DI-Boxjelly

Digital Health Platform

Read more →

PROJECT PRESENTATION

MEET THE TEAM

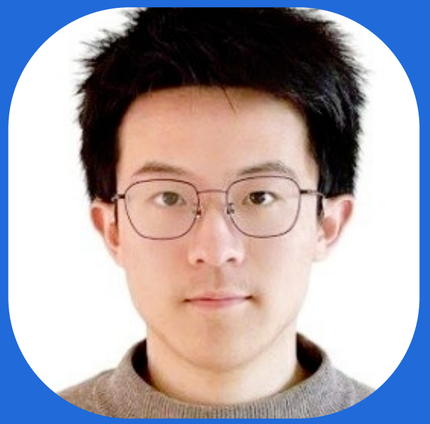
DI-Boxjelly

Kunxi (Quincy) Sun

Product Owner
DevOps
Backend developer

Chenyang (Peter) Dong

Scrum Master
Backend developer



Hanyi (Henry) Gao

Development Team Member
Frontend developer
UI designer

Yulai (Ricardo) Luo

Development Team Member
Frontend developer
UI designer

Yue (Molly) Fei

Development Team Member
UI/UX

MEET STAKEHOLDERS

Supervisor

Mauro Mello Jr

MEET THE STAKEHOLDERS

Client

Dr Vlada Rozova

Vlada is a Research Fellow in the School of Computing and Information Systems.

A/Prof Daniel Capurro

Daniel is a Medical Doctor and hold a PhD in Biomedical and Health Informatics from the University of Washington in Seattle.

Dr Mike Conway

Mike Conway is Senior Lecturer in Digital Health at the University of Melbourne's School of CIS and the Centre for the Digital Transformation of Health.

DIGITAL HEALTH PLATFORM

Business Need

01 Development of a platform to assess appropriate medication prescription

02 Improve analysis of clinical documentation

03 Normalising those short strings

PROJECT REQUIREMENTS

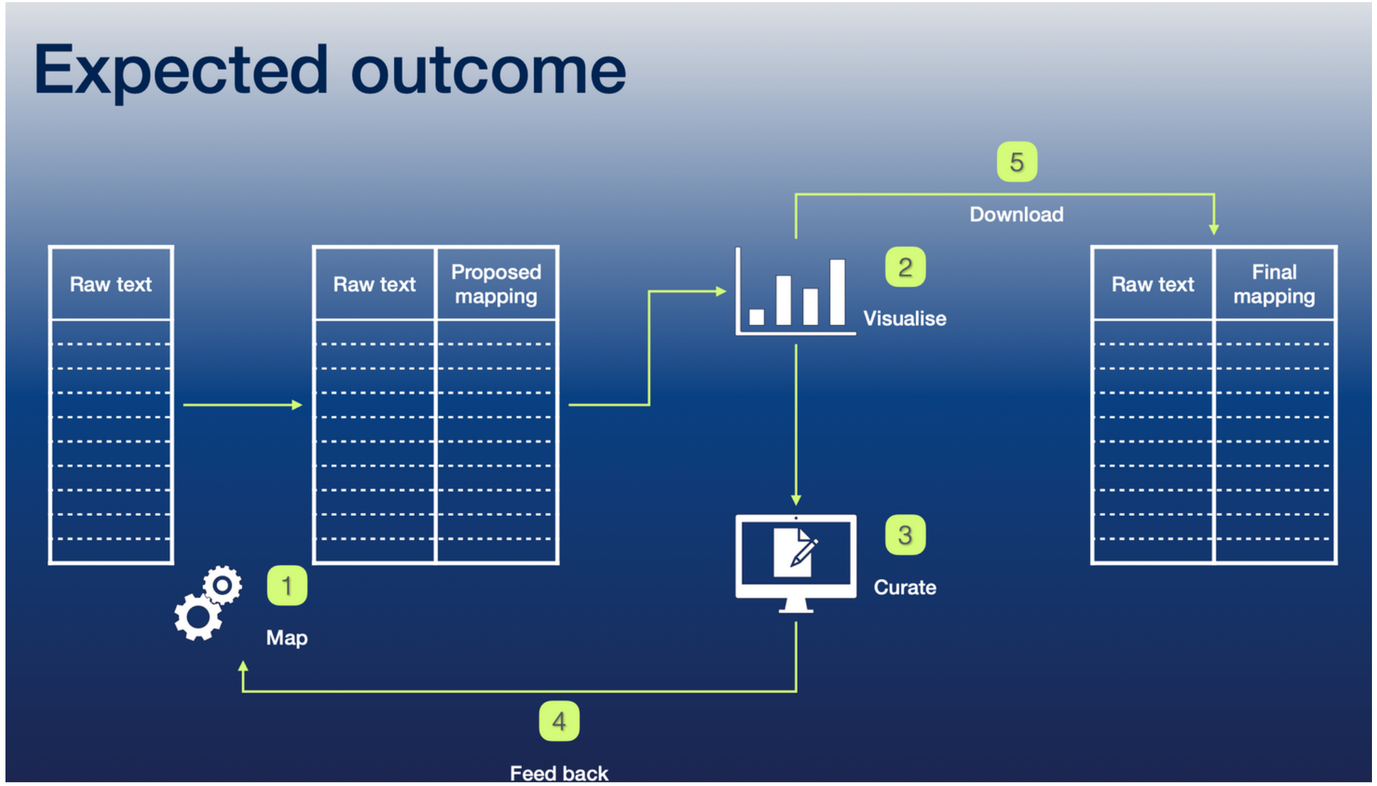
Functional Requirements - From Client

01 Map
Clinical text to Universal Indication List

02 Visualisation
Show system performance and task result

03 Curate & Retrain
continuously improve the system performance

04 Export result
Export mapping result



PROJECT REQUIREMENTS

Additional Functional Requirements

Derived extra functional requirements

05 **Authentication**

Credential user

06 **Team Management**

A research team

07 **Code System Management**

Universal Indication List updated continously

PROJECT REQUIREMENTS

Non-Functional Requirements

01 Security

Sensitive clinical data

02 Performance

Fast & Accurate

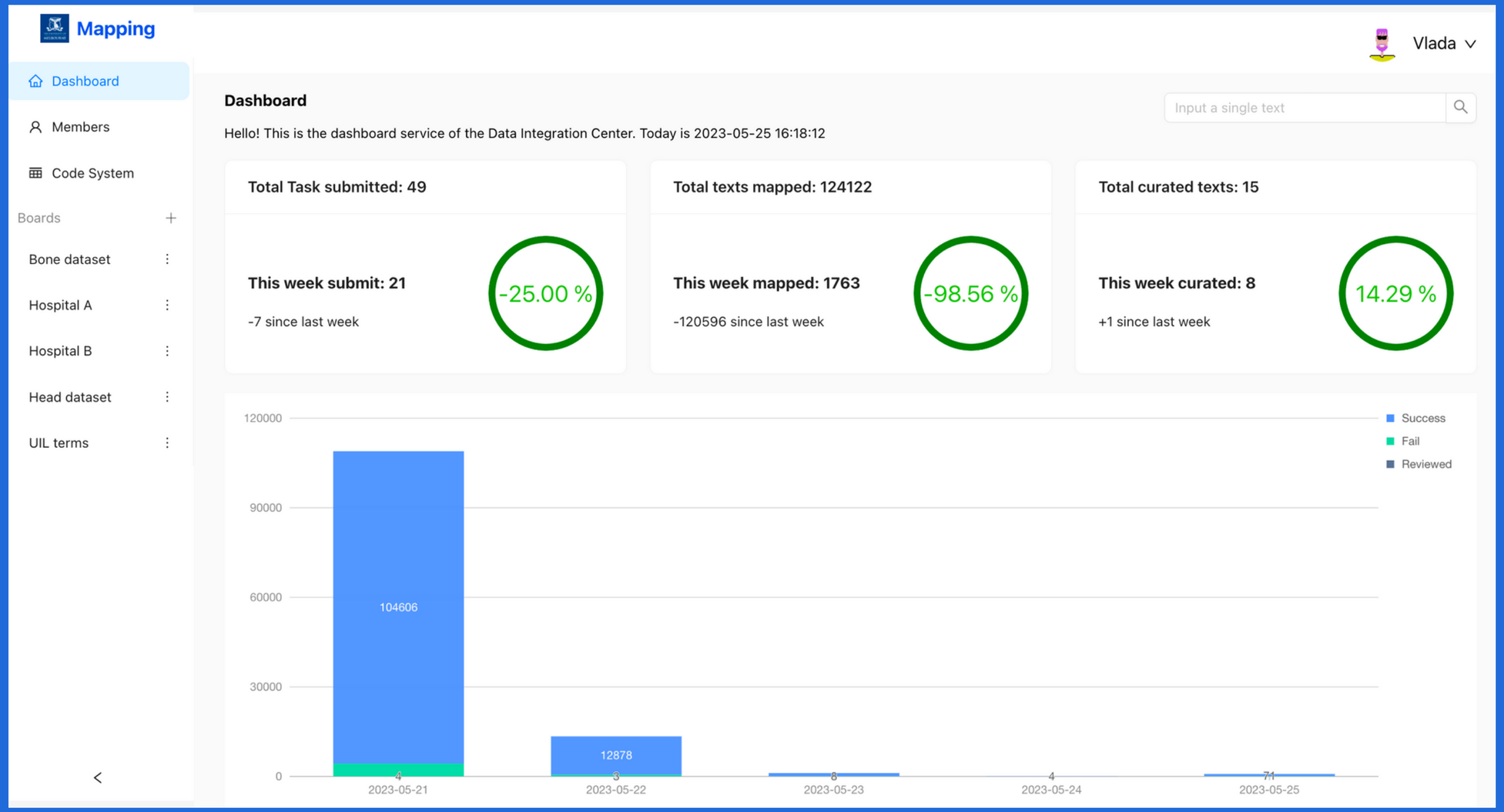
03 Scalability

Easy to maintain and extend

Live Demo

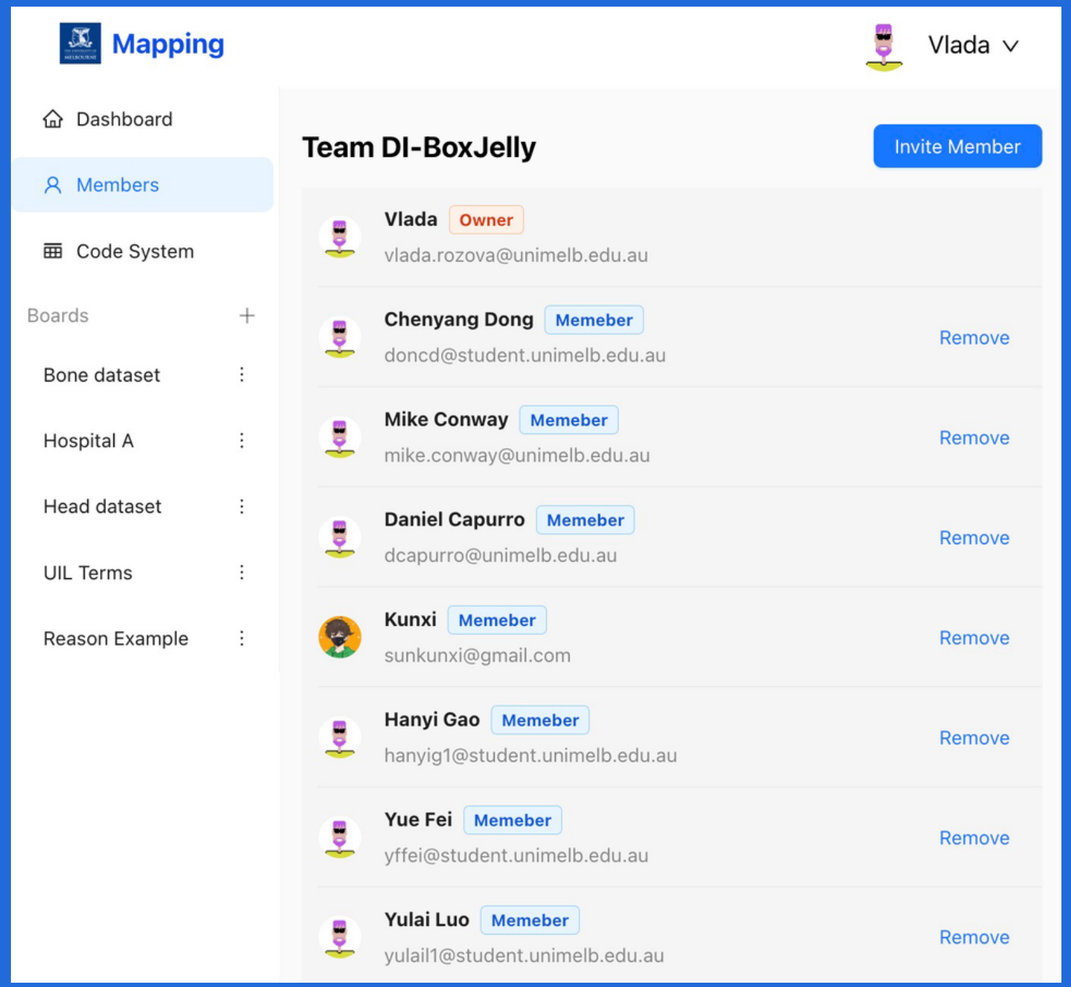
Other Features

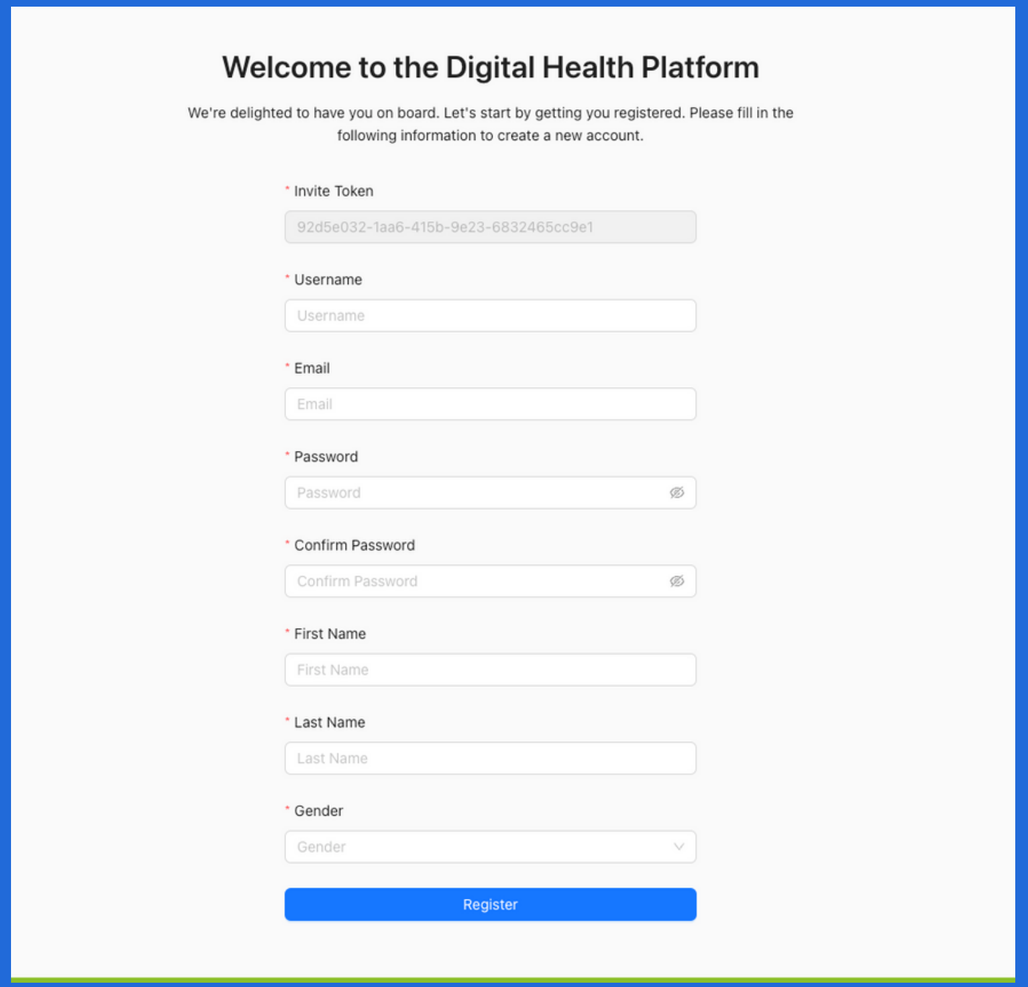
Dashboard - System Overview



Other Features

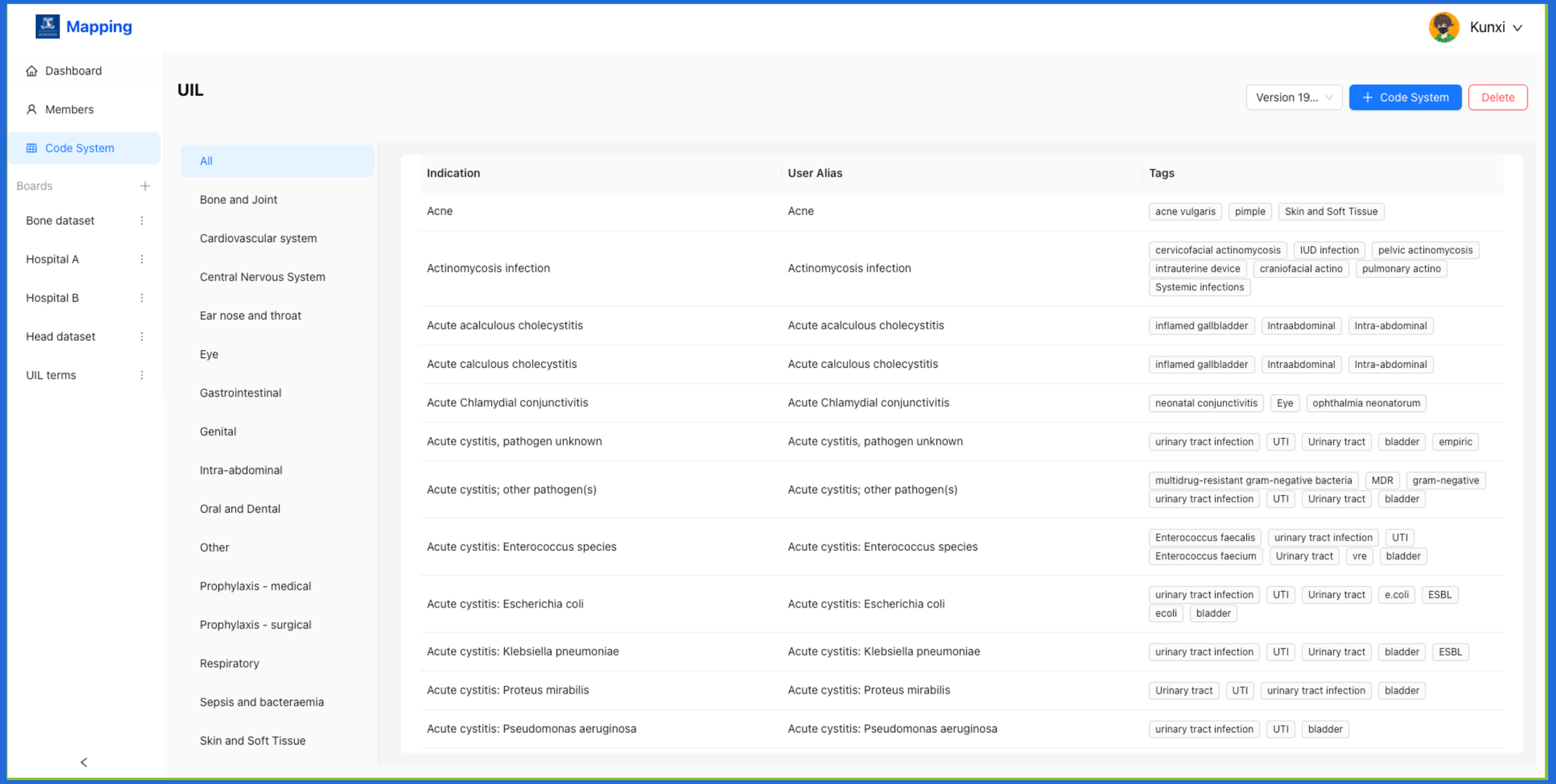
Team Management - Credential User





Other Features

Code System – Version control



SYSTEM DESIGN

Backend Frontend Separation

Frontend

React

Ant design

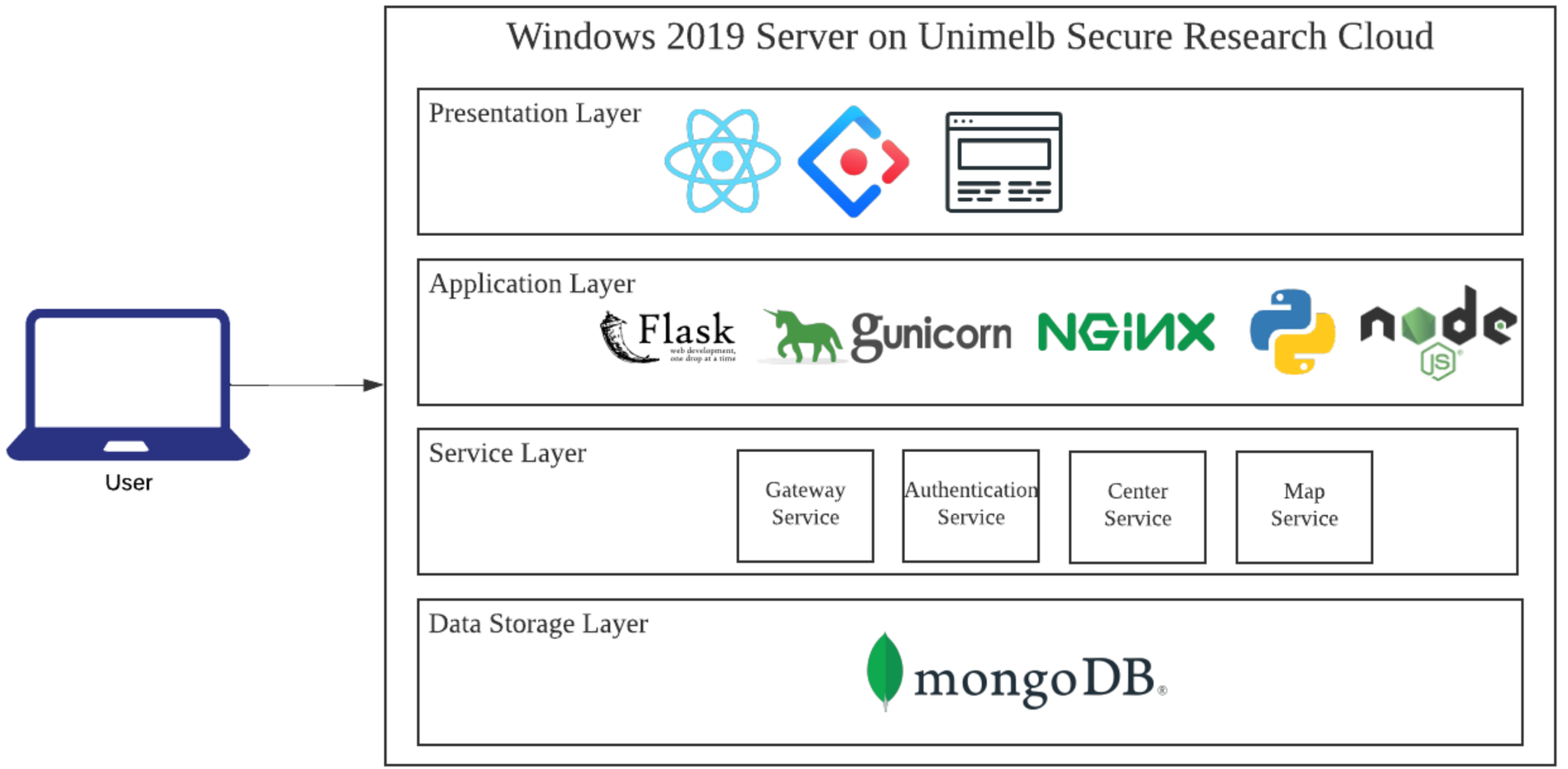
Backend

Flask

MongoDB

SYSTEM DESIGN

System Diagram



SYSTEM DESIGN

Microservice

Service Layer

Gateway

Control the request and response

Auth

User, team and login

Center

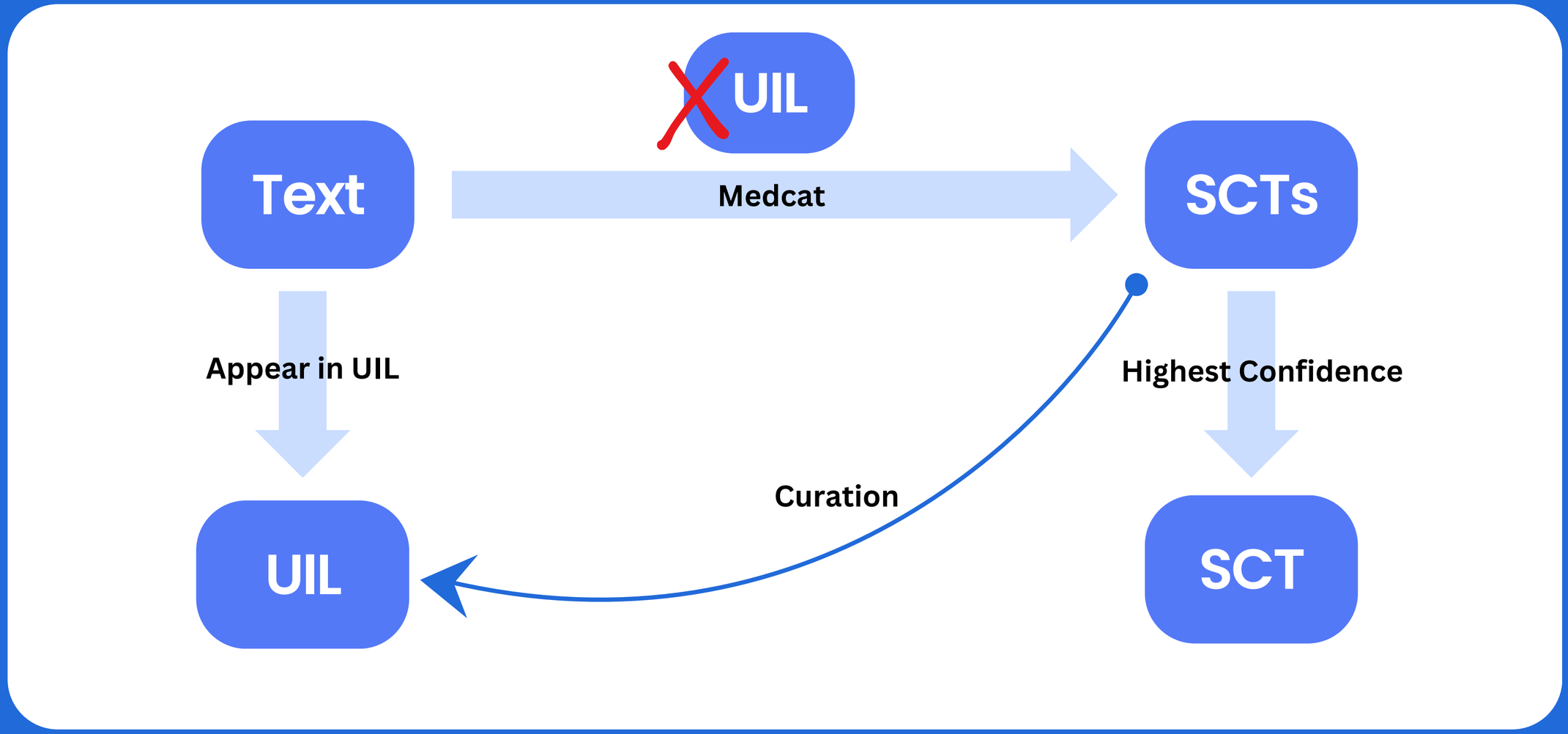
Code system, task, visualisation

Mapper

Map, curation, retrain

MAPPER

Mapping Process



MEDCAT

Clinical Text -> SNOMED-CT

https://github.com/CogStack/MedCAT

What is Medcat?

Medical Concept Annotation Tool

Pre-trained Model on SNOMED-CT

MIMIC-III Clinical Database

Named Entity Recognition + Linking (NER+L)

MAPPER

SNOMED-CT -> Universal Indication List

"Sinusitis, maxillary / UTI "

Maxillary sinusitis

1

attempt

UIL

Urinary tract infectious disease

0.563

SYSTEM DESIGN

Key challenges

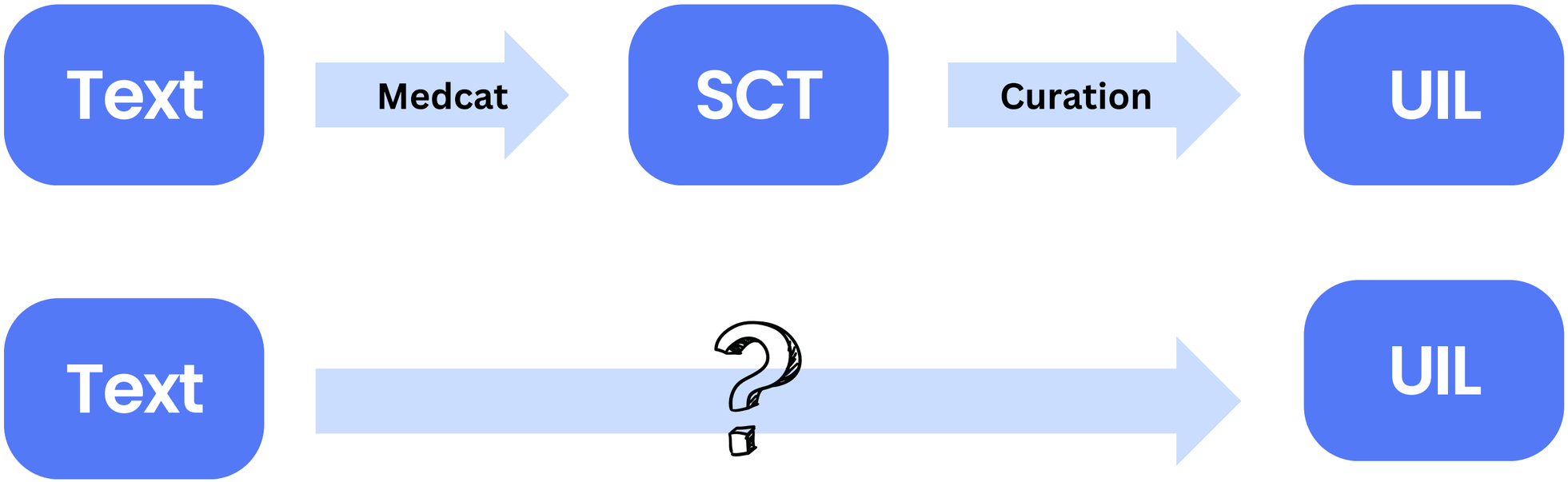
Lack of data

CI/CD

KEY CHALLENGES

Lack of data

No training data



KEY CHALLENGES

CI/CD

Continous Integreation? Yes !

How? Github Actions & Ansible

Continous Deployment? No

Why? No Production Server

SYSTEM DESIGN

Accomplishments

- User-friendly web interface
- Highly scalable microservices architecture
- Fast and accurate mapping based on MedCAT
- Continuous integration via Github Actions
- Follow the SOLID software principles

Thank you so much!

Q & A time