



12-13 February, 2022

Machine Energy Monitoring

Challenge:

Develop a bolt-on energy monitoring system for manufacturing equipment

Many manufacturers have little insight into how much energy their equipment uses. Better insight into energy usage can facilitate decision making and motivate operational changes that lead to reduced energy usage and therefore costs. In this challenge you will develop a simple bolt on system that can be attached to a piece of equipment to log it's energy usage. There are 3 phases to this challenge:



- 1) Integrate low-cost sensors to collect data
- 2) Set up, configure and deploy the system
- 3) Provide a visual dashboard

Evaluation Criteria:

- > Total system cost
- > System flexibility
- > Non-intrusiveness

Skills you will need/learn:

- Electronics and soldering
- Mechanical design
- Basic web development

Requirements

This event is open to students of University of Cambridge and University of Nottingham only.

Sign up or find out more

<https://bit.ly/hackDMS2022>

Hackathon



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Cost Modelling of Disruptions and Changes

Challenge:

Develop a simple but efficient costing system that captures project disruptions and changes

Capturing changes and disruptions in manufacturing processes can help organisations track and understand the final cost to produce a product. In this challenge, participants will develop a costing system that considers impact of changes, e.g. from BOM, labour or suppliers, in manufacturing process plans. There are 3 phases to this challenge:

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- 1) Interface with a system that stores changes in manufacturing processes
 - 2) Develop a cost model that calculates the cost of changes
 - 3) Visualise the results

Evaluation Criteria:

- > Ease of interaction
- > System accuracy
- > Information display

Skills you will need/learn:

- Costing systems
- Manufacturing processes
- Basic web development

Requirements

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Analysis of Product or Customer Demand

Challenge:

Develop a system to understand the impact of promotional activity on the sales of SME products at retailers

Small food producers who sell their products via large supermarkets are encouraged by those organisations to run promotions or discounts on their products. The impact of these promotions is rarely assessed or interpreted. Further, there is no meaningful feedback on the availability of product during a promotional event, so SMEs do not know if their rate of supply is matching demand or if their products are on shelves in stores for customers. There are 3 phases to this challenge:



- 1) Develop a system that collects actual data on the movement of goods within the supermarket
- 2) Provide feedback on the impact of a promotional event on sales performance
- 3) Generate real time alerts when there are no goods on the shelf in a supermarket

Evaluation Criteria:

- > Total system cost
- > Reliability
- > Non-intrusiveness

Skills you will need/learn:

- IoT systems
- Electronics and soldering
- Basic web development

Requirements

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