Research Assistant

May 7, 2024

How I've interpreted what the role is

> Develop an open source IOT platform for monitoring building operational energy and indoor environmental quality performance.

- **Advance** an adaptable and scalable IOT based platform.
- **Extend and Maintain** an existing cloud infrastructure based in AWS
- **Handle** data streams from multiple concurrent sources.
- **Adapt and Scale** in response to new sensor requirements.
- **Utilise** ML approaches to develop an agent to autonomously maintain, scale, clean and analyse the data being produced from the sensors in both real time and retrospectively.
- **Provide** services to stakeholders like: Monitoring, insights and guidance [1].

Could this be expanded to look at agent-based modelling to simulate energy demand?
Who are the stakeholders?

[1] Monitoring, and analysis of energy and indoor environmental quality, identification of abnormal energy demand and indoor environmental quality patterns, insights of energy demand and indoor environmental quality of homes **through customisable reports**, **guidance documents** for how to best use their home and appliances for optimum energy.

What are the expected deliverables?

The duties seem quite broad and open ended (see bold from above) things like creating customisable reports, guidance documents while also developing out visualisation and monitoring seem to conflict with the maintenance and handling of current data.

- Are there some hard goals that you are hoping to meet?
- If not, is the deliverables to be defined by the successful candidate?

Actively participate as a member of a research team What is the research team?

My interests

Currently, I'm interested in expanding my applied mathematics ability for better modelling. Specifically, in the areas of agent-based modelling and statistics.

Why I think I'm a good fit

- Experience in Software Development.
- Experience applying my technical knowledge to more abstract reasoning of research [2].
- Experience using software as a tool for research.

[2] Creating a model in python out of an Excel sheet that was creating to model the GHG of Jet fuel. This involved communication of technical topics in a language we could both understand. Constant interaction with research group.