Who are we?

We are the University of Cambridge’s presence in Singapore, Cambridge CARES. Our activities are sponsored by the National Research Foundation's CREATE programme. Our first research programme, Cambridge Centre for Carbon Reduction in Chemical Technology (C4T), is a collaboration between University of Cambridge, Nanyang Technological University and National University of Singapore.

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.

We are looking for a talented and creative chemical, computer, software or electrical engineer to support the J-Park Simulator (JPS) Project. The JPS project aims at a comprehensive virtualisation of industrial operations, i.e. a hierarchical representation of data and models associated with every entity in an industrial park, in order to exploit synergies for resource, energy, and emissions savings. The overall goal is, using ideas from the Semantic Web, Internet of Things, Industry 4.0, machine learning, artificial intelligence, and statistics, to create an integrated simulation platform and expert system capable of providing quantitative decision support.

Role and responsibilities

The successful candidate will be expected to:

- Develop our main software tool (JPS). This will involve keeping abreast of the latest web technologies, making key design decisions, and ensuring their realisation
- Participate in research discussions with local industries and partners, overseas universities, and writing reports
- Build a data model of entities and infrastructure of a large industrial park and country which makes use of a geographical information system (GIS)
- Create semantic representations of data, models and algorithms
- Designing and developing executable programs and browser based applications
- Develop mathematical systems / models for the chemical industry and utilities companies
- Develop combined heat and power cogeneration optimisation agent
- Develop energy system decarbonisation models and analysis
- Perform data integration using advanced statistics and AI applications
- Visualise data in a modern media lab using big data handling
- Communicate complex technical concepts to non-technical stakeholders
- Translate business and feature requirements into technical specifications
- Evaluate new technologies for their appropriateness to proposed solutions, including assessing their strategic benefits to the programme
- Write conference / journal papers and reports
Applicants must have:

- A good Bachelors / PhD degree in a relevant discipline such as Mathematics, Statistics, Computer Science, Software, Chemical or Electrical Engineering or any other relevant majors, ideally involving data visualisation or/and semantic technologies
- Excellent knowledge of modelling tools such as object-oriented programming languages (Java), scripting languages (Python), and IDEs (NetBeans, Eclipse)
- Demonstrable experience in software engineering/web development using C++/Java, as well as JavaScript/PHP, etc. (an advantage)
- Some understanding of relational and non-relational database management systems, semantic web and ontologies (an advantage)
- Mathematical and statistical skills, with experience in algorithm and methods development (an advantage)
- The ability to publish conference/journal papers
- Excellent oral and written communication skills in English
- The ability to work as part of a dynamic, multidisciplinary team of researchers

Please note that this post is mainly based in the CREATE Tower at NUS University Town, Singapore. To apply, please send your CV and cover letter (summarising the most relevant skills and experience that you have for the position) to cares@hermes.cam.ac.uk.