INSTITUTO UNIVERSITÁRIO DE LISBOA

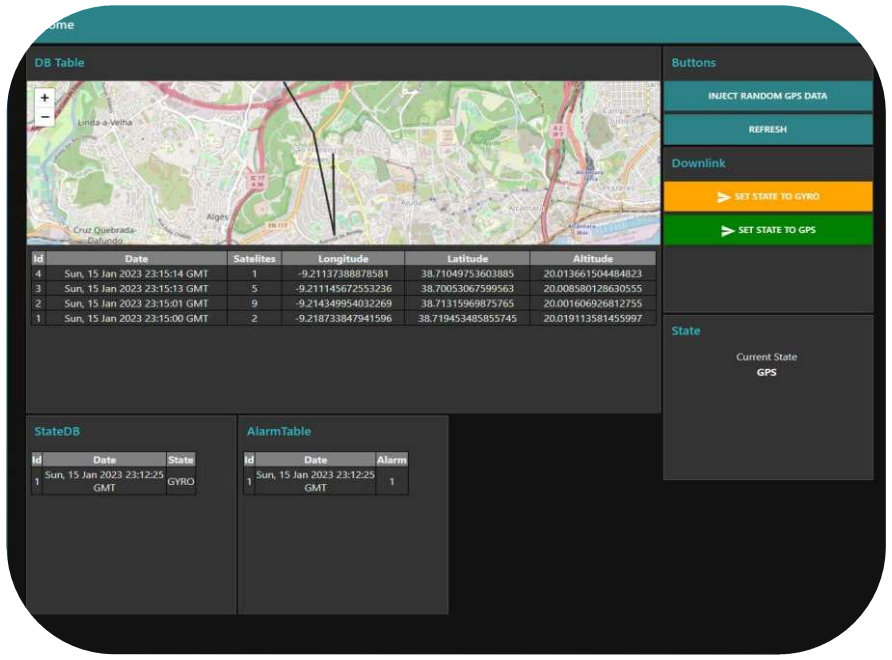
Automobile safety and tracking

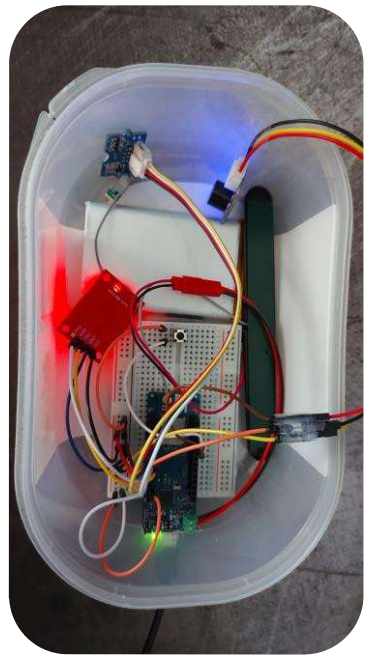
João Almeida(MEI, Iscte-Iul), Afonso Vale (MEI, Iscte-Iul)

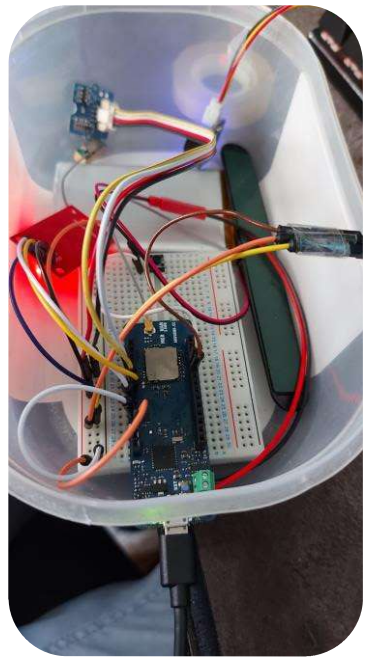
Introduction

IoT can help us solve many problems that exist nowadays. One of them is car burglary.

According to Motor24, 36 cars are stolen every day in Portugal[1] and 125 per year per 100,00 inhabitants.







Hardware

- Arduino mkr wan 1300
- Grove 3-axis digital compass v2.0
- Buzzer
- Neo-6M GPS

Related Work

GPS trackers have many possible usages in many fields of interest such as transportation, military and health care. It is of core importance for location based services.

Therefore, many articles and projects have been done regarding this subject because of its major importance nowadays.

Two of those studies were especially important for the development of this project[2][3].

System Description

This project is meant to serve as a protection and data gathering device for a personal car which it achieves using two different operational modes that the user switches manually pressing a button. Those operational modes are:

Tracking mode - In this mode, the device activates its tracking module, periodically registering its current position and communicating said data with our server, where that data is stored and used for visualizations, statistics or even machine learning algorithms.

Alert mode - In Alert mode the device activates its Gyroscopic sensor and detects any sudden movement, upon which it will communicate this information to the server.
Said server will send email notifications to the configured address, making sure the owner of the valuable item knows that the item is in motion.

References

[1] Os países onde se roubam mais carros na Europa. Portuguese. url: https://www .motor24.pt/noticias/os-paises-onde-se-roubam-mais-carros-na-europa/1544299/
[2] Pratik Kanani and Mamta Padole. "Real-time Location Tracker for Critical Health Patient using Arduino, GPS Neo6m and GSM Sim800L in Health Care". In: 2020 4th International Conference on Intelligent Computing and Control Systems (ICICCS). 2020, pp. 242–249.doi: 10.1109/ICICCS48265.2020.9121128.
[3] Asep Najmurrokhman et al. "Design and Implementation of Vehicle Speed Recorder using GPS Tracker and Internet-of-Things Platform". In: 2021 International Conference on Artificial Intelligence and Computer Science Technology (ICAICST). 2021, pp. 152–156. doi: 10.1109/ICAICST53116.2021.9497797.