Distinction: Project Plan

Overview of the task

For this unit, to achieve a distinction, you must complete a project. The project is to design, build and deploy an IoT solution that is demonstratably scalable.

In this unit, we will cover 6 broad modules, each of these has conceptual and technical learning. To achieve a distinction, you must complete a project that contains at a minimum, the following. Note that you will provide the evidence of achieving these in the final project report.

- Explore and document the requirements and scalability concerns for the IoT smart solution you are aiming to build.
- Design the solution to aim to build a scalable solution.
- Set up the data collection process using simulation or hardware.
- Create a Flow based processing using Node RED.
- Build an event-based microservice architecture.
- Deploy and demonstrate automatic scaling of specific microservices using Amazon Web Services.
- Demonstrate secure deployment.
- In your final submission, you should provide a link to your code in github, evidence of your deployment and scalability experiments, and a discussion of the appropriateness of your solution.

The programming language, platforms and servies you must use are Node.js, Node-RED and Amazon Web Services.

You should choose an interesting problem to create an IoT-enabled smart solution for. The following are some interesting problems that you might like to tackle. You can choose any system you like, but make sure you are tackling a complex enough problem that scalability would be a concern.

- A smart home lighting system.
- A bank automatic security system.
- A smart airconditioning system for a large building.
- A system to allow military units to autonomously operate in the field.
- A smart maintainance system for a manufacturing site.
- A driver-less taxi system for a smart city
- An automatic stock management and delivery system for supermarkets.

Submission Details

You need to provide a plan of how you are going to complete your project by the end of the unit.

For this task, you can use the Template in ontrack or your own style.

- distinction_plan.pdf

You must discuss your plan with your tutor to get this task signed off.

Instructions

For D grades and above, you will be expected to complete three Distinction tasks from the unit. An initial project plan, a project status update and a final project submission. This submission is for you to plan your approach to the main unit Distinction task.

1. Provide a short document (4-5 pages) which contains a plan for your solution.
2. Provide a high-level analysis of the problem you are tackling. Include the user stakeholders, system requirements, data flow diagram, and overview of the algorithms required for any data aggregation/filtering/processing, and a discussion on the scalability aspects of the problem.
3. Like with the technical task from week 2, include a high-level block diagram showing the different parts of the system and how they interconnect (what sensors, actuators exist, what processing is needed and what storage is needed). Include the hardware list or what you will be simulating including the components and the communication technology you will or would use. Include the data design, what data is collected, and how it is stored e.g. SQL tables or Documents from MongoDB.
4. Export this document as a pdf e.g. `distinction_plan.pdf`.
5. Submit all required files to Ontrack.