FH University of Applied Sciences TECHNIKUM WIEN

Documentation & Project Diary

Innovation Lab 1/2/3
Year 2021

Project: **Visitor Counter**

Team: **Group 29**

1. General Information

Project name: Visitor Counter

Supervisor: Rohatsch, Lukas

Innovation Lab 1, winter term 2021/22

Projectteam:
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Management Summary of the Project

This project is about setting up a camera module at the entry of the Presentation Lab (located: Bx.yz) to count visitors and deliver data categorized to different data packages (total, daily, current and so forth). To deliver this project, hardware is necessary to be set up correctly (central processing unit, camera, body, holding), combined with efficient software (control the hardware) and a webpage to enable access of the data. Furthermore, this project shall serve as a preparation for more advanced projects like analyzing traffic data, rate of flow and similar purposes.

Framework Conditions and Project Environment

Programming languages:
The project assignment demands to use python for processing the data. As a commonly used programming language, currently no other programming language is considered for further use regarding data processing. For the webpage the team will use the framework Angular.

Usability:
There are 2 access points for the client and / or users. The webpage is enabled for open access which includes all users with access to the internet. Therefore, the usability aims for beginner-level access. The local access directly connected to the visitor counter will be especially designed for the client.

Interfaces:
Data transfer by JSON.
wait for details regarding webspace

Standards:
It is necessary to respect the data protection rules as we enable open access to the collected data by our built webpage. Therefore, a livestream of the set up camera will only be accessible at the local console, where the module is located. The webpage will only display the processed data without any pictures or livestreams. Using own made videos or demo videos to test or logic programming.

Deadlines:
currently no details identified

Semester-Roadmap

1. semester	Focus: Raspberry Pi **1. sprint** install Raspberry Pi OS and configure packages, install camera module **2. sprint** ensure requirements (python and required packages) **3. sprint** expand python libraries **4. sprint** implement system for visitor counter **5. sprint** final capture of visitors **6. sprint** prepare presentation
2. semester	Focus: Raspberry Pi / Interface **1. sprint** Testphase der letzten Streams / Zeitbuffer für Bugfixes **2. sprint** Camera Stream über HDMI ausgeben **3. sprint** Erfassung der Besucher aktiv vor Ort testen **4. sprint** install and configure mqtt **5. sprint** Interface bereitstellen und testen **6. sprint** prepare presentation
3. semester	Focus: Interface / Webpage **1. sprint** Website planen und Webserver installieren **2. sprint** Website umsetzen **3. sprint** Webseite <-> Raspberry Pi Verbindung finalisieren **4. sprint** bugfixes **5. sprint** bugfixes **6. sprint** prepare presentation / end project

Collaboration & Tooling

Communication
Discord + Zoom
https://moodle.technikum-wien.at/mod/zoom/view.php?id=856605

Documentation
Google Docs
https://docs.google.com/document/d/1BBYcPMEPId7wDEDzKSeP8IeQkE-NuGIvCQY_mRtRi6g/edit

Timetable
Google Sheets
https://docs.google.com/spreadsheets/d/1ep5FswrHorSOHT6Ck-h5r6ZSO9rwkWMd2KY0pQrVxrQ/edit#gid=26059217

Tracking Work
Trello
https://trello.com/b/lgDMUH6r/visitor-counter29

Source Code Management
GitHub
No repository currently existing

Screen Prototyping
Mockplus
No project currently existing

Modelling
Modelio
No project currently existing

Remarks

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2. Brief Description of the Project

The **main object** for the project is a visitor counter which will be located at the “Presentation Lab” room to count the number of visitors. For the counting a camera module will be used in combination with a software to detect and count people from a livestream. This functionality can be used as an example to display or even regulate a maximum number of people inside for health (Covid) or security reasons (events).

As the **biggest challenge**, the project group will face the needs of learning the necessary skills (logic programming with python) and mechanical capabilities (working with hardware like Raspberry Pi, camera module and 3D printer).

The **usability object** will be the easy access to the data and controlling the interfaces at beginner level (local livestream or processed data via webpage).

The **non-objective** of the project is involving face recognition and tracking.

As for the **scope**, the project covers the functionality to process data from a livestream to calculate the number of people (staying inside a room or entering/leaving) and to display it on a local console + webpage with free access. For implementing the software, we need to know about the specifications necessary for the Raspberry Pi and will orientate on similar projects / products. Additionally, we need to learn about video-recognition software to get the necessary skills.

ORDER model questions:

Opportunity - Development of visitor counter for room “Presentation Lab” of campus FH Technikum Vienna featuring face recognition to count visitors and displaying data via webpage and local livestream.

Resources - Hardware / Webspace / Software (Libraries)

- Raspberry Pi + camera module (sponsored)
- display for local livestream (sponsored)
- host + domain (sponsored)
- python libraries

Decision Process - guaranteed anonymity

Exact Solution - High complexity implies risk of failing the project.

Relationship - Project is happening.