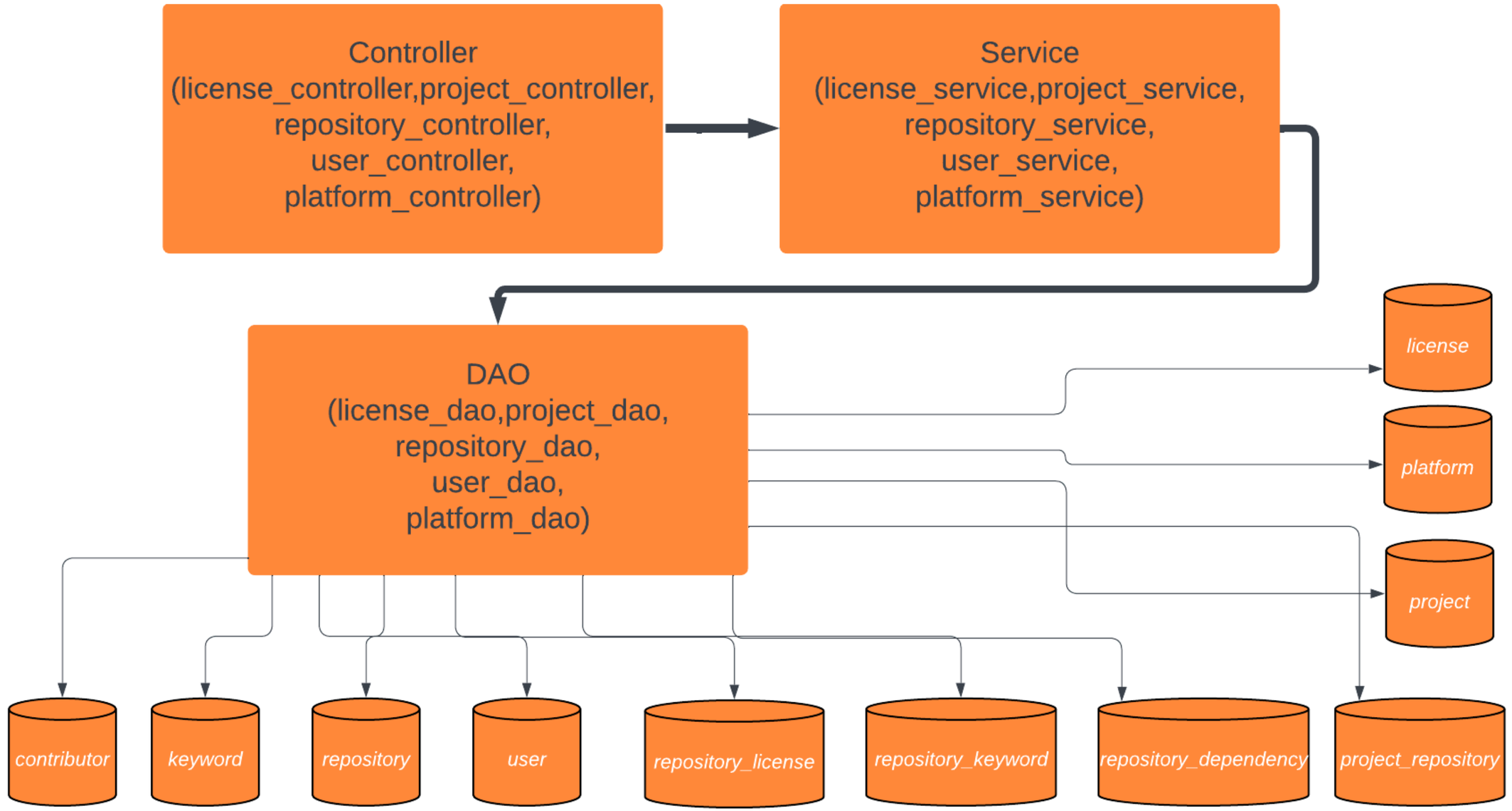

fig2 Backend architecture

Fuzzy Logic

Fuzzy logic is a technique used in information retrieval to account for approximate matches and handle typographical errors or variations in search queries.

- Fuzzy Query: Fuzzy Query feature allows to search for terms that are similar to a specified term, taking into account variations like misspellings user can search for the components even if the keyword is incorrect.

- Edit Distance: Fuzzy matching in Elasticsearch is based on the concept of edit distance. Elasticsearch uses the Levenshtein distance algorithm to calculate the edit distance.

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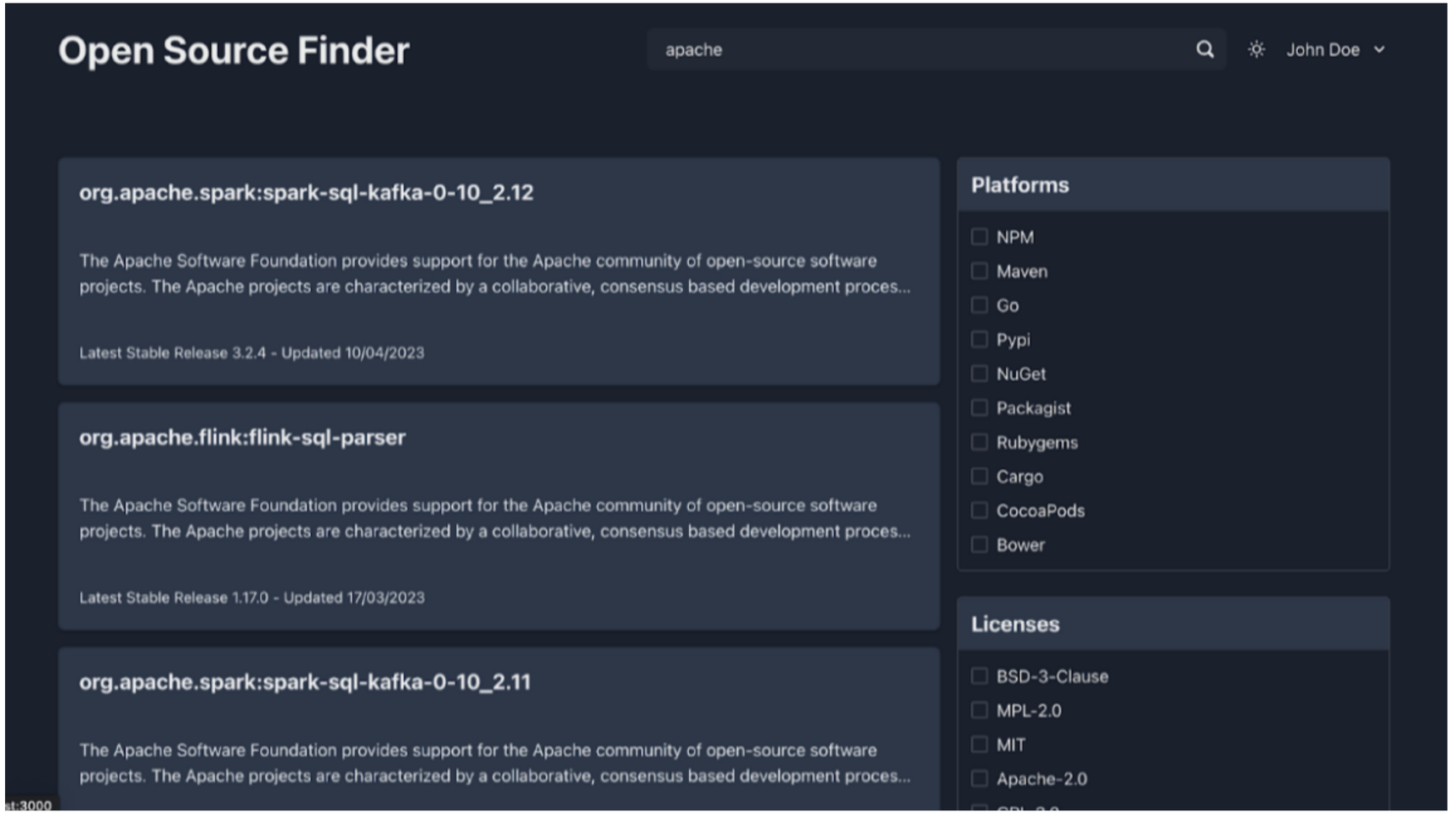
Demo



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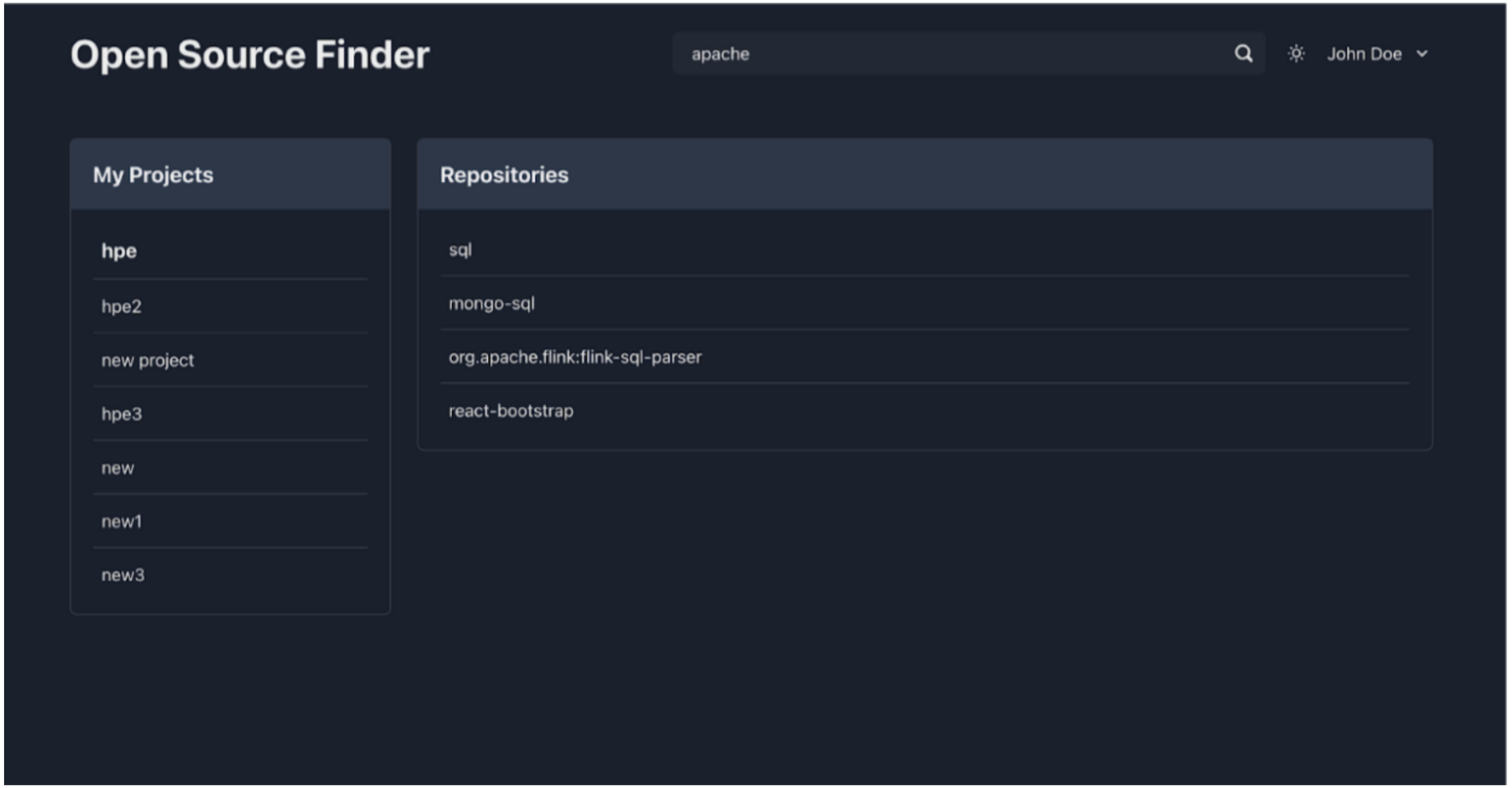

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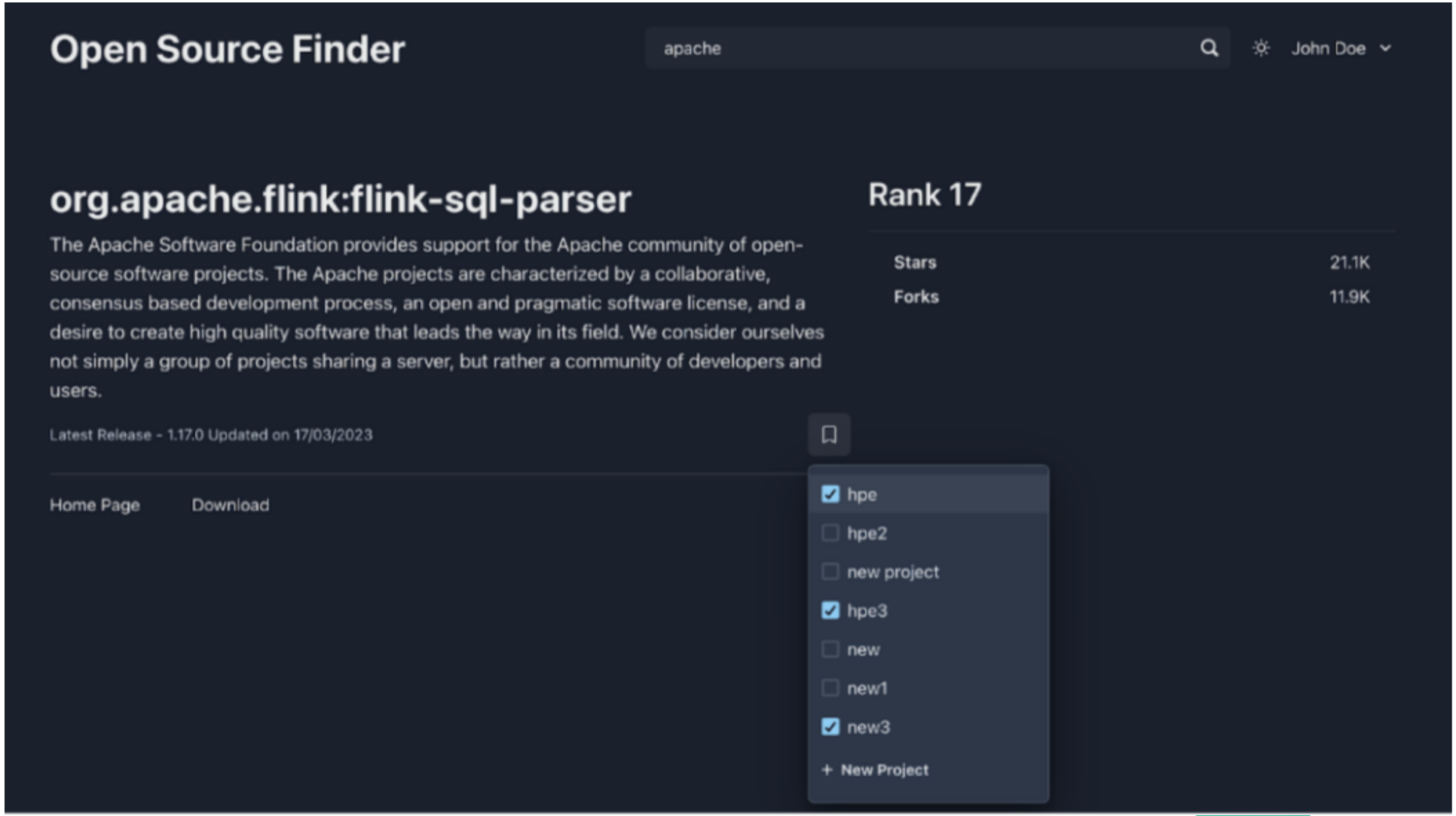

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Learnings

- Introduction to fuzzy logic .
- Good understanding of Model view controller(MVC) architecture.
- Introduction to openai and langchain to train a large language model for building a generative AI.
- Introduction to redis cache

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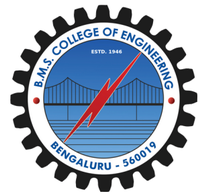

Challenges

- Extending the search to support more english like statements
- Dependency on libraries.io api
- Validation

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Future Scope

- Build a generative AI chatbot by training a large language model with data extracted from the database.
- Integrate a user-friendly form that enables users to manually input and add open-source components to the system.
- Implement a validation mechanism to ensure the integrity and quality of the fetched open-source components.
- Reduce Dependency on libraries.io api , by exploring other api's such as PyPI (Python Package Index), npm (Node Package Manager), Maven (Java packages), or RubyGems (Ruby packages),

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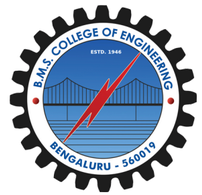

Resources and Links

Resources:-

- https://libraries.io
- https://platform.openai.com/docs/api-reference
- https://pypi.org/project/fuzzywuzzy/

Links:-

- https://github.com/Akshat9254/hpe_open_source_finder

Any Questions?

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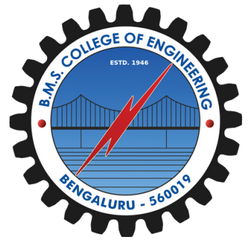

Thank You