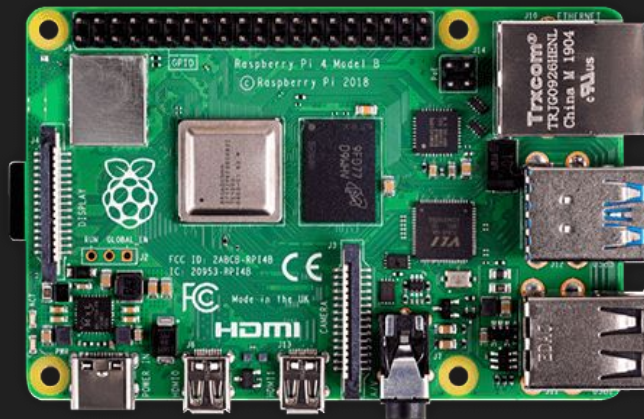
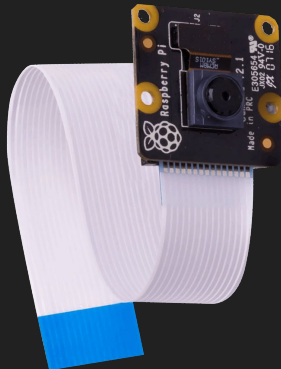




Visitor-Counter



Stefan Dux | Jessica Isabella Görög | Dominic Grabner | Rebekka Tschuppen | Lukas Varga
Visitor-Counter | Gruppe 29 | BIF3 | Innovation Lab 1 | “the Observer”





Description

- data recording + analysis via raspberry pi 4 + camera module
- person recognition to count visitors at Presentation Lab (FH Technikum)
- adapted with interface, web-application and further data processing

1. General Information

Project name: Visitor-Counter (the Observer)

Supervisor: Lukas Rohatsch, MSc

Innovation Lab 1, 2021/2022

Projectteam:

Varga Lukas,	if20b167@technikum-wien.at,	project manager
Dux Stefan,	if20b245@technikum-wien.at,	
Görög Jessica Isabella,	if20b094@technikum-wien.at,	
Grabner Dominic,	if20b219@technikum-wien.at,	
Tscheppen Rebekka,	if20b164@technikum-wien.at,	

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:

Prototype for end of Semester #4 (demo-version for project)

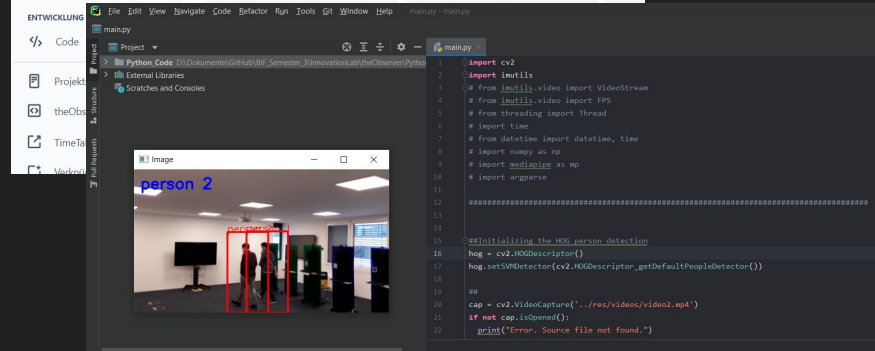
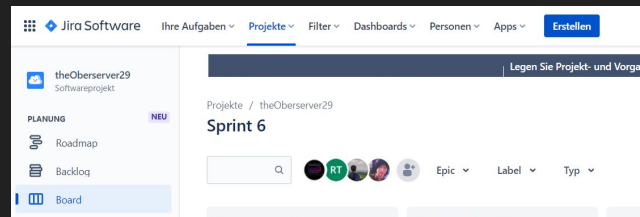
currently no further details identified





Collaboration Tools

- Communication: Discord
- Documentation: Jira (Atlassian)
- Timetable: Google Sheets
- IDE: JetBrains - PyCharm
- Source Code: GitHub



#	date	start	end	duration	content of work
1	23.09.2021	16:00:00	17:45:00	01:45:00	Class 1: Course Startup (discuss project topics to choose, plan to form group together)
2	23.09.2021	19:00:00	19:50:00	00:50:00	chose topic 29 (visitor counter) and formed group via project selection tool
3	06.10.2021	17:00:00	18:00:00	01:00:00	discussed and documented first ideas of requirements, ORDER questions and collaborations tools
4	07.10.2021	08:00:00	09:00:00	01:00:00	Class 2: presented project supervisor requirements and collaboration tools; got information for project / routines; made appointment for picking up hardware
5	08.10.2021	19:00:00	21:20:00	02:20:00	creating trello board = project schedule (basic data, collaboration tools, member list, management-summary, theme conditions)
6	10.10.2021	19:45:00	20:00:00	00:15:00	group meeting (format of timetable / kanban board / documentation discussed)
7	11.10.2021	14:20:00	16:00:00	01:40:00	group meeting (prepare documentation for self study C)
8	11.10.2021	20:00:00	21:50:00	01:50:00	formatted current documentation, translated to english; used the most stupid software ever (office 365 online); prepared and uploaded documentation for class-3

sum - hours of work: 42:45:00

current hours of work - group in total: 151:13:00

How to use:

- for a new entry of time & work start a new line with typing in the proper date and time your started your work
- the number of entry (column 'C') will appear after starting time is confirmed
- type in your ending time in column 'F' and after confirming it, your time of work will be calculated and added to the sum
- recording what you did with that time, put your work of content in the same line at column 'H'
- "ctrl" + "V" adds the current date

Thanks for participating!





Jira - tracking work (1)

Legen Sie Projekt- und Vorgangsberechtigungen fest. Probieren Sie den Standard-Tarif von Jira Software in der 14-tägigen Testversion aus.

Projekte / theOberserver29

Sprint 6

3 Tage verbleibend Sprint abschließen

AUFGABEN 2 VORGÄNGE

- people detection number fix
Bug
TO29-154
- adapt position of camera
Bug
TO29-155

IN ARBEIT 1 VORGANG

- update GitHub repository
Documentation
TO29-157

FERTIG 4 VORGÄNGE

- update jira tasks
Documentation
TO29-156
- sum up doc. for hand-in
Documentation
TO29-160
- answer ProjectKitchen for 3D print
Documentation
TO29-158
- generate Video for presentation (+ doc. and code)
Documentation
TO29-159

In Confluence öffnen

Sprint#6

Erstellt von Lukas D. A. Varga
Letzte Aktualisierung: Jan. 12, 2022

[Basic description of sprint #6:](#)

The sixth and final sprint for the semester will focus on documentation only. After the documents are summarized to one project diary, a video of the documentation and working python project will be generated and uploaded.

[Time:](#)

start (sprint #6): 13.01.2022, 16:00:01
deadline (protocol): 19.01.2022, 23:59:00
deadline (sprint #6): 20.01.2022, 15:14:59

[Content:](#)

bug fixes [#3reqID1_]

- #01 print correct number of people detected
- #02 adapt position of camera for full recognition of software

software [#3reqID2_]

hardware [#3reqID3_]

documentation [#3reqID4_]

- #03 update Jira tasks
- #04 update GitHub repository
- #05 answer ProjectKitchen for 3D print in presence
- #06 generate video for "final" presentation (including documentation + python code)
- #07 edit/sum up documentation for "final" hand-in

[Assignment:](#)

- Stefan, Jessica, Dominic (#04, #06)
- Rebekka, Lukas (#01, #02, #03, #05, #07)





Jira - tracking work (2)

The screenshot shows the Jira project page for 'theObserver29'. The left sidebar lists various project sections: Sprints, Notizen (Notes), and TableOfContents. The 'Notizen' section is expanded, showing a list of notes with dates and update status. The 'TableOfContents' section lists various documents like 'Management-Summary', 'Frame Conditions', 'Semester Roadmap', etc. The right sidebar shows a list of templates for creating a new page, including 'Leere Seite', 'Produktanforderungen', 'Entscheidung', 'Besprechungsnotizen', 'Retrospektive', and 'Weitere Vorlagen'.

Section	Item	Created	Updated
Sprints		Erstellt Nov. 21, 2021	
Notizen		Aktualisiert Nov. 26, 2021	
	07.10.2021	Aktualisiert Nov. 21, 2021	
	08.10.2021	Aktualisiert Nov. 21, 2021	
	14.10.2021	Aktualisiert Nov. 21, 2021	
	03.11.2021	Erstellt Nov. 21, 2021	
	09.11.2021	Erstellt Nov. 21, 2021	
	10.11.2021	Erstellt Nov. 21, 2021	
	24.11.2021	Aktualisiert Nov. 24, 2021	
	25.11.2021	Aktualisiert Nov. 26, 2021	
	Configure OpenCV on Raspberry Pi	Erstellt Dez. 06, 2021	
TableOfContents	08.12.2021	Aktualisiert Dez. 15, 2021	
	10.12.2021 ProjectKitchen	Erstellt Dez. 10, 2021	
		Erstellt Nov. 21, 2021	
	Management-Summary	Aktualisiert Nov. 21, 2021	
	Frame Conditions	Aktualisiert Nov. 21, 2021	
	Semester Roadmap	Aktualisiert vor etwa 6 Stunden	
	Effort Estimation	Erstellt Nov. 21, 2021	
	Short Description	Erstellt Nov. 21, 2021	
	Meetings / Communication	Erstellt Nov. 21, 2021	
	Requirements	Erstellt Nov. 21, 2021	
Collaboration Tools	Aktualisiert Nov. 25, 2021		

The screenshot shows a Confluence page titled '14.10.2021'. The page content includes a list of bullet points and three photographs. The bullet points describe a visit to the Presentation Lab, confirmation of access, and room measurements. The photographs show the interior of the lab, including a presentation screen, a whiteboard, and several green and blue storage units.

14.10.2021

Erstellt von Lukas D. A. Yarga
Letzte Aktualisierung: Nov. 21, 2021

- Begehung von Presentation Lab (Raum für die Durchführung des Visitor Counter)
- es wurde bestätigt, dass wir als Entwicklungsteam KEINE Zugangsrechte zum Raum bekommen => nur durch das Beisein von Supervisor möglich
- Maße des Raums genommen (9x20 Meter)

The photographs show the interior of the Presentation Lab, including a presentation screen, a whiteboard, and several green and blue storage units.





Python - processing person recognition

- using pre-trained library for recognition
- currently only detects fully scaled people
- can process video or livestream

The screenshot displays a Python IDE with a project named 'main.py'. The code on the right uses OpenCV and HOG (Histogram of Oriented Gradients) for person detection. It captures video from a file, processes each frame to detect pedestrians, and displays the results in a window titled 'Image'. The output window shows a video frame with two red bounding boxes around detected persons and the text 'person 2' in blue. The console at the bottom shows the command prompt and the output 'fps of current video file: 30'.

```
16 hog = cv2.HOGDescriptor()
17 hog.setSVMDetector(cv2.HOGDescriptor_getDefaultPeopleDetector())
18
19 ##
20 cap = cv2.VideoCapture('../res/videos/video2.mp4')
21 if not cap.isOpened():
22     print("Error. Source file not found.")
23 else:
24     fps = int(cap.get(cv2.CAP_PROP_FPS))
25     print("fps of current video file: ", fps)
26 ##
27
28 while cap.isOpened():
29     # Reading the video stream
30     ret, image = cap.read()
31     if ret:
32         image = imutils.resize(image,
33                                 width=min(480, image.shape[1]))
34
35     # Detecting all the regions
36     # in the image that has a
37     # pedestrians inside it
38     (regions, _) = hog.detectMultiScale(image, winStride=(4, 4), padding=(4, 4), scale=1.05)
39
40     # Drawing the regions in the
41     # image
42     person = 1
43     for (x, y, w, h) in regions:
44         cv2.rectangle(image, (x, y), (x + w, y + h), (0, 0, 255), 2)
45         cv2.putText(image, f'person {person}', (x, y), cv2.FONT_HERSHEY_SIMPLEX, 0.5, (0, 0, 255), 1)
46         person += 1
47
48     # Showing the output image
49     cv2.putText(image, f'person {person - 1}', (10, 30), cv2.FONT_HERSHEY_SIMPLEX, 0.8, (255, 0, 0), 2)
50     cv2.imshow("Image", image)
51     if cv2.waitKey(1) & 0xFF == ord('q') or not ret:
52         break
53     else:
54         break
55
56 cap.release()
57 cv2.destroyAllWindows()
```





Status

- raspberry pi 4 + camera module working well
- additional element (PoE - Power over Ethernet) defect and will be replaced
- software & packages installed
- system for recognition implemented (first version)
- 3D case planned but print delayed due to Covid-19

Semester Roadmap	
<div><div></div><div><div>Erstellt von Dominic Gra</div><div>Letzte Aktualisierung: vor etwa 6 Stunden von Lukas D. A. Varga</div></div></div>	
3. semester	<div><u>Focus: Raspberry Pi</u></div> <div>1. sprint</div> <div>install Raspberry Pi OS and configure packages, install camera module</div> <div>2. sprint</div> <div>ensure requirements (python and required packages), Raspberry Pi Case 3D model planning</div> <div>3. sprint</div> <div>expand python libraries</div> <div>Raspberry Pi Case 3D model printing</div> <div>4. sprint</div> <div>implement system for visitor counter</div> <div>5. sprint</div> <div>final capture of visitors</div> <div>6. sprint</div> <div>prepare presentation</div>





End of current phase

- 1 of 3 semesters done
- start of upcoming phase #2 in late february 2022
- same team, more quality



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