Hand-in #2 Mini Project - IDS F2024

Create an interactive digital system and/or interface with networking at its core.
Focus your system on connecting and transforming data.
Define a concept or problem that this system explores. Describe how such a system can support useful, novel or interesting ways of interacting.

In general terms, a project should minimally have:

- The program has to use network programming in some form. (UDP, TCP, DeepAI web APIs, WebSockets, MQTT or something else).
- At least two novel inputs/outputs total, of different types.
- Documentation.
    - For example: circuit diagram / state diagram / flow chart diagram / class diagram

Here we define “novel” as input/output NOT keyboard, mouse, or screen monitor.

You can work with ESP32, Javascript (p5js), or a combination of those languages.

Suggestions for projects

Although you are allowed to “simply” make a technical prototype, we suggest that you brainstorm about what the problem is about and how this project explores the question.
This way you have a better foundation for concretely practising reflection on the possibilities and challenges of your technical choices. Here is an opportunity to experiment or explore more poetic questions rather than focusing on solutions. Below are suggestions for technical projects you can use as a starting point to conceptualise a project.

- Interactive Art Installation that transforms proximity, light, temperature, etc into LED displays.
- A “smart” home system, that collects sensor data (temp / light / humidity), to then operate motors, or turn on and off other devices.
- A game of Pong using face tracking for control over a network, keeping score on a LCD display
- Music Visualizer that collects sounds, turns them into an image / text(!), and then prompts DeepAI for an image translation.

A minimal example could be some input from accelerometer data used to control an on-screen shape in p5js. The novel output here could include the network connection.
What is less interesting is a project that blinks two different types of LEDs, because there are few inputs/outputs or transformation of data.

Formal requirements

Work together in groups of 1 to 5 people. (Around 3-4 is ideal).

You need to upload the following three elements to eksamen.ruc.dk:

1. The report (upload as pdf)
    - Write a paragraph that explains your concept and what it tries to tackle.
    - Write up to 5 pages (excluding screenshots!) describing your program, your code, your use of data structures and your design. Reflect transparently on what works and what does not.
    - Use Screenshots and photos to document the prototype in such a way that it is possible to get a visual understanding of what the prototype does and how it functions.
    - If you are using p5js then provide a link to the working prototype in their cloud editor.
    - (Optional) If possible include online links to working online prototypes and a link to github code.
2. Include a video of the system in use. Upload a single video file as MP4 or MOV to Youtube. 1 - 5 min max.
3. All your code should be in a single compressed file (as Zip).

Additional info:

- You are more than welcome to combine several simpler ideas from our examples.
- It is ok if some elements do not work. Be sure to discuss and document why and how it doesn't.

Some elements of a good or excellent hand-in are:

- Usage and mastering of the techniques and data structures presented during the course.
- Concise, informative framing of the problem / question(s) explored.
- Describe the theory or mechanics behind the more advanced stuff you do. Diagrams bring clarity and help describe execution.
- The code is well-written, clean, readable and consistent. Modular, reusable, well structured, with clear variable names and comments for lines that are not obvious.
- Demonstration and thoughts of how you tested your program.
- Analysis and reflection on your project exploration. For example: what did you learn? what could be in the next iteration? How would you change the design / approach / tools / tests etc… What constructive feedback could you give to your own project?

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