CODE Smart Campus 2.0: data and management
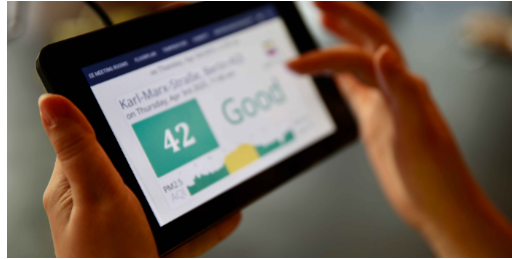
Outline

Updates

Team

Project Information

'Smart Campus at CODE: Data and Management' **This is a professor led project looking for a small mixed group of students from Interaction Design, Software Engineering and Product Management fields to investigate 3 specific prototype/design/product opportunities.**

Main Contact Person

Prof. Dr. Daniel Buzzo

Level of Guidance

There will be a high level of guidance or contact available

Project Topic

Smart Campus data and management

There is a channel of ongoing development with the campus team as they deploy more networked devices, data and sensors around campus. They would like to see how they can integrate this with what we built last semester as a practical design or set of tools they can use in their day to day management of the campus.

The prototypes will be deployed in-situ at the CODE Berlin campus allowing wide ranging user testing, examination of use cases, and iterations on design ideas. Central to this experience is the design approach of embodying the 'Campus' in the profile, personality and responses of the system. In effect using the metaphor of asking the building about things that the building might know - if it were actually 'smart' and embodied. We anticipate experiments and projects that explore allowing users to interact with this central

building entity via speech, screen and mobile. The experimental systems proposed could allow realtime information, query and retrieval to allow users to interact with the smart campus as an entity.

Exploring user interactions such as;

- Campus, is this room booked?
- Campus, which rooms are free right now?
- Campus, can you book this room for our team for the same time next week?
- Campus, can you remind me when the 3D printer is free?
- Campus, what books do we have in the library related to computer vision?
- Campus, is my team here right now?
- Campus, what was the utilisation of room A17 this semester?
- Campus, how has air quality been on campus this month?

Learning Goals

This project has a combination of design, engineering and product research and management. Gaining or improving proficiency and knowledge of any or some of the following areas or topics including

- Ai and cloud apis
- Design with ai
- Machine learning and LLM use
- Speech technologies
- User research
- Speculative design
- Interaction and interface design
- Project and product management
- Interactive environments and iot
- Prototype development
- Deployment and testing
- Interaction and interface design
- Networking and systems
- Documentation and communication
- Smart objects and environments
- Security and data storage and access

Roadmap

Software

We use a current base of HomeAssistant - and large open source smart home system with wifi and Zigbee mesh radio allied to a range of sensors and data sources about the campus. The system is open and available via the campus wifi and has a multiuse mobile

app and also the ability to make web based dashboards for desktop, touchscreen and kiosk. The system allows wide hardware and data integration and is modular allowing straightforward development of new tools and interfaces.

Hardware

Building information will be collated and shared via Zigbee mesh network based sensors in each campus room recording heat, light, humidity, air quality, and motion. Optionally, smart speakers allowing voice interaction and feedback from any point in campus. With a central hub for Zigbee mesh network and local processing for data privacy and security.

Technological Plan and possible module and learning areas

This project has a combination of design, engineering and product research and management that covers topics including

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Version History (?)

- **Changed Members**

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- **Changed Description**

  25.08.25 08:39

- **Changed Description**

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- **Changed Title**

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- **Changed Title**

  25.08.25 08:08

- **Changed Outline**

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- **Changed Title**

  25.08.25 07:56

- **Changed Members**

  23.08.25 10:27

- **Changed Outline**

  21.08.25 13:03

- **Project Approved**

  21.08.25 11:55

- **New Consultant**

  21.08.25 11:55

- **Changed Title**

  21.08.25 10:45

- **Changed Outline**

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