PROJECT PROPOSAL

BLOCK 1D-2023-2024

Straat-o-sfeer

Names of the Students

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I. Introduction

The purpose of this project is to design and develop an application that will improve road safety in the city of Breda. This topic is very relevant, as even though technology in the modern world moves forward, road safety does not improve. With the help of machine learning techniques, this project aims to change that.

II. Problem Statement

The problem we aim to solve during this project is to reduce the number of incidents that happen on the road. By solving this problem, the roads would become a safer environment. The end goal of the project is to create a mobile application that would use AI to alert users about potentially hazardous areas and increase their awareness while driving. The metric that will be used to measure the success of the app will be the number of incidents after the release. If the number of incidents goes down, then the goal will be achieved.

III. Data Description

The main dataset used for the project is the 'Safe Driving' dataset provided by ANWB. The dataset contains data on incidents that happened on the road, with information such as the severity of the incident, the time it happened, and the type of incident. This dataset will be used to calculate a 'danger level' score and assign it to specific roads in Breda. Additionally, datasets containing weather data like 'Wind', 'Precipitation', and 'Temperature' will be included in the final product to compare historical weather conditions with the number of incidents that happened. If any additional datasets that are deemed valuable will be made available, they will also likely be used in the project.

IV. Methodology

Having completed the outline of the project, model development will become the focus of the project. This phase will begin with data selection and cleaning, and once a good base is established, the model can start being developed. The plan is to use a linear model for the project; however, this may change during the development process. The choice to use a linear model came from the need to develop a scoring system to grade the hazard level on the road, which makes the linear model suitable for the task. The type of linear model will be selected based on the results from testing several kinds of models, and the one with the best performance will be selected.

Once the model is complete, it will be integrated into an API on the Google Cloud Platform. Specifically, the Maps API will be used to allow the application to detect user location in real-time and provide guidance based on that.

The next step is frontend and backend development. A simple, functional design of the application will be created, which will allow for later deployment. During the deployment phase, Flask will be used to deploy the application.

Regarding the legal aspect of the project in connection with the EU AI Act, the app will be associated with the level of 'Minimal Risk'. Some of the obligations we will need to keep in mind are keeping up to date technical documentation of the model, and ensuring that the users are aware that they are interacting with an AI system.

V. Project Timeline

The project will be carried out over the span of 5 weeks. The planned timeline is as follows:

Week 1 – Project draft and proposal.

Week 2 – Data preprocessing and model development.

Week 3 – Further model development and API integration.(Maps API, API that talks to our interface)

Week 4 – Creating the frontend and backend, start of deployment process.(We already have a developed figma prototype of the app)

Week 5 – Finalizing the deployment.

The tasks will likely take less time to complete, in which case the additional time will be left for any fixes and potential improvements.

The project timeline, tasks, and individual contributions will be documented using a Trello board, and the project will be carried out in the Kanban approach.

VI. References

Chapter V: General Purpose AI Models | EU Artificial Intelligence Act. (n.d.). https://artificialintelligenceact.eu/chapter/5/