SUSTAINABLE CAPSTONE PROJECTS (SCAP)
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SUSTAINABLE DOMOTICS HOUSE SYSTEM

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GROUP MEMBERS

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IMPLEMENTATION

Hardware: The system was built using a Raspberry Pi 4 microcontroller, which manages various actions within the house. It was programmed using Python.
Software: A custom application was developed from scratch using React Native. Firebase was used to send and receive data, enhancing the project s capabilities. This approach allowed for greater learning and integration of diverse features.

INTRODUCTION

The IoT Smart Home project aims to integrate IoT devices into private homes, allowing users to control these devices wirelessly via smartphones and tablets.

This integration enhances comfort and convenience while offering opportunities to reduce energy consumption.

MATERIALS USED IN CONSTRUCTION

-5mm wood from past projects, cut with a laser cutting machine
- Jumper wires from old computers
-Glass for windows
-Screws
-Wood sticks for the roof
-Aluminum steel for the garage door
-LEDs from old devices

New Materials:

Raspberry Pi Grass for decoration Cardboard Fire sensor Humidity and temperature sensor Photodiode sensor

FINAL PRODUCT

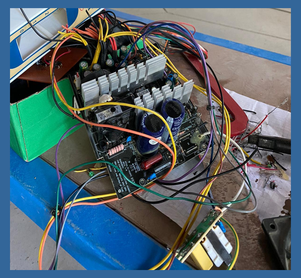
Using SolidWorks, the house was designed and adjusted based on the available wood. A laser cutting machine was employed to cut the wood. Testing involved calibrating sensors, optimizing application speed, and improving the garage door mechanism for smooth operation.

BENEFITS
IoT devices, such as motion sensors and smart plugs, enable users to increase energy efficiency in their homes.

MOTIVATION
The motivation behind this project is to use scrap materials and technology to create products that benefit both people and nature.

OBJECTIVES
The project's goal is to continuously integrate new features and develop new ideas with each session.

SMART HOUSE



RASPBERRY PI

RESULTS AND DISCUSSION

This project provided an exciting opportunity to learn about IoT systems and sustainable technology. We encountered various challenges but learned to solve them, enhancing our problem-solving skills and improving the project.
The results were satisfying, and we hope future iterations will make the system even smarter and more sustainable, incorporating elements like solar panels for power monitoring and autonomy.

CONCLUSIONS

The SCAP program provided a platform to express our talents, develop our imagination and creativity, and learn new technologies such as Raspberry Pi. By repurposing broken materials, we demonstrated that parts could be given a second life. This project allowed for interdisciplinary learning and collaboration, offering a comprehensive view of various challenges faced by different departments. The main challenge was ensuring a consistent internet connection and power supply. Additionally, creating a functional garage door mechanism required significant teamwork and support. Overall, this project taught us to manage resources efficiently, learn from each other's skills and experiences, and collaborate effectively as a team.

REFERENCES

1. https://github.com/Danico-mfala/smart_home_python
2. https://github.com/Danico-mfala/smart-home-app
3. Raspberry Pi 4 - Wikipedia