



CrowdVision

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Background

Students waste time finding study spaces before finding one with adequate space. Currently, there is no efficient way to track real-time occupancy of rooms.

Project Goal

Create a system to track room occupancy and display this information for students to see availability of study spaces.

Materials

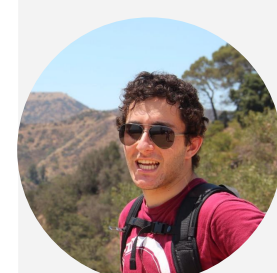
Hardware

- Raspberry Pi 3 Model B+
- Raspberry Pi Camera Board v2
- 5V 2.5A Switching Power Supply
- Mounting items

Software

- Facebook Detectron (Vision)
- Flask Server on Heroku
- Postgres SQL

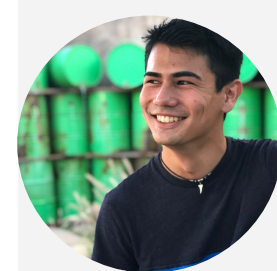
Team Organization



Dylan Agiman
Back-End



Gianna M.
Design Impl.



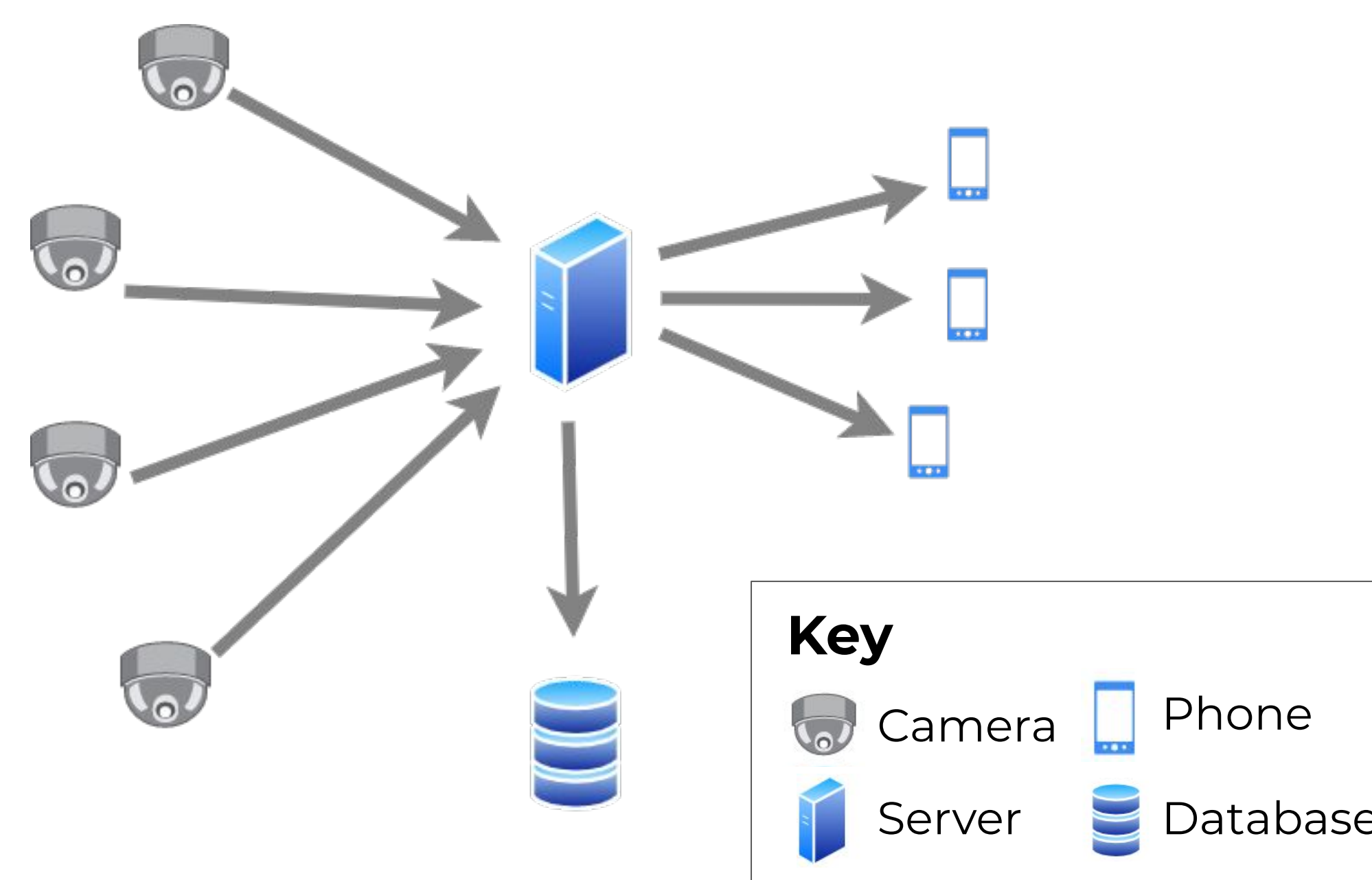
Wesley Bellin
Hardware



Jens Tuyls
Full-Stack

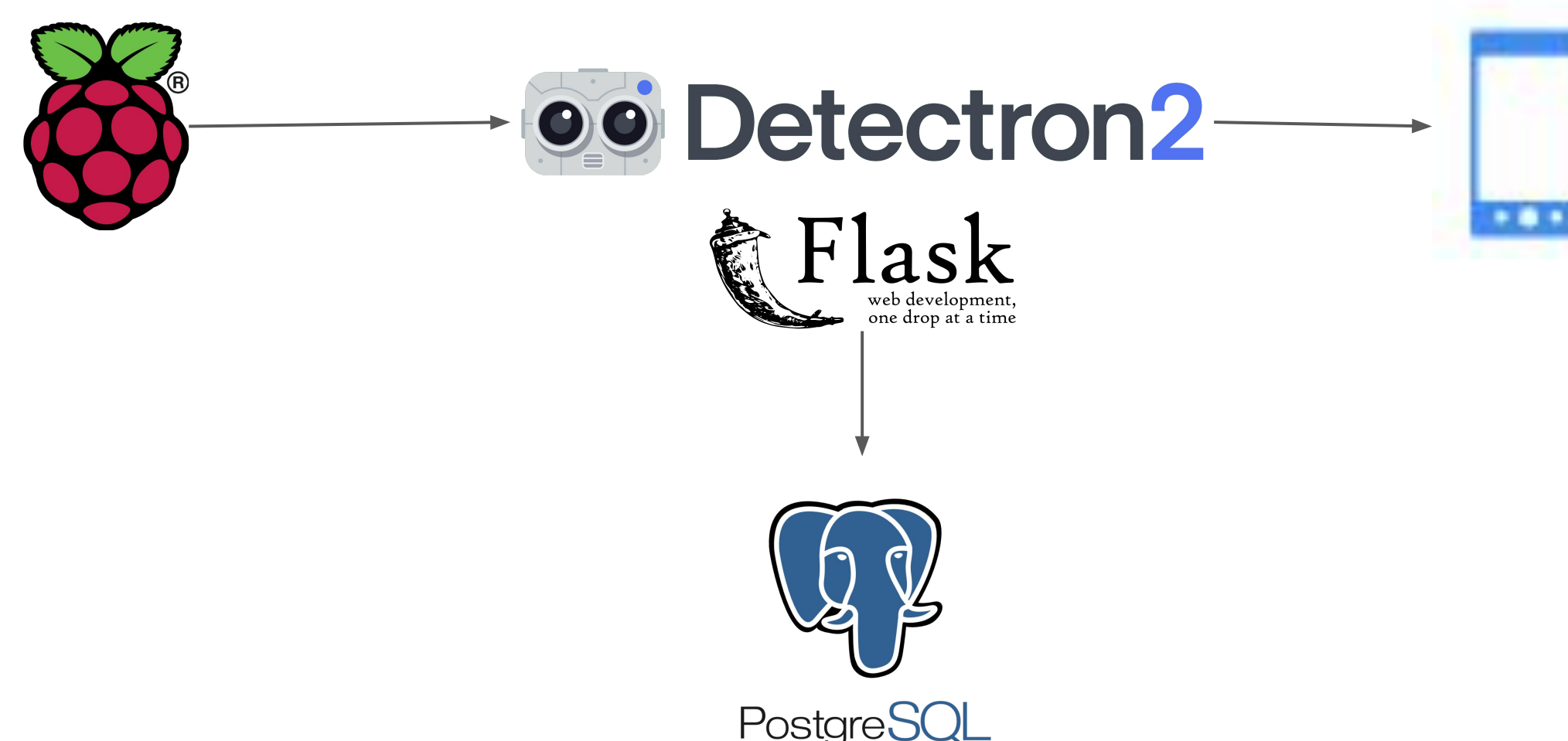
High-Level Diagram

Depicts flow from the cameras to the processing server to the end-user devices



Low-Level Diagram

Details specific components we're implementing in our High-Level Diagram



Future Work

From this point on, we intend to

- Integrate Hardware & Software (i.e. connect web server with Detectron to the Pi)
- Complete the web app & store relevant data in database
- Predict study room availability

Accomplishments / Challenges

Accomplishments

- Setting up server, computer Vision , and web app
- Receiving some hardware

Challenges

- Accessing Raspberry Pi remotely
- Receiving some hardware

References

- [1] X. Liu, P. H. Tu, J. Rittscher, A. Perera and N. Krahnstoever, "Detecting and counting people in surveillance applications," *IEEE Conference on Advanced Video and Signal Based Surveillance*, 2005., Como, 2005, pp. 306-311.
- [2] Yuxin Wu, Alexander Kirillov, Francisco Massa, Wan-Yen Lo, and Ross Girshick. 2019. Detectron2. <https://github.com/facebookresearch/detectron2>