CAITO Knowledge Repository

AUT

CAITO

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Supervised by Weihua Li Year 2020, Semester 2

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Project Purpose

Cognitive AI is still a relatively new field and as yet there is no Cognitive AI powered knowledge management tools available for individuals to use. The CAITO team is looking to extend their AI powered knowledge repository platform to provide a domain-specific knowledge management tool for individual users. Such a tool would allow individual users to build private knowledge repositories where they can upload and search artefacts with natural language queries.

Rationale

Some of the problems that arise the need for this project include the following:

- Spending a large amount of time searching for relevant resources, however, later to realize many of which were actually irrelevant to their needs.
- Manually organizing documents (such as journals) takes time to read the documents and effort to organize those documents with an unstandardized criteria.
- Risk of obtaining resources that include the desired keywords, but not the desired content.

The proposed project can solve the issues mentioned, through the following process:

- Users will be able to ingest all resources into their own knowledge repository, allowing CAITO to ingest the documents.
- At any given time, users can simply search using the search bar with keywords or natural language to query all relevant documents. Unlike a typical search engine that simply matches keywords, CAITO is able to return search results based on the context of each ingested artefact.
- As CAITO searches through the user's data and is trained on the user's queries it displays relevant results reducing the amount of searching a user must do.
- In addition, each repository may have multiple collaborators to speed up the artefact gathering and sharing information. Thus, improving the quality and efficiency of team-based activities.

Objectives and Goals

- Build a front-end web application.
- Build a front-end mobile application.
- Build a client server to interface with the CAITO engine.

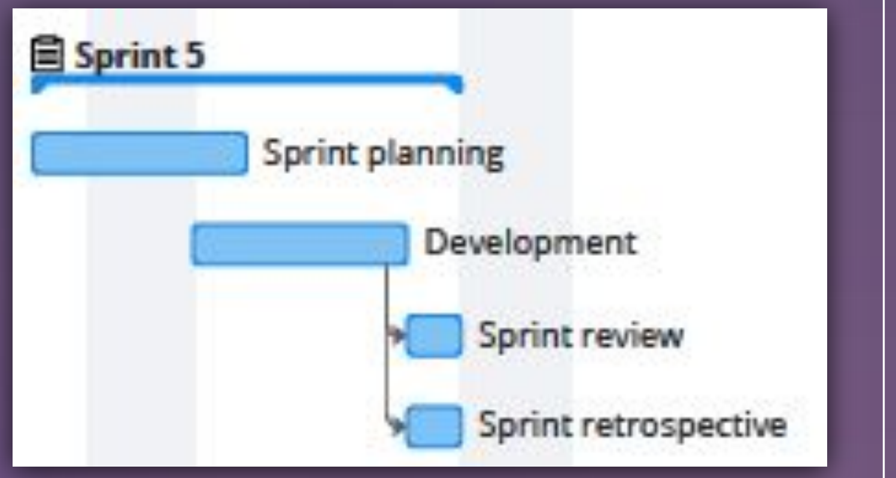
Key Milestones:

- Application UI Design approved by the client
- Application UI implemented and approved by the client
- Backend Server functionality implemented and tested
- Front-end functionality connected to backend data and actions, and tested
- Front-end application approved by the client
- Back-end server approved by the client
- Project handover

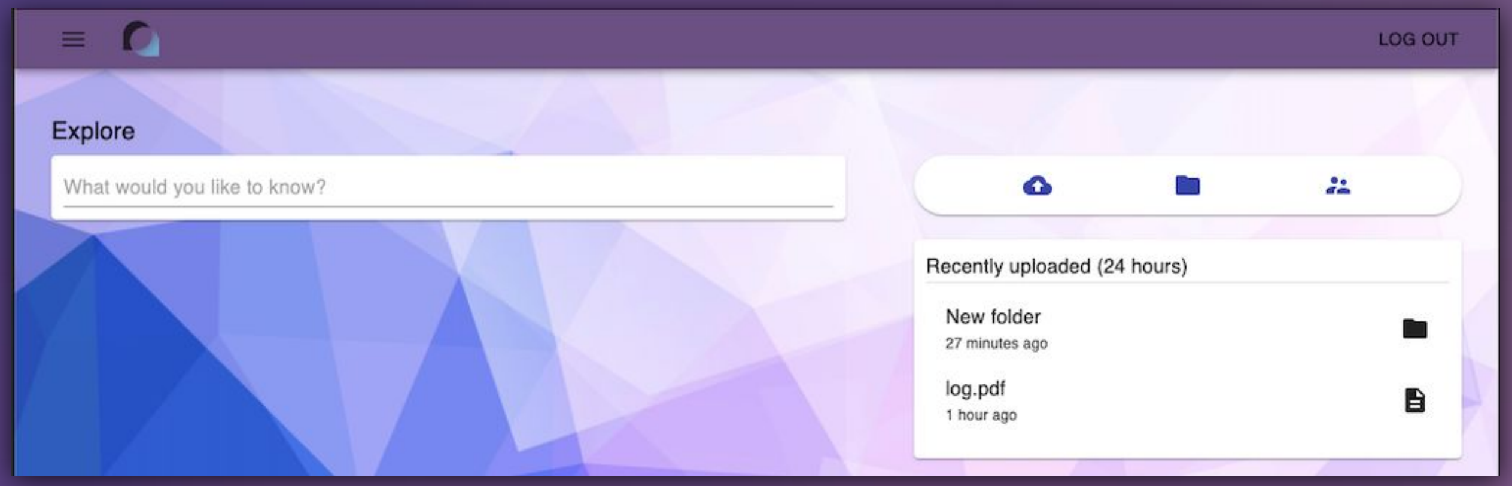
Method

We planned to use a modified version of the SCRUM framework to guide our work efforts. Whilst we managed to use the backlogs, we were not able to meet frequently with each other or the client due to lockdown. This hampered our efforts with SCRUM, as frequent face-to-face communication is a core part of multiple SCRUM activities.

We have set up 5 sprints in total for the development process. The overall tasks have been allocated to each sprint every sprint planning session, while keeping in mind the last sprint will be primarily for fixes and improvements. In addition, "Sprint 0" was performed before part 2 of the paper, where each member focused on upskilling the tools and technologies required to implement the systems.



Artefacts Produced & Results

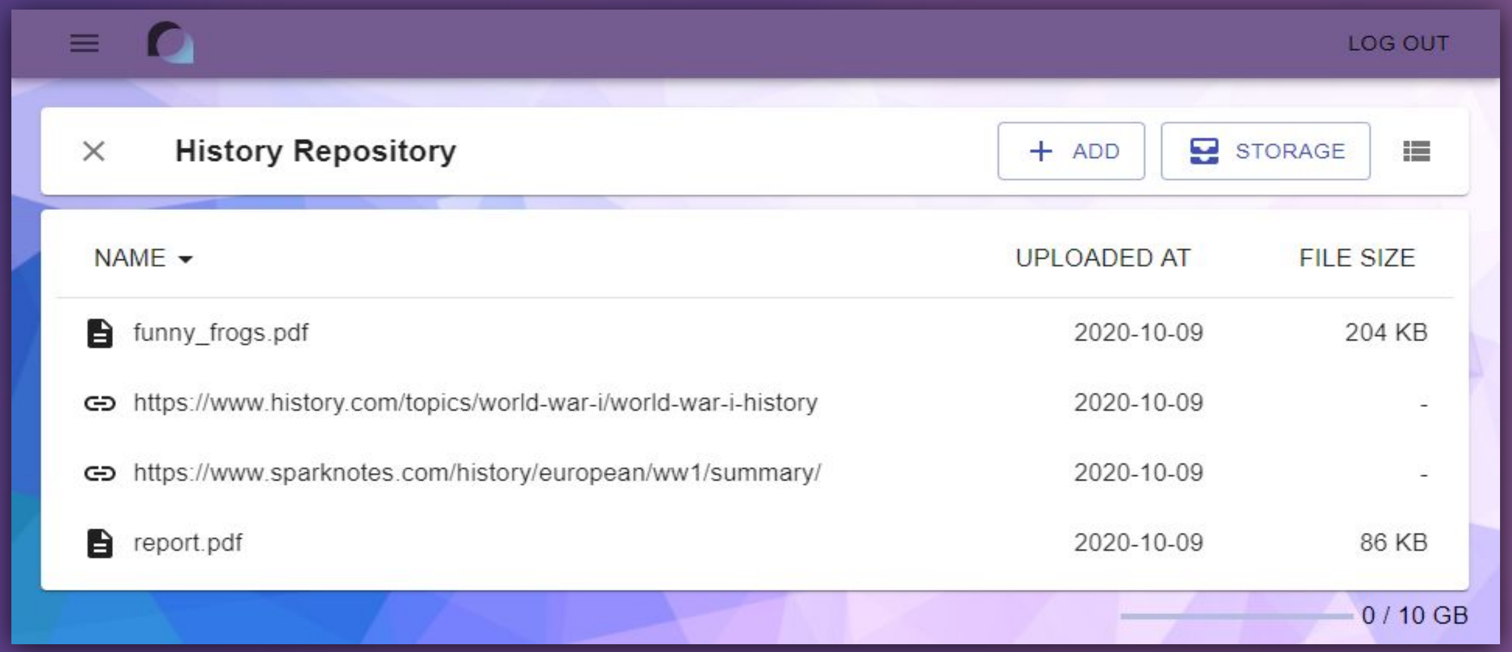


Recently uploaded (24 hours)

New folder
27 minutes ago

log.pdf
1 hour ago

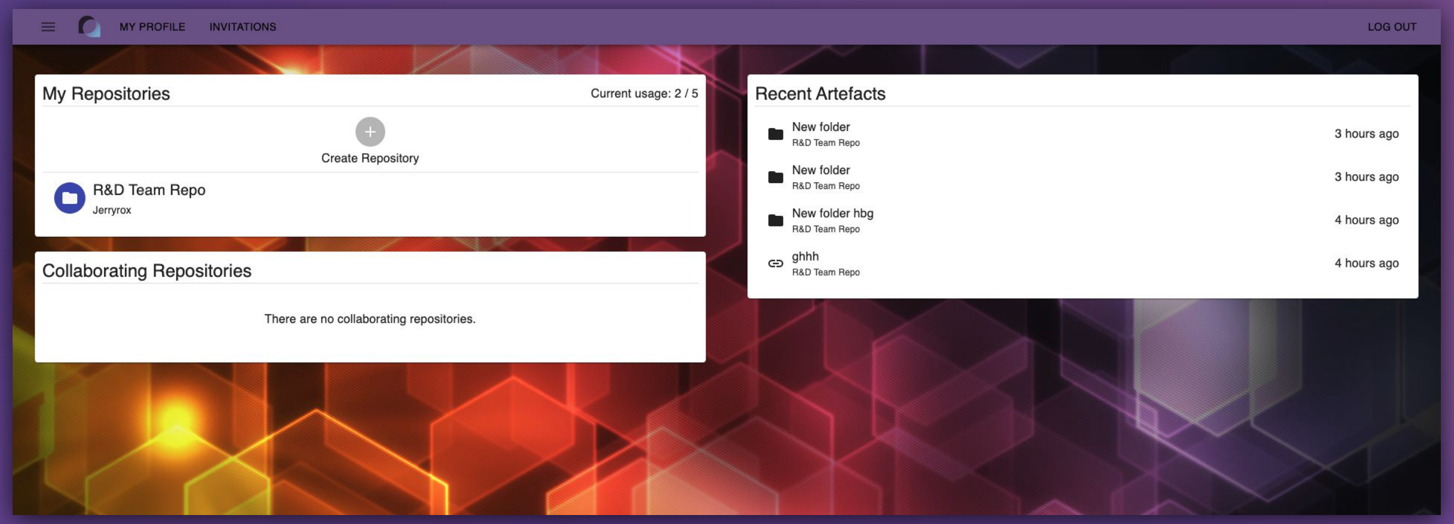
The Search View.



NAME	UPLOADED AT	FILE SIZE
funny_frogs.pdf	2020-10-09	204 KB
https://www.history.com/topics/world-war-i/world-war-i-history	2020-10-09	-
https://www.sparknotes.com/history/european/ww1/summary/	2020-10-09	-
report.pdf	2020-10-09	86 KB

0 / 10 GB

The Repository View.



My Repositories Current usage: 2 / 5

R&D Team Repo
Jerryrox

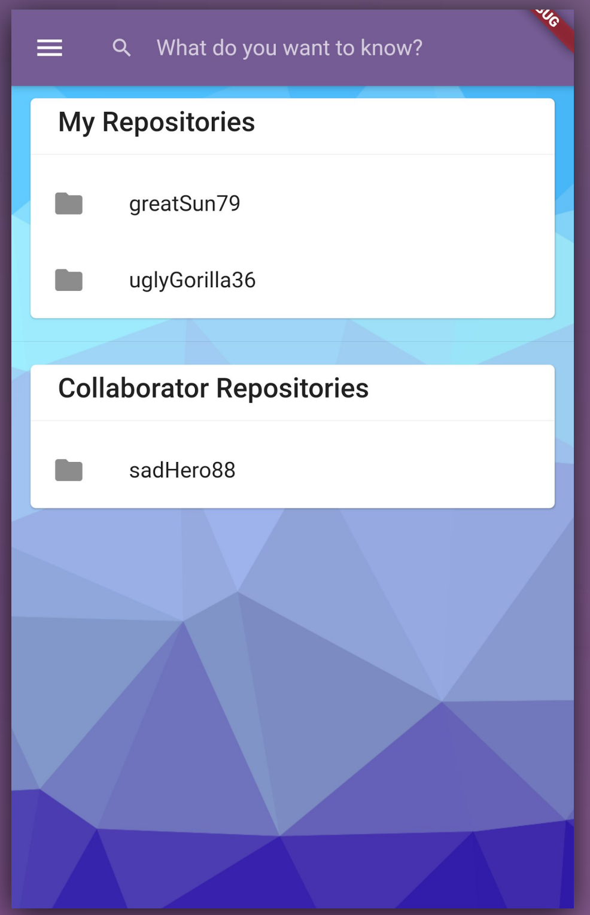
Collaborating Repositories

There are no collaborating repositories.

Recent Artefacts

New folder	R&D Team Repo	3 hours ago
New folder	R&D Team Repo	3 hours ago
New folder hbg	R&D Team Repo	4 hours ago
ghhh	R&D Team Repo	4 hours ago

The Home View.

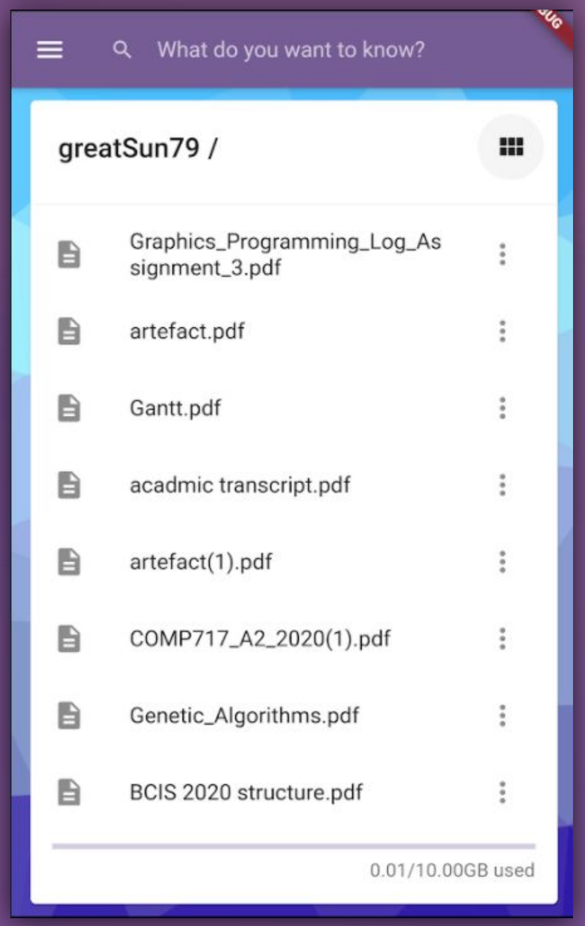


My Repositories

- greatSun79
- uglyGorilla36

Collaborator Repositories

- sadHero88

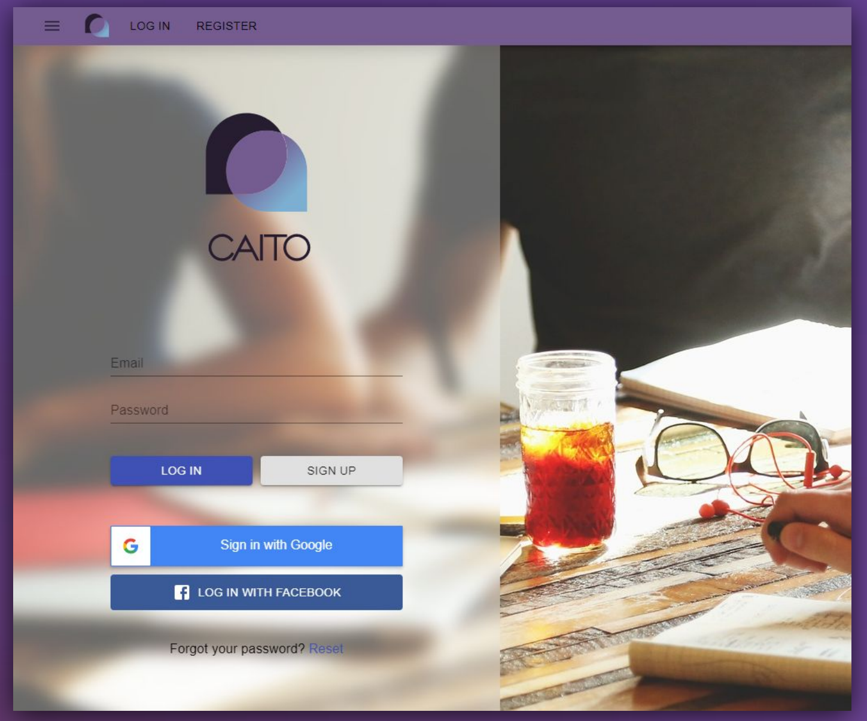


greatSun79 /

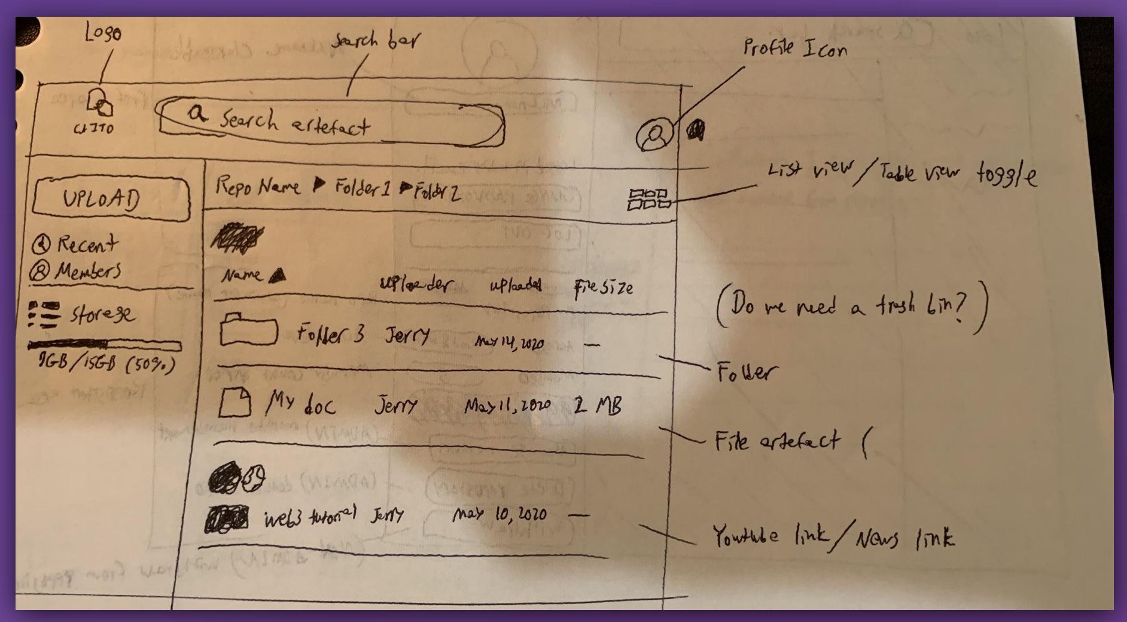
- Graphics_Programming_Log_Assignment_3.pdf
- artefact.pdf
- Gantt.pdf
- acadmic transcript.pdf
- artefact(1).pdf
- COMP717_A2_2020(1).pdf
- Genetic_Algorithms.pdf
- BCIS 2020 structure.pdf

0.01/10.00GB used

Mobile App, Repository View



The Login Interface


Logo
Search bar
Profile Icon
CAITO
Search artefact
UPLOAD
Recent
Members
Storage
9GB/15GB (50%)
Repo Name ▶ Folder1 ▶ Folder2
List view / Table view toggle
Name
uploader
uploaded
file size
Folder 3 Jerry May 14, 2020 —
My doc Jerry May 11, 2020 2 MB
web3 tutorial Jerry May 10, 2020 —
(Do we need a trash bin?)
Folder
File artefact (
Youtube link / News link

Initial Main Design

Critical Review

POSITIVES

- Prioritizing tasks and tracking bugs was easy, thanks to our backlog management strategy.
- Having a solid practice in Git branching and merging enabled awareness of codebases and helped maintain code quality.
- Reimplementing the web functionality on mobile enforced a fairly thorough code review which was useful, if time consuming.

NEGATIVES

- Time availability is critical to perform Scrum activities. However, we did not produce Scrum artefacts very often.
- We did not create Trello cards based on user stories, but rather focused on features, bugs, and improvements which would be more suitable for the Kanban approach instead.
- There were no sprint retrospectives
- We didn't do any estimations for story points or equivalent.

Areas of Difficulty

NON TECHNICAL

- COVID-19 lockdowns made it difficult to get familiarised with each other, making communication very difficult initially
- The client company had a busy period, and it was hard to maintain frequent communication and perform scrum activities.
- Lacking motivation and apathy were some issues faced during the project.

TECHNICAL

- Unfamiliarity with the rendering engine of Flutter framework, causing issues with animations and layout.
- We only had a limited variety of physical test devices for the mobile application. Also, only one member had access to iOS devices.
- Coming up with the best programming practices was quite tricky to do in the initial stages of development. We had rapid changes in this area during development and there are some remains of old practices in our codebase. Most of them were resolved through refactoring but some have become a hassle to do so.
- Choosing between code quality and overall time consumption.

Lessons Learned

- It is difficult to manage the project with a larger team.
- Planning how classes interact, and the functions which they should use can minimize the amount of refactoring required.
- It is very hard to apply agile when client interaction cannot be done frequently.
- Scrum does not seem to work when there are too many uncertain variables.