Inspiration

A challenge that concerns any city with automobile traffic is the safety of every type of transport, consideration of different physical and mental disabilities and keeping traffic fluid despite these challenges. To take one more step towards a more intelligent, respectful et efficient city, an AI-powered, handicap-conscious approach to transportation.

What it does

Our system implements RFID scanning to collect data on pedestrian traffic, which is then used to train a machine learning model, which in turn logs inferences of necessary pedestrian light delay depending on the date, the distance and the type of user.

These inferences are, in turn, taken from the database when there is a related request and relayed to the traffic light module in time for the requesting party to have an adequate delay for their traversal.

How we built it

Everything closely related to the API was built in a .Net environment. An ASP.Net API, Code-First SQL Server database using EntityFrameworkCore, ML.Net for machine learning.   
  
For our physical proof of concept, we used an ESP32 and an Arduino Uno with a RFID-RC532 module. Using the Arduino DOIT Devkit, we wrote the necessary C++ code to make API requests using the RFID information to send a unique key and the location to receive the necessary data to adjust our traffic/pedestrian light timings.

Challenges we ran into

Obtaining and soldering the necessary materials despite time constraints, f limiting the project’ size to make sure we could present a proof-of-concept in less than 48h and finding compatible libraries for the esp32 for the RFID receiver were the biggest challenge in this competition.

Accomplishments that we're proud of

This was our first experience in competing in a hackathon or any other competition so being able to think of an idea and making a working prototype in a tight timeframe was a big challenge for us, but we are proud of what we’ve been able to accomplish in so little time. It’s also been a first using Machine learning and it’s been really fun to learn at the same time.

What we learned

In a tight schedule, we’ve really had to learn how to manage our time and how to plan and develop a project from scratch. Learning RFID and Machine learning technology was also a blast.