

## **Research Associate**

### **Who are we?**

We are the University of Cambridge presence in Singapore called Cambridge CARES, sponsored by the NRF CREATE program CAM.CREATE. The research programme Cambridge Centre for Carbon Reduction in Chemical Technology (C4T) is a joint Cambridge, NTU and NUS research activity within Cambridge CARES.

Our team is comprised of world-class scientists and engineers working in a vibrant, fast-paced environment with great opportunities for knowledge and skills development.

### **Who are we looking for?**

We are looking for a talented and creative research associate to support the C4T research team. Primarily, we are looking for an individual dedicated to data-driven modelling, semantic representation and visualisation of chemical processes and industrial networks of an industrial park.

The project aims at a comprehensive virtualisation of an industrial park, i.e. a hierarchical representation of data and models associated with every entity in the industrial park, in order to exploit synergies for resource, energy, and emissions savings. The overall goal is, using ideas from Industry 4.0, Internet of Things, the Semantic Web, machine learning, artificial intelligence and statistics, to create an expert system capable of providing quantitative decision support.

The successful candidate will be expected to:

- Create and maintain ontologies for various domains in an Industrial Park using suitable editors.
- Expand and maintain the existing knowledge graph in JPS.
- Build agent frameworks capable of operating the knowledge graphs for conducting specific tasks.
- Develop dynamic models for the chemical plants and utilities systems.
- Develop optimization models using commercial software like GAMS or Matlab.
- Perform data integration using advance statistics and visualize it.
- Designing and developing executable programs and browser based applications.
- Conduct discussions with local industries and partners, overseas universities and write reports.

### **What skills do you have?**

- A good degree in Chemical Engineering or related fields.
- Knowledge of simulation tools like gPROMS, Aspen etc.

- Familiarity with knowledge management systems and formal representation of knowledge
- Some understanding of relational and non-relational database management systems, semantic web, reasoning, SPARQL and ontologies (an advantage).
- Basic knowledge in optimization and optimization algorithms.
- Strong analytical, project management, communications and interpersonal skills to work as part of a dynamic, multidisciplinary team of researchers.
- Excellent oral and written communication skills in English.
- Good understanding of process flow diagrams.

#### **What can we offer you?**

- A stimulating working-environment with friendly, highly motivated colleagues.
- Opportunities to develop and implement new ideas in a creative environment.
- A competitive salary in line with your skills and experience.
- A one-year contract in the first instance, extendable following a satisfactory performance.
- A comprehensive medical insurance coverage as part of your employment.

Please note this post is mainly based in the CREATE Tower at NUS University Town, Singapore and is likely to be suitable for recent graduates.

#### **How to apply?**

Please send your CV and cover letter (summarizing the most relevant skills and experience that you have for the position) to

[cares@hermes.cam.ac.uk](mailto:cares@hermes.cam.ac.uk)