

PROJECT CLOSING REPORT				1 (11)
Author(s) KONTU, PROKKOLA, SALMELA-SINIKETO	File template project closing report	Version 1.0		
	Created	Saved 2019-10-20 18.10		
		Printed out		

PROJECT ACCESS CONTROL WITH RASPBERRY PI CAMERA

THE VERSION HISTORY OF THE DOCUMENT

VERSION No.	DATE	REASON FOR CHANGE	AUTHOR/ACCEPTOR
1.0	19.10.2019	completed	SASA
0.1	15.10.2019	Initial version	SASA

PROJECT CLOSING REPORT				2 (11)
Author(s) KONTU, PROKKOLA, SALMELA-SINIKETO	File template project closing report	Version 1.0		
	Created	Saved 2019-10-20 18.10	Printed out	

LIST OF CONTENTS

LIST OF CONTENTS	2
1 THE DESCRIPTION OF THE PROJECT	3
2 RESULTS OF THE PROJECT	4
2.1 Description of the System	4
2.2 Description of the Hardware	5
2.3 Description of the Software	8
3 GENERAL EVALUATION OF THE PROGRESSION OF THE PROJECT	9
4 THE EXPERIENCES OF THE USED TOOLS AND METHODS	10
5 PERSONAL EXPERIENCES AND LEARNING	10
5.1 Niko Kontu experiences	10
5.2 Janne Prokkola experiences	10
5.3 Satu Salmela-Siniketo experiences	10
REFERENCES	11

PROJECT CLOSING REPORT				3 (11)
Author(s) KONTU, PROKKOLA, SALMELA-SINIKETO	File template project closing report		Version 1.0	
	Created	Saved 2019-10-20 18.10	Printed out	

1 THE DESCRIPTION OF THE PROJECT

The aim of this project was to make an access control system, using Raspberry pi camera, AWS web service and Android phone. When someone wants to step in, he presses the button, and Raspberry pi camera take a photo. Raspberry pi sends the image to the AWS server in cloud, whereof supervisor can view the picture on his own Android phone.

PROJECT CLOSING REPORT				4 (11)
Author(s) KONTU, PROKKOLA, SALMELA-SINIKETO	File template project closing report		Version 1.0	
	Created	Saved 2019-10-20 18.10	Printed out	

2 RESULTS OF THE PROJECT

2.1 Description of the System

The system diagram of the product is shown in FIGURE 1. The system that we worked on, consisted of AWS cloud, Raspberry pi, Raspberry camera and Android phone.

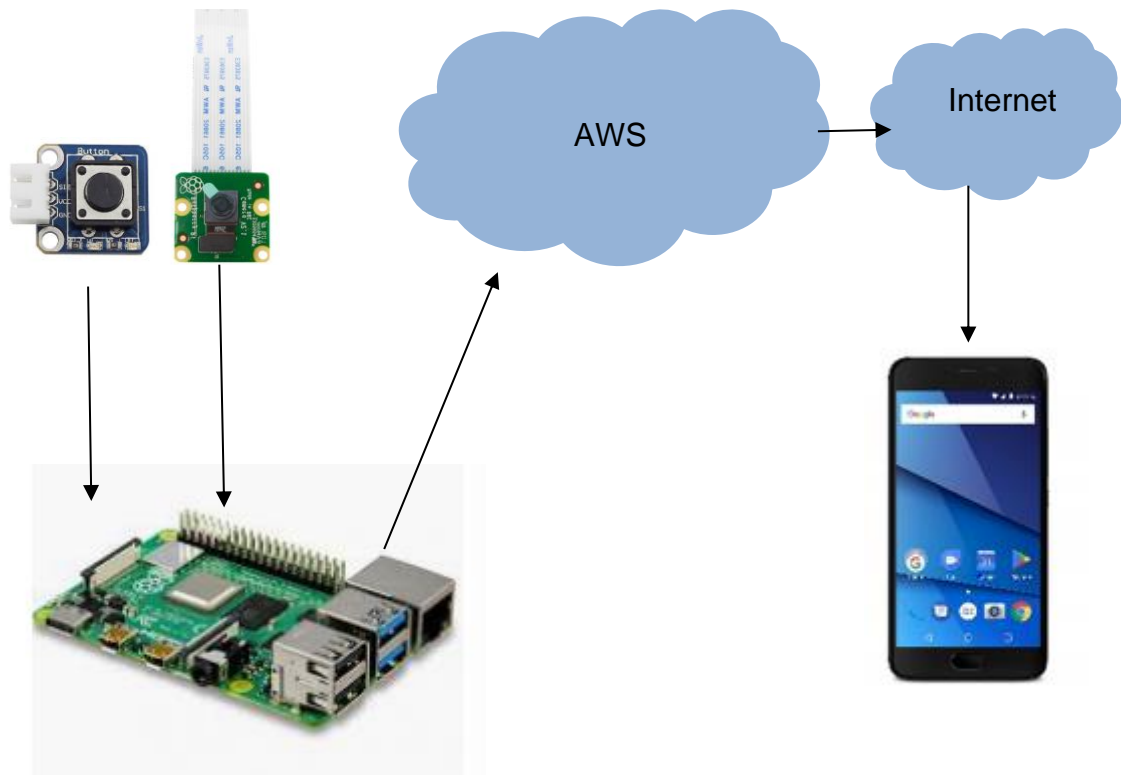


FIGURE 1. System diagram of the product

PROJECT CLOSING REPORT				5 (11)
Author(s) KONTU, PROKKOLA, SALMELA-SINIKETO	File template project closing report		Version 1.0	
	Created	Saved 2019-10-20 18.10	Printed out	

2.2 Description of the Hardware

First, the camera and button were connected to Raspberry pi as show Figure 2.

The corresponding schematic diagram is in

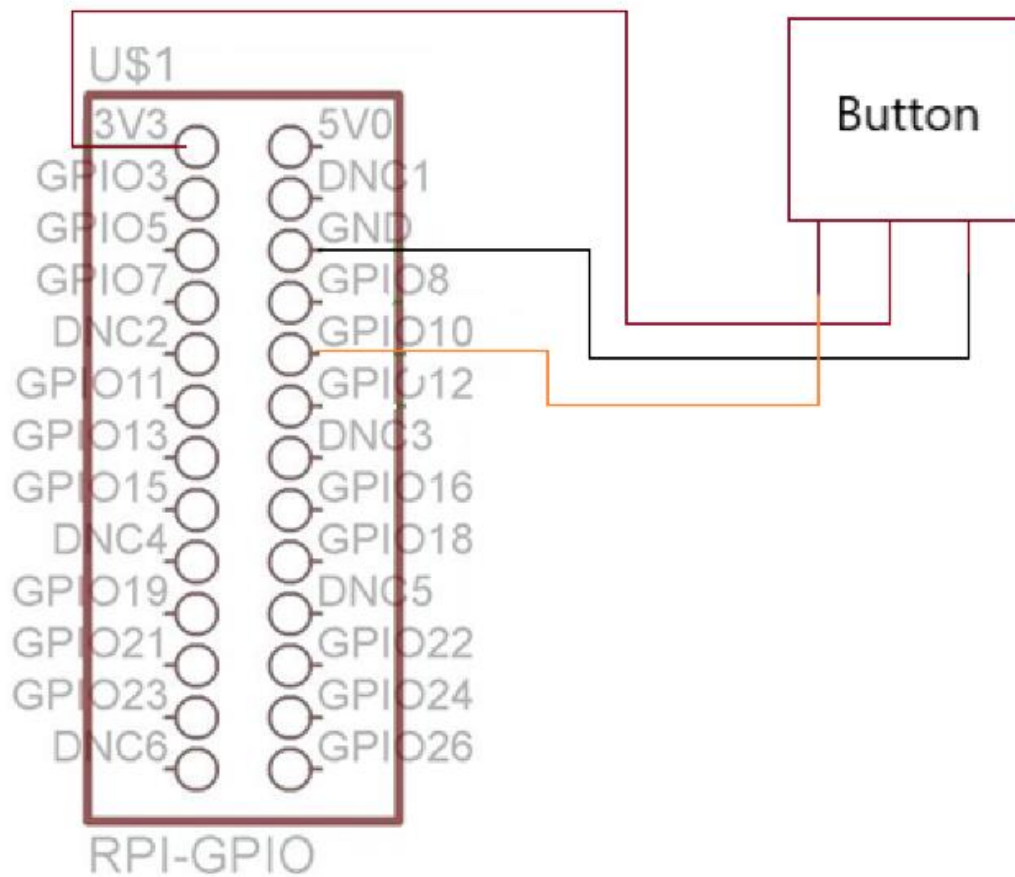


FIGURE 3.

Author(s) KONTU, PROKKOLA, SALMELA-SINIKETO	File template project closing report	Version 1.0	
	Created	Saved 2019-10-20 18.10	Printed out

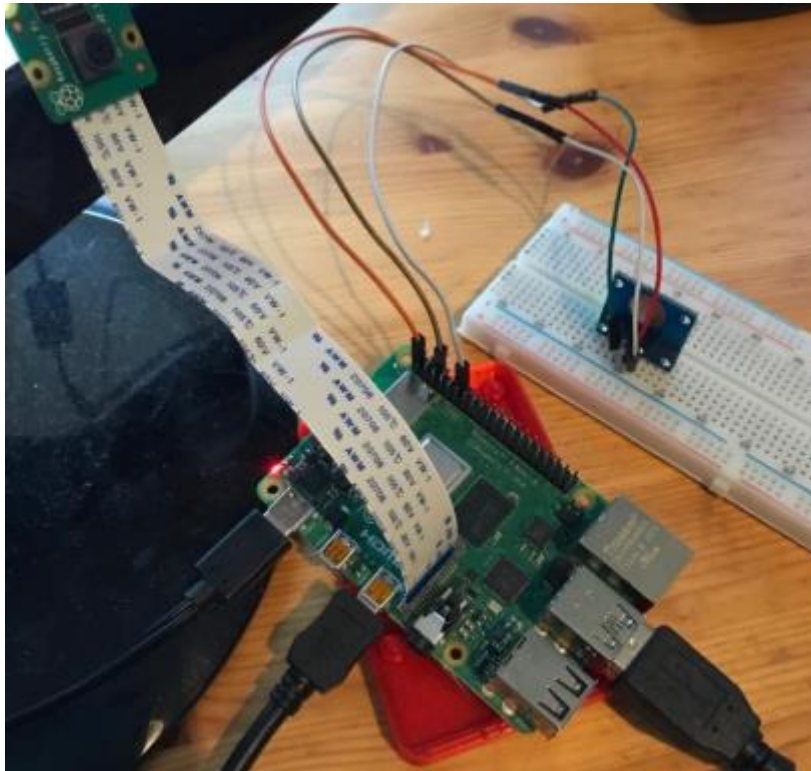


FIGURE 2. Connecting camera and button to Raspberry.

PROJECT CLOSING REPORT				7 (11)
Author(s) KONTU, PROKKOLA, SALMELA-SINIKETO	File template project closing report		Version 1.0	
	Created	Saved 2019-10-20 18.10	Printed out	

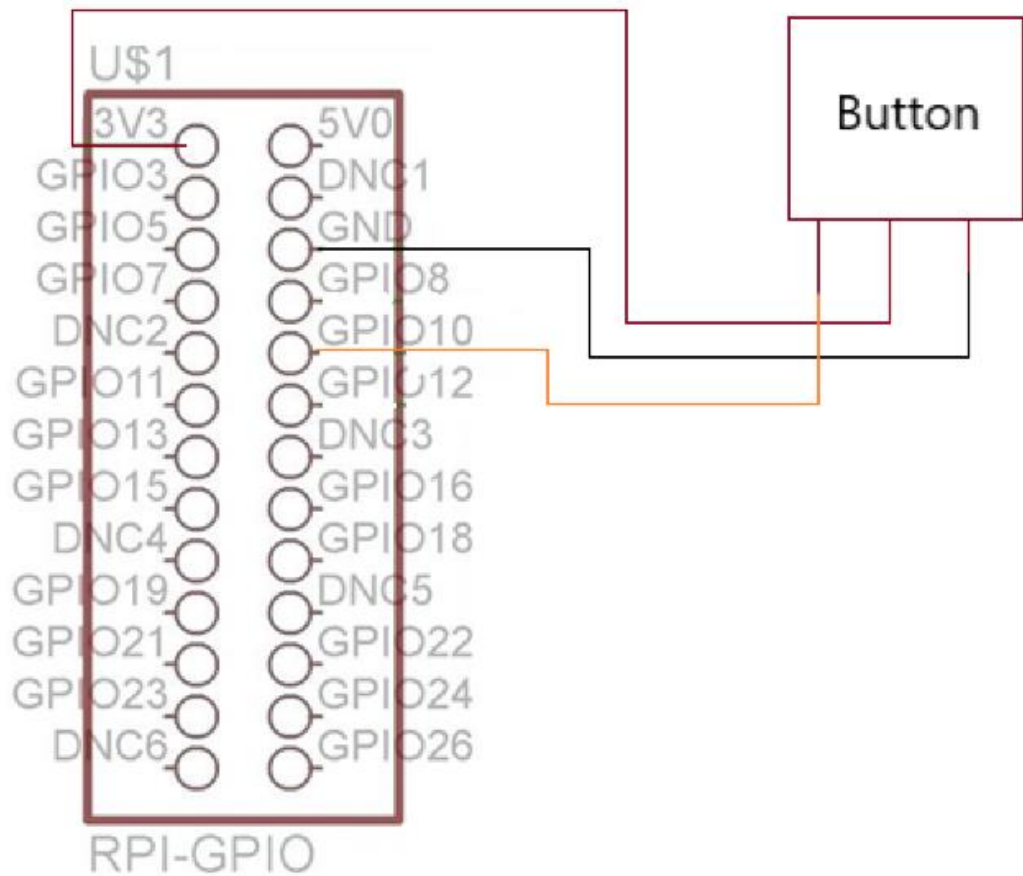


FIGURE 3. Schematic diagram of the connection of the button to Raspberry pi.
The camera was attached to the Raspberry pi camera pins.

PROJECT CLOSING REPORT				8 (11)
Author(s) KONTU, PROKKOLA, SALMELA-SINIKETO	File template project closing report	Version 1.0		
	Created	Saved 2019-10-20 18.10	Printed out	

2.3 Description of the Software

First, create an account with AWS, add a bucket s3, create a user and grant access to the created bucket. Installed with Python pip boto3 and AWS CLI. Configure AWS CLI user accounts for the computer and then use Python to use the boto3 library from the computer to connect to the bucket and transfer files.

Raspberry pi programs were developed with Python. Raspberry detects when a button is pressed and sends a message and an image to the cloud. Android phone can open images in the cloud.

The activity diagram of the program is in FIGURE 4.

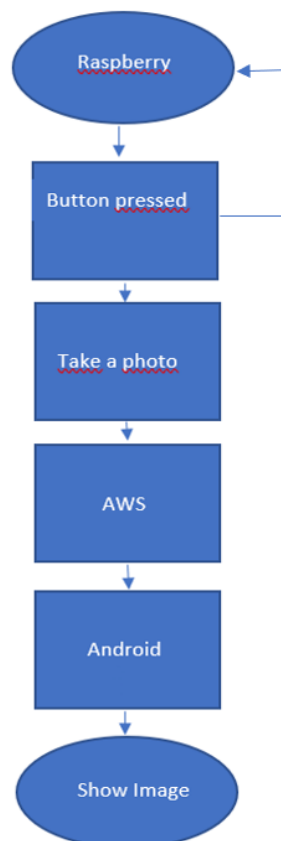


FIGURE 4. Activity diagram of the calibration program

PROJECT CLOSING REPORT				9 (11)
Author(s) KONTU, PROKKOLA, SALMELA-SINIKETO	File template project closing report	Version 1.0		
	Created	Saved 2019-10-20 18.10	Printed out	

3 GENERAL EVALUATION OF THE PROGRESSION OF THE PROJECT

This project went rather closely according to the original plan. AWS was a new thing and initially difficult to use. Schedule reasons, we had to leave out some previously planned things from the program.

THE EXPERIENCES OF THE USED TOOLS AND METHODS

Raspberry and Python programming were familiar from previous courses, and their use did not cause any problems. The software was built without major problems. Remote teamwork always poses its own challenges.

PROJECT CLOSING REPORT				10 (11)
Author(s) KONTU, PROKKOLA, SALMELA-SINIKETO	File template project closing report	Version 1.0		
	Created	Saved 2019-10-20 18.10	Printed out	

4 PERSONAL EXPERIENCES AND LEARNING

4.1 Niko Kontu

This project was more challenging than we expected because Amazon Web Services was very difficult to use. We had problems to set the right settings to get connection working perfectly. I learned a lot of AWS and Python programming. But after all we made it and the project was completed successfully.

4.2 Janne Prokkola

This project was fun, but at the same time very frustrating, we chose to use AWS(Amazon Web Services), because it is world widely popular, and knowing how to use it, would help after we graduate. The first task was to get raspberry pi to communicate with aws, there was so many options to choose from, we picked MQTT broker for this task. AWS website has a lot of tutorials, and finding the best for us, was challenging, but we managed to find one for python Publish/Subscribe, then we modified the code, so it would send the message, if button was pressed, this was very easy. The most challenging task was to get the message to android device, the tutorials for this, were very confusing and it was hard to find advice for the issues we had. I think our project was a success, and I learned a lot from AWS and Android.

4.3 Satu Salmela-Siniketo

This was an interesting project. The unfortunate thing was that, because I live far away, and I could not get to school to practice the Raspberry pi camera. I learned a lot about AWS and more about Python programming. If evaluated based on the outcome, we succeeded very well. The project was completed in the allocated time and the work and report were of good quality.

PROJECT CLOSING REPORT				11 (11)
Author(s) KONTU, PROKKOLA, SALMELA-SINIKETO	File template project closing report		Version 1.0	
	Created	Saved 2019-10-20 18.10	Printed out	

REFERENCES

1. Access control with Raspberry pi camera. 2019. Project poster. OAMK Degree Program in Information Tecnology