បណ្ឌិត្យសភាបច្ចេកវិទ្យាឌីជីថលកម្ពុជា
Cambodia Academy of Digital Technology

Institute of Digital Research & Innovation

Cambodia AMR Predicting Application

Technical Document

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1. TECHNOLOGY

This system consists of a complete web application stack featuring a ReactJS/TypeScript frontend with Material UI styling, a FastAPI backend running on Python 3.9.13 (recommended), and PostgreSQL 17 for the database. The entire infrastructure can be deployed using a single command.

- **Postgres:** PostgreSQL (often called "Postgres") is an open-source relational database management system (RDBMS) that emphasizes extensibility and SQL compliance. It's one of the most popular and advanced database systems available today.

- **FastAPI:** FastAPI is a modern, high-performance web framework for building APIs with Python. It was created by Sebastián Ramírez and first released in 2018. FastAPI has quickly gained popularity due to its combination of speed, ease of use, and robust feature set.

- **ReactJS:** ReactJS (commonly just called React) is a popular JavaScript library for building user interfaces, particularly for single-page applications. It was developed by Facebook (now Meta) and released as an open-source project in 2013.

By integrating these technologies, the system operates efficiently to provide a highly satisfying user experience with accurate predictions, responsive feedback, minimal latency, and rapid data transfer.

2. REQUIREMENTS

You need to download the machine learning model and extract into the corresponding directory as follow:

1. Download the model and unzip it from Download Link. There are several machine learning model files such as: random_forest_stage_1.joblib, random_forest_stage_2.joblib,.. etc.
2. Move all the model files into the **root directory of the project** (they must be located in the same directory of root level server.py).

After the models downloaded and placed in the correct location, you can proceed building and run the web applications as below.

3. HOW TO BUILD AND RUN THE APPLICATION

There are 2 options to build and run the web applications.

Option 1: Pull Docker Image from CADT's Server

1. First you need to pull docker image from CADT registry using the docker registry credential that we provided by using the following command.

   » docker login pull registry.idri.edu.kh -u USERNAME -p PASSWORD

   » docker pull registry.idri.edu.kh/amr:latest

2. Then you can run the Docker Image using the following command:

   » docker run -d -p 8000:80 registry.idri.edu.kh/amr:latest

3. Access the website via at http://localhost:8000.

Option 2: Build from Source code

For the easiest way, we provide a docker compose's file that you can up all services by follow below:

1. Build and run the docker containers using docker-compose:

   » docker-compose up -d --build

2. Access the website via at http://localhost:8000.