CavaAnnotate Web Application Build

Technical Documentation

By Oyeleke Olayemi

Introduction

CavaAnnotate is a specialized web application designed for annotating eye movement data images, specifically those related to episodes of dizziness or vertigo experienced by patients wearing the CAVA medical device. This tool enables an admin to upload eye movement signal images. Three clinicians can then log in individually to review, annotate, and clinically evaluate these images to determine the presence of nystagmus. The collective annotations result in a consolidated master table on the admin's dashboard, indicating the majority consensus for each image. All annotated image files are securely stored in the web application's backend database and are also made available for training machine learning algorithms.

Technology Stack

The CavaAnnotate Web App is built using the following technology stack:

- Laravel Framework
- Tailwind CSS
- MySQL Database

Installation/Server

The CavaAnnotate Web App is hosted online, ensuring easy access for users. You can visit the application by clicking on the following URL or entering it directly into your browser: www.cavaannotate.com

Features

The CavaAnnotate Web App has a range of features tailored to the needs of healthcare professionals as follows:

Authentication

The web application incorporates a robust authentication system that enables annotators to securely create accounts, log in, and log out, all with the goal of facilitating image annotations. Currently, **the web app supports three (3) users or annotators**, in addition to the admin.

Upon login, each user is provided with a dedicated "task" list, along with an individual dashboard where previously annotated images can be accessed.

Image Upload

Admins are equipped with the capability to upload eye movement signal image files directly through the web application. These uploaded files are then made available on both the admin's dashboard and the task lists of the three (3) clinicians for annotation. Supported file formats for image uploads include JPEG and PNG. Furthermore, admins can edit the uploaded image files as needed. It's important to note that admins cannot perform annotations, as they do not possess a task list.

Image Annotation

Clinicians, also referred to as annotators, can conveniently view the uploaded images in their respective task lists and proceed to add annotations. Images are dynamically displayed upon clicking the "Annotate" button within the task list. Annotations and clinical comments may be added to the image files to evaluate the presence of nystagmus. Currently, the web application accommodates up to three (3) clinicians for image annotation. Previously annotated images are conveniently organized and accessible on each clinician's dedicated dashboard via a comprehensive table.

Download

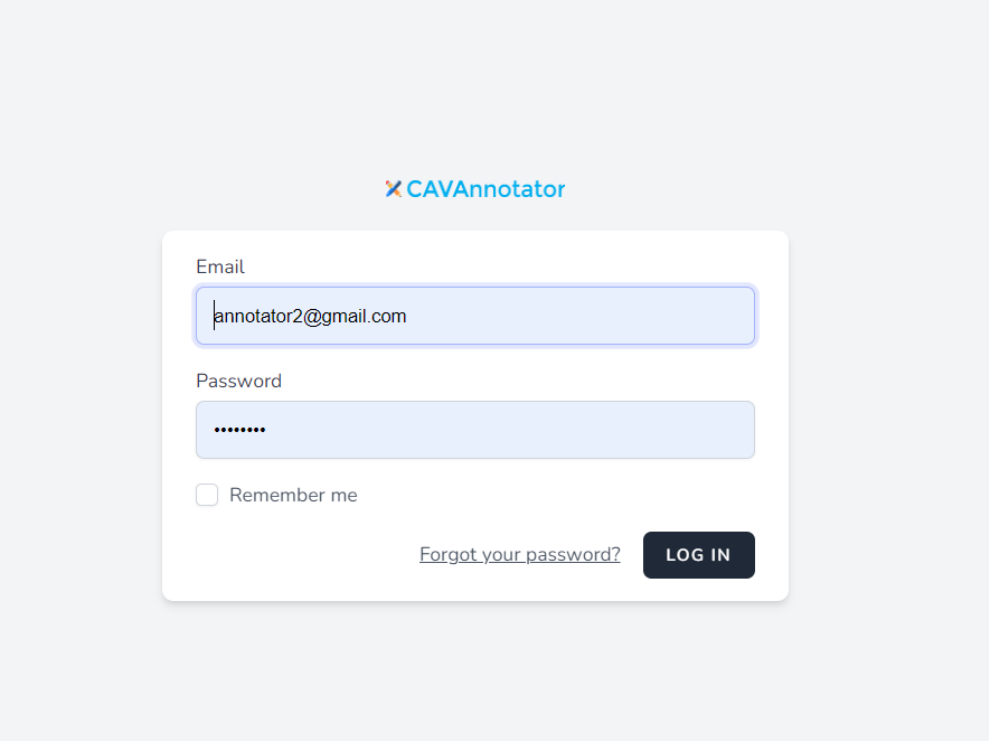
The culmination of clinicians' annotations is a master table, accessible on the admin dashboard. This table provides an overview of majority votes for each image file, calculated based on the annotations contributed by each clinician. Admins can easily download this table in CSV format for further analysis and documentation.

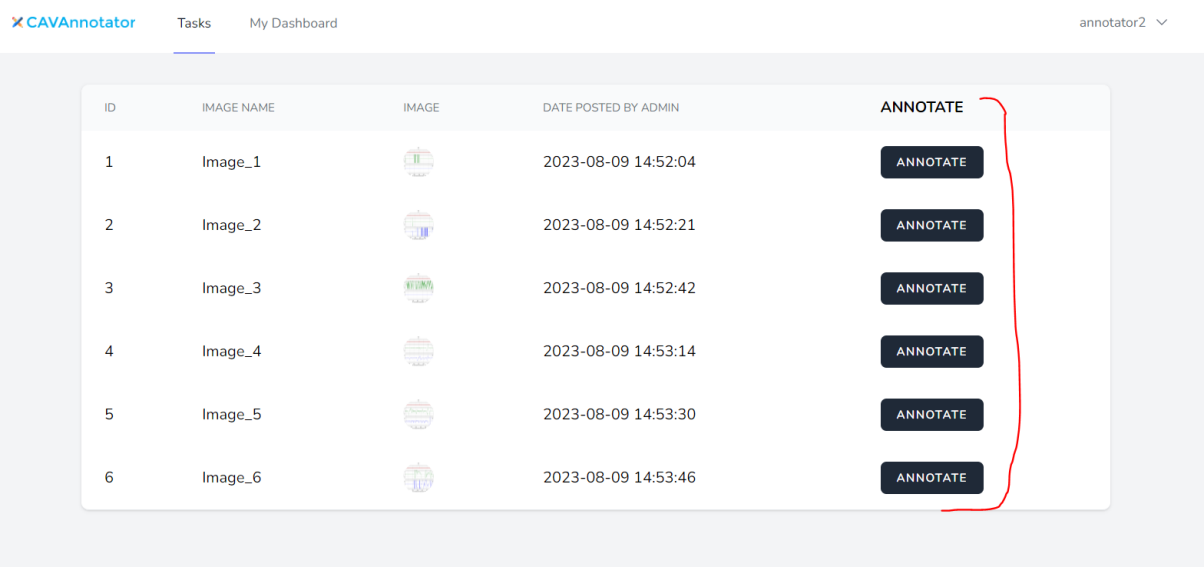
Security

Ensuring the utmost security of sensitive data is a priority within the CavaAnnotate Web App. User authentication is meticulously handled by Jetstream, and all images are stored securely within a MySQL database. Additionally, the web application is configured to prevent unauthorized access by web crawlers, as it is intended exclusively for in-house use.

Conclusion

In summary, the Image Annotation Web App, CavaAnnotate, presents a valuable tool for clinicians to annotate and provide clinical commentary on images generated during the analysis of eye movement data in patients experiencing dizziness or vertigo while wearing the CAVA medical device. This application's robust features, including secure authentication, image upload and annotation capabilities, and a searchable database, empower clinicians to initiate the diagnostic process based on clinical images of eye movements, fostering more efficient patient care.





Annotation Process using dynamic processes

Below is a description of the admin login dashboard, displaying annotations from all annotators along with the prevailing majority vote. You will also find the option to download the final output as a CSV file.