

Conor Keane

G00391846

BEng (H) in Software & Electronic
Engineering

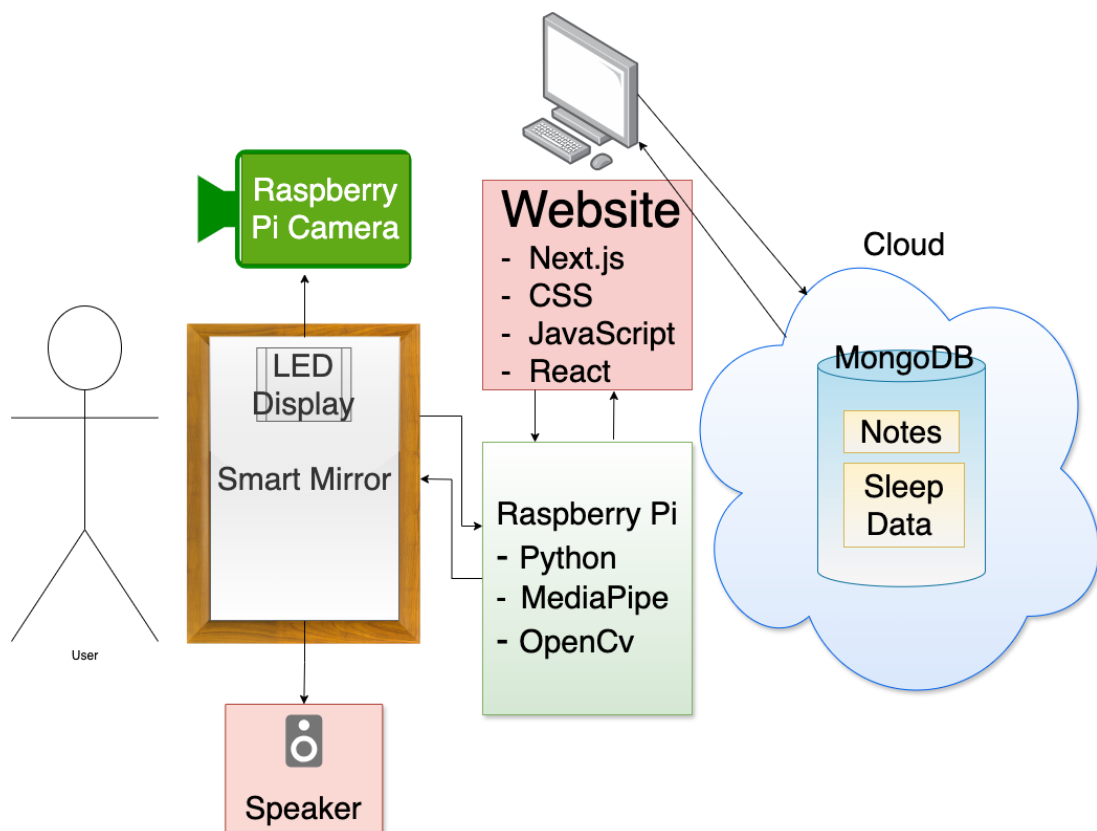
Smart Mirror



Ollscoil
Teicneolaíochta
an Atlantaigh

Atlantic
Technological
University





Ollscoil
 Teicneolaíochta
 an Atlantaigh

 Atlantic
 Technological
 University

Smart Mirror

Conor Keane

BEng (H) in Software & Electronic Engineering

<h2>Introduction</h2> <p>Studies show that the average person spends, one-sixth of their lifetime looking in the mirror. Why not make this time more useful.</p> <p>This Smart Mirror can help multitask and save time. The user can add notes and tasks that need to be done through-out the day. Check weather forecasts and more.</p> <p>With a built-in camera, the Smart Mirror uses facial recognition to monitor sleeping patterns. The user can improve sleep and well-being by consistently monitoring the Smart Mirrors feedback.</p>	<h2>How it Works</h2> <p>An LED display is placed behind a one-way mirror. The one-way mirror enables the user to see both themselves and the LED display at the same time. This is achieved by using a glass panel with partially reflective coating. A RaspberryPi powers the LED display and hosts a web page. The webpage displays data and notes stored on MongoDB Atlas. A pi-camera module uses face tracking and MediaPipe to monitor the user's sleeping patterns. A weather API is used to help document the weather to the user.</p> <div> </div>	<h2>Build</h2> <ul style="list-style-type: none"> • Wooden Frame • One-way Mirror • RaspberryPi • RaspberryPi Camera
<h2>MediaPipe</h2> <p>MediaPipe is a framework by Google used for image processing.</p> <p>I use MediaPipe to detect faces. Once a face is detected, landmarks are drawn on the face and connected. The landmarks are used to get the users facial co-ordinates.</p> <p>With these co-ordinates, the user's facial detection can be recorded.</p>	<h2>Mirror</h2>	<h2>Architecture Diagram</h2>
		<h2>Technology</h2> <ul style="list-style-type: none"> • Python • MediaPipe • Node.js • Next.js • MongoDB
		<h2>Features</h2> <ul style="list-style-type: none"> • Add Notes • Check Weather • Monitor Sleep

Technical Content

Hardware

- Raspberry Pi 4 Model B
- Raspberry Pi Camera Module 3
- USB Speaker
- LED Touch Screen Display
- Bluetooth Mouse and Keyboard

Software

- OpenCV
- MediaPipe
- Node.js and Next.js
- AWS Ec2
- MongoDB Atlas

Research

- MediaPipe Landmarks
- MongoDB Atlas vs PyMongo
- Spotify API
- AWS Ec2

Organisation

- GitHub
- Scrum
- Balancing software and hardware work
- Pricing

Projects / Smart Mirror

SM board

GROUP

TO DO ✓

+ Create issue

🔍 See all Done issues

IN PROGRESS 2

Research

✓ SM-1

+ Fix Teams Logs

✓ SM-20

+ Create issue

ON HOLD 2

Install TensorFlow

✓ SM-23

Get Facial Paralysis Data Base

✓ SM-16

DONE 11

Create Note tracking page

✓ SM-14

Build Mirror

✓ SM-10

Project Poster

✓ SM-3

Integrate electronic components into the mirror

✓ SM-11

Create sleep tracking Page

✓ SM-15

Have Website displaying on RaspberryPI

✓ SM-17

Finish Report

✓ SM-26

Purchase Mirror Frame

✓ SM-29

Initiative and Engagement

Updating Supervisor
on workflow

Changing Software

Problem Solving

Team Work



Demonstration of Understanding