Uma imagem com texto

Descrição gerada automaticamente

**Home Smart Home**

Ambient Intelligence Project

MEIC - Instituto Superior Técnico

Group 04

Isabel Soares (89466) & Rodrigo Sousa (89535)

May 2021

# Abstract

Content

[Abstract 1](#_Toc72230125)

[Introduction 1](#_Toc72230126)

[Related Work 2](#_Toc72230127)

[General Structure 2](#_Toc72230128)

[Backend 2](#_Toc72230129)

[Frontend 2](#_Toc72230130)

[Description of the Solution 3](#_Toc72230131)

[Details of the Solution 4](#_Toc72230132)

[Evaluation 5](#_Toc72230133)

[Conclusion 6](#_Toc72230134)

[References 7](#_Toc72230135)

# Introduction

Nowadays the process of automating simple and daily tasks takes a big focus on the development of new technologies. The big focus is due to the want and need for the removal of painfully and repetitive tasks from the everyday person, basically what we assume that a machine would be able to do as well as us every day we would like not to do it. Some quick examples of this kinds of tasks include closing automatic blinds at a certain hour, suspend or place devices on standby mode after a certain hour, prepare a coffee at predetermined time, among others.

In addition to the examples given before, where the focus is on scheduling this type of events and delegating them to a specific system, there is also a wish for commodity, the user might want to change the state of certain devices without having to go to them, remotely controlling them. Such cases include turning on or off all the lights without having to each one individually, changing the television channel when we do not know of the remote, opening an automatic blind from bed, among others.

As an additional aspect that most users aspire these systems to have is the capability of recognizing patterns of users’ routine and themselves scheduling these types of tasks. That means that more than allowing for the control of the environment they want this system to have characteristics that resemble pro-activeness and adaptivity. Just like we mentioned before if we open the blinds everyday at the same time, we would like this task to be automated and scheduled, but additionally we would want the system to automatically recognize this as a repeating task and schedule it.

Even though new technologies and frameworks, for instance Alexa, seem to be developed every day, they all lack in a simple aspect, compatibility between different devices, which can be a problem.

In order to solve that problem, we bring *Home Smart Home*, a framework system that allows the user for the creation of a model that describes the user’s houses, floors and devices, as well as the devices states, their history and allowing for the scheduling of automated tasks on these devices. As an additional feature this system also recognizes simple daily patterns on the user’s routine and develops schedules autonomously.

# Related Work

During the development of the project a vast of technologies and frameworks were used in order to either facilitate the process of development or due to their already verified results and efficiency.

## General Structure

Probably the most crucial part of this project is supported by an already developed framework called *DomoBus* [1]. *DomoBus* specifies a system focused on a house in a hierarchical way, although the model is defined in an XML like syntax, the schema can be transformed and adapted maintaining their properties.

*DomoBus*, besides defining houses, floors, divisions and devices in this hierarchy, also defines Device Types which give a schema of properties

## Backend

For the backend, we used Node Package Manager (npm) [2]

## Frontend

The frontend was also built using Node Package Manager (npm) [2] but this time integrated with React[3] and Electron[4].

# Description of the Solution

# Details of the Solution

# Evaluation

# Conclusion

# References

1. Nunes, R. (2016), *DomoBus*, accessed 18 May 2021, < <http://domobus.net/> >
2. NPM Inc. (2021), *Node.js*, accessed 18 May 2021, < <https://nodejs.org/en/>>
3. Facebook Inc. (2021)*, React*, accessed 18 May 2021, < <https://reactjs.org/> >
4. Open JS Foundation (2021)*, ELECTRON*, accessed 18 May 2021, < <https://www.electronjs.org/>>