

Valparaiso University

ValpoScholar

Symposium on Undergraduate Research and
Creative Expression (SOURCE)

Office of Sponsored and Undergraduate
Research

Spring 5-1-2020

Live Robot Sensor View

Dane Towner
dane.towner@valpo.edu

Duy Truong
duy.truong@valpo.edu

Johnny Batorek
johnny.batorek@valpo.edu

Paul Oscar Benbow
oscar.benbow@valpo.edu

Brandon Sheehy
brandon.sheehy@valpo.edu

Follow this and additional works at: <https://scholar.valpo.edu/cus>

Recommended Citation

Towner, Dane; Truong, Duy; Batorek, Johnny; Benbow, Paul Oscar; and Sheehy, Brandon, "Live Robot Sensor View" (2020). *Symposium on Undergraduate Research and Creative Expression (SOURCE)*. 852. <https://scholar.valpo.edu/cus/852>

This Poster Presentation is brought to you for free and open access by the Office of Sponsored and Undergraduate Research at ValpoScholar. It has been accepted for inclusion in Symposium on Undergraduate Research and Creative Expression (SOURCE) by an authorized administrator of ValpoScholar. For more information, please contact a ValpoScholar staff member at scholar@valpo.edu.

Live Robot Sensor View

Team Members: Duy Truong, Johnny Batorek, Paul Oscar Benbow, Brandon Sheehy, Dane Towner

Abstract

The Valparaiso University Robots Team's Robotic Football group has requested an application to process and display real-time sensor data during gameplay. Data of interest to both the build and drive teams includes the robot's uptime, current speed, motor power, control stick orientation, and battery life. This information will be sent to a Raspberry Pi single-board system by Arduino chips on each robot via MQTT and processed and presented by the application being built. To achieve this, the tool will be built on the Django web server framework, using Python. Challenges involve working with multiple stakeholders, multiple networked objects sending data simultaneously, and rapidly-evolving technical considerations.

Challenges

While working on the project, difficulties included:

- It took time for us to access to necessary tools such as the Raspberry Pi.
- We had little to no experience with Django.
- Due to the COVID-19 pandemic, we had to complete most of the project remotely. This resulted in:
 - A feature being cut, since it couldn't be tested remotely.
 - Working schedules changing dramatically.
 - Technical problems becoming magnified since hardware access was no longer possible.

Sensor View

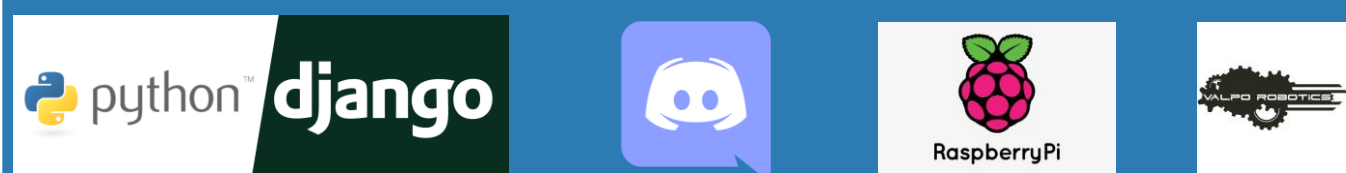
Robot Name	Time(sec)	Speed	Power	L-Stick	R-Stick	Battery
Test Bot 1	April 18, 2020, 2:43 a.m.	MS 3	MP 7	LS-(2,4)	RS-(6,8)	56%
Test Bot 2	April 18, 2020, 2:44 a.m.	MS 1	MP 2	LS-(7,7)	RS-(5,4)	61%
Test Bot 0	April 18, 2020, 3 a.m.	MS 50	MP 100	LS-(9,1)	RS-(0,6)	25%

The Robotics Team requested the ability to view the robot's identifier, its uptime, motor power level, its current speed, joystick controls, and remaining battery life.

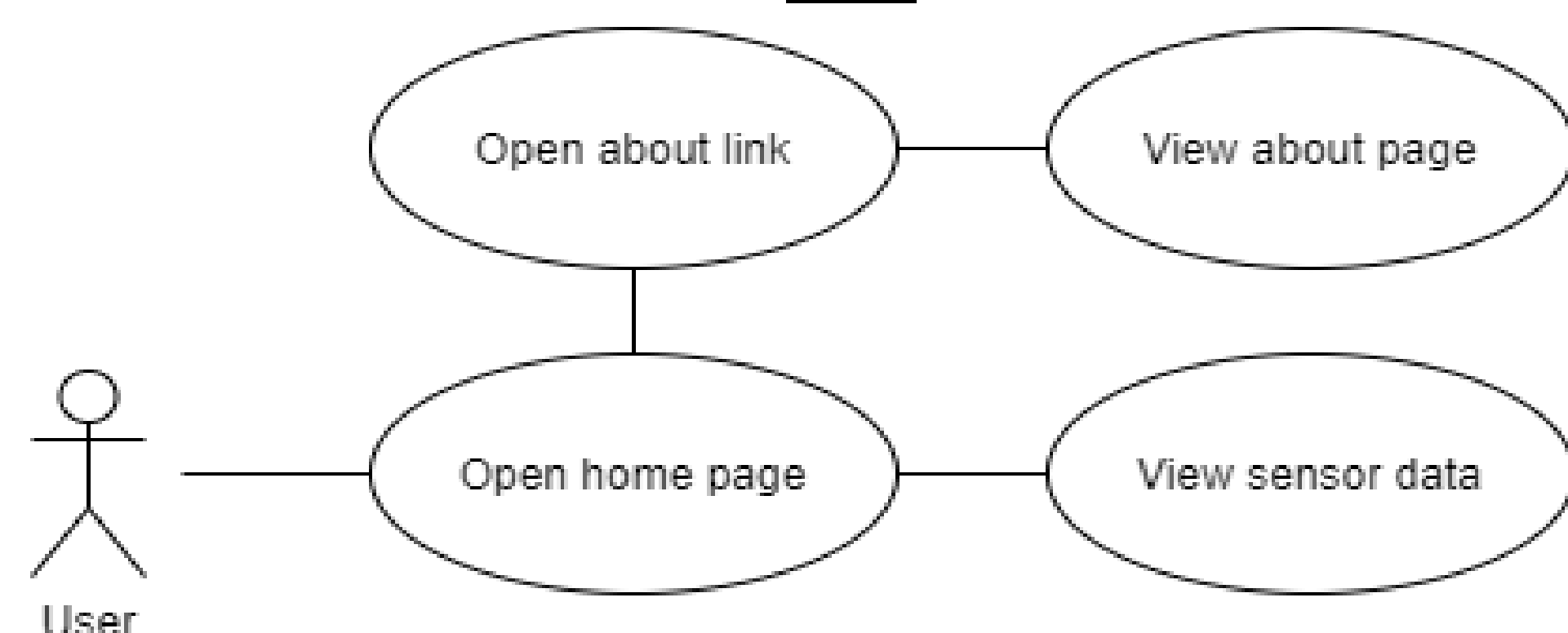
The table displays incoming sensor data from up to 64 unique robots. The list will automatically populate with new data sent to the database by refreshing every few seconds with new data. It will display the 64 most recent unique entries.

Acknowledgements

- Professor Nicholas S. Rosasco, DSc.
- Discord: <https://discord.gg>
- Django: <https://www.djangoproject.com/>
- Raspberry Pi: <https://www.raspberrypi.org/>
- Valparaiso University Robotics
- Jonathan Bayert, 21
- Alex Hurtig, 22
- Larry Alexander Crawford, 21



UML



VALPARAISO
UNIVERSITY

Computing and
Information Sciences