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Introduction

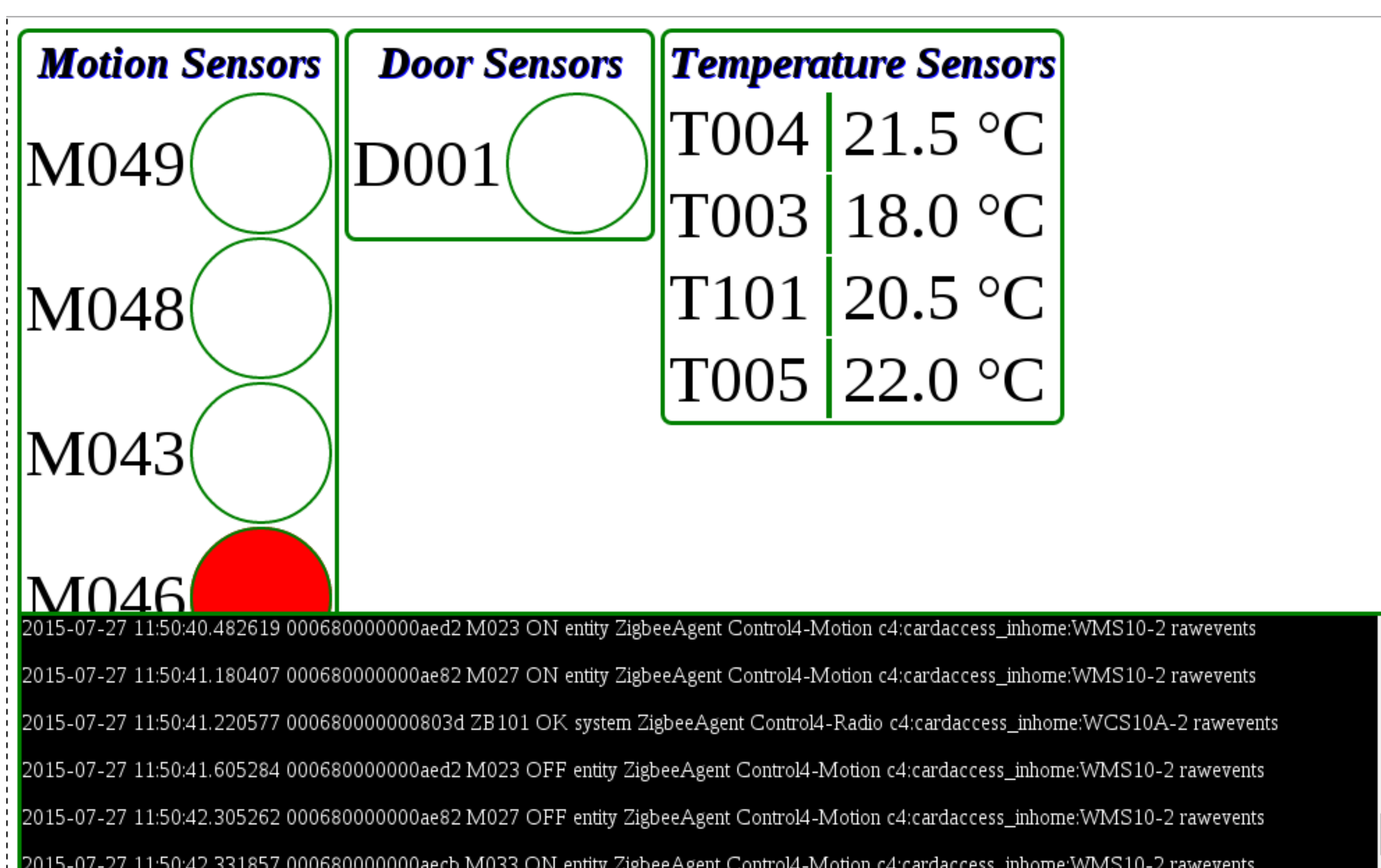
- As the US population ages, finding ways to keep elderly people in their own homes longer is becoming a major societal issue.
- The long term objective is to provide residents, caregivers, and medical professionals with a real time visualization of a home. This way, abnormal movement can be detected.
- The goal of this project was to develop a method to stream data in real time from motion sensors to a website accessible from anywhere.

Methods and Procedure

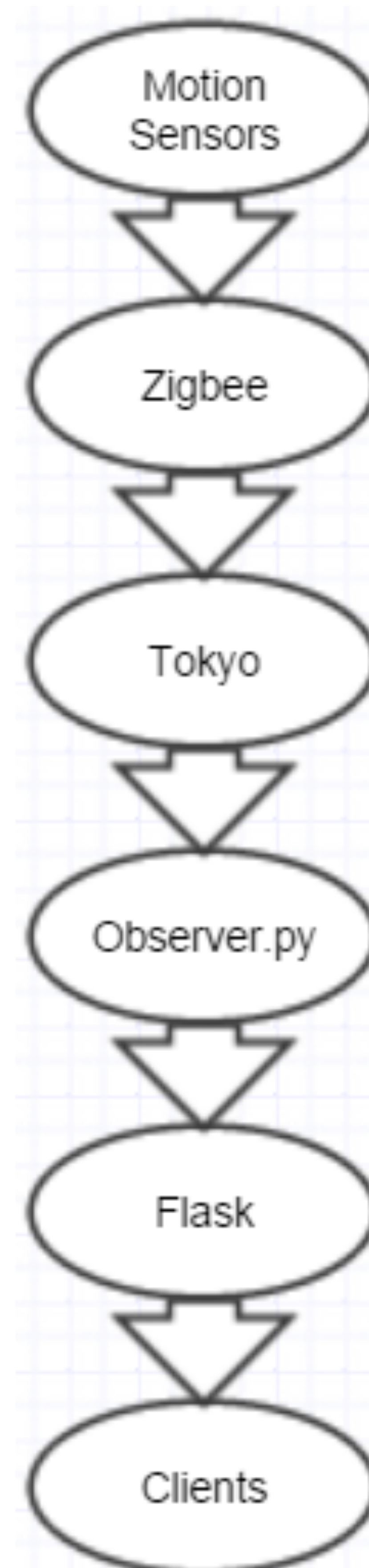
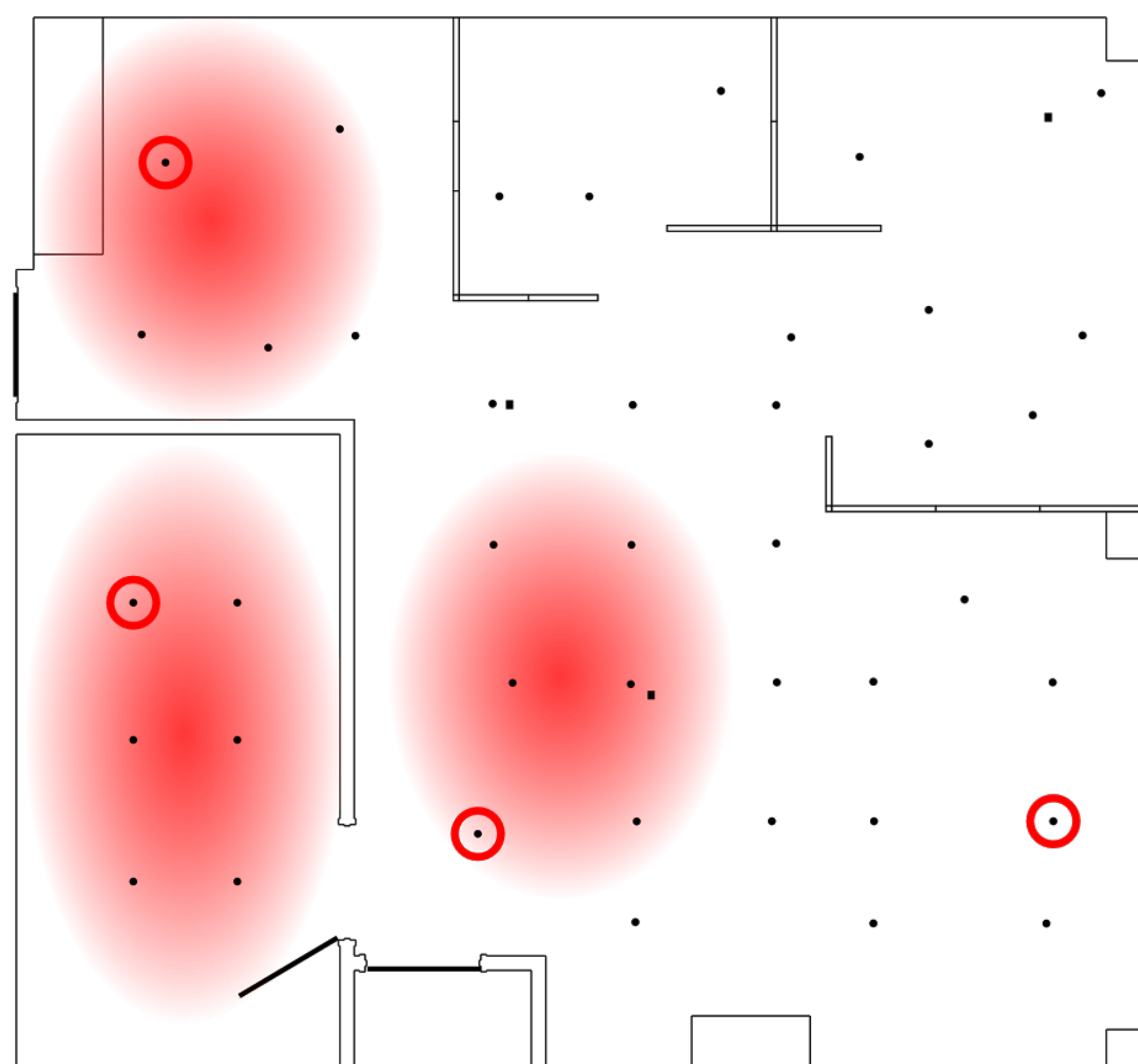
- The current visualization tool, PyViz, does not allow for access via the internet, and is platform dependent.
- The new visualization tool that has been developed, WORRDS (Web-based On-board Real-time Rendering Data System), is easy to set up, platform independent, and can be accessed anywhere.
- The new tool, WORRDS uses HTML5, CSS, JavaScript, JQuery, Flask, RabbitMQ, Nginx and SVG images to create the visualization.

Discussion

- Using a variety of software development tools, the tool (WORRDS) successfully streams data from motion sensors to a webpage.
- WORRDS may allow for better home monitoring and provide better help for the elderly.
- The tool could be improved using machine learning to notify a caregiver or a resident if their is abnormal activity in their home.
- The tool is able to stream data from the motion sensors to the web in real time. However, sometimes on startup the tool doesn't do anything for 10-15 seconds.
- The tool sees pets move, so a possible improvement would be to figure out how to ignore pets.
- The tool has a variety of applications including that it could tell a caregiver or the police if the resident hasn't moved for a long period of time.
- The tool could also diagnose loss of brain functionality over time by spotting different patterns in a resident's daily routine.



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- The sensors send data to Tokyo, a server, via ZigBee, which is like Bluetooth.
- Tokyo then passes the data to observer.py which is a messaging chat program.
- The chat sends the data to flask, a web framework, through RabbitMQ, a message distribution system.
- Flask uses sockets to send info to the clients.

References

D. Cook, A. Crandall, B. Thomas, and N. Krishnan. *CASAS: A Smart Home in a Box*. IEEE Computer, 46(6):26-33, 2013.

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