EUL - A UN SDG CLASSIFIER AND REPOSITORY

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Why EUL?

EUL is just an item in Dota 2, and I came up with that name because I was too lazy to think of other names.

What is it about?

It is a full-stack application that classifies documents into 17 UN Sustainable Development Goals. This application doesn't just tell you what category the document belongs to, it also tells you how much that document belongs to a specific SDG by outputting the percentage. Once classified, the user can choose to store the document along with the tagged SDG and percentage in the system.

UN SDG?

The United Nations Sustainable Development Goals (UN SDGs) are a set of 17 global objectives designed to address the world's most pressing challenges, ranging from poverty, education, and health to climate action and sustainable development. Adopted in 2015 as part of the UN’s 2030 Agenda, the SDGs aim to create a more just, inclusive, and environmentally sustainable future for all.

They are highly relevant for guiding research, policymaking, and innovation, and serve as a framework for aligning academic and professional efforts toward real-world impact. (This section is generated by ChatGPT btw, xD)

Why SDG?

Why not? Nah, joke, this is originally a thesis project for our Bachelor’s Degree. The overall goal of the thesis was to create a full-fledged university-wide UN SDG repository. We actually did it, well, kinda. We created mobile and web applications for this one. We, me and Cristopher Bohol. I was the one who made the mobile part and the classification algorithm in the Python Flask part, Bohol made the original web application, and the Node.js backend and Database for the CRUD parts. To answer the question of why SDG, it’s a pretty novel idea to classify papers not just by keywords but also by SDGs.

I just reused my old classification algorithm code in Flask, fine-tuned it, and revamped it to be deployed on the internet, and I created from scratch the new web application with new tech stacks such as Firebase and Cloudinary, which you are using right now.

Tech Stack

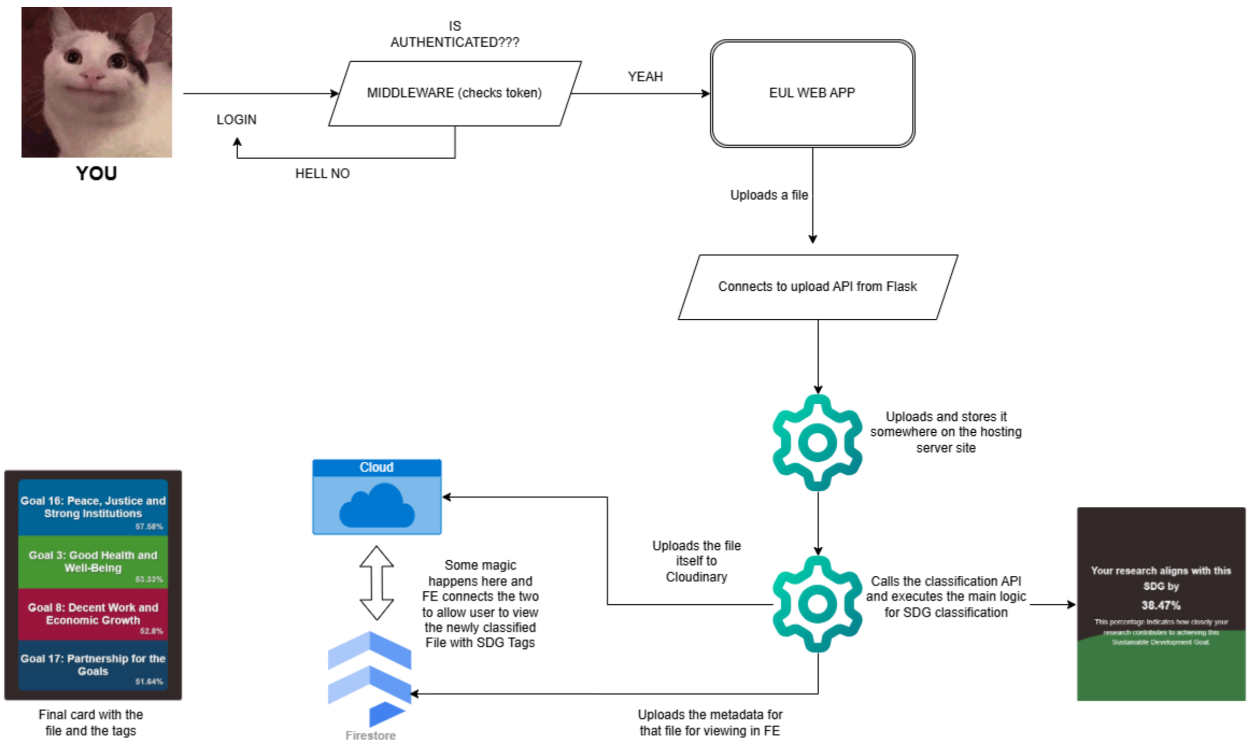
For Frontend, it is using NextJS (React + Typescript), a no-brainer decision since there are a couple of routes, and for SEO purposes.

For the database, Cloud Firestore is used, which avoids unwanted complexity when deploying since it's already in the cloud.

Python Flask is used for the backend algorithm; the algorithm is written in Python and hosted on a Flask server using REST API services.

The uploading and storing of the files are being handled by Cloudinary through its admin API.

What's the Flow?


YOU
LOGIN
IS AUTHENTICATED???
MIDDLEWARE (checks token)
HELL NO
YEAH
EUL WEB APP
Uploads a file
Connects to upload API from Flask
Uploads and stores it somewhere on the hosting server site
Cloud
Uploads the file itself to Cloudinary
Some magic happens here and FE connects the two to allow user to view the newly classified File with SDG Tags
Calls the classification API and executes the main logic for SDG classification
Your research aligns with this SDG by
38.47%
This percentage indicates how closely your research contributes to achieving this Sustainable Development Goal.
Goal 16: Peace, Justice and Strong Institutions
57.58%
Goal 3: Good Health and Well-Being
53.33%
Goal 8: Decent Work and Economic Growth
52.8%
Goal 17: Partnership for the Goals
51.64%
Final card with the file and the tags
Firestore
Uploads the metadata for that file for viewing in FE

How Does the Classifier Work?

The training for the model is already done before being deployed. The training set comprises 3-5 PDF files worth of content for each SDG. After which, a function is called to process the training set into vectors, and in its final form, is the TFIDF file. So once the user uploads a document, a new item is appended to the TFIDF, which is now the 18th item on the TFIDF. It will then calculate the cosine similarity of those vectors based on the TFIDF and will return the percentages for each goal. Confusing? Yeah, I know. Just download the research paper on the site, and it will explain everything, or schedule an interview with me 😉