PhD Vacancy for August 2024 / January 2025 Intake

A vacancy is available for a Ph.D. scholarship with the IDEAS lab (https://ideaslab.io) at the National University of Singapore (https://www.nus.edu.sg) under the supervision of the lab's PI, Dr. Adrian Chong (https://ideaslab.io/authors/admin/). The scholarship is known as the NUS Research Scholarship and is awarded to outstanding graduate students. You may find out more about the scholarship here (https://nusgs.nus.edu.sg/scholarships-list/).

Topic Overview

The successful applicant will work on an exciting topic aimed at revolutionizing the way digital twins and machine learning models are developed for building HVAC systems, shifting from a model-centric to data-centric approach to model development. Traditional methods, heavily reliant on historical data and model-centric approaches, have shown limitations in generalizability. Despite the vast amounts of historical operational data, its value is often not fully realized due to a lack of diversity in building operations due to the repetitive nature of building operations. Consequently, a large dataset does not inherently mean it is information rich. This thesis will challenge the status quo by exploring and establishing a data acquisition framework that is designed to enhance the development of models that more accurately reflect the true energy performance of building HVAC systems across a broader spectrum of operational scenarios.

Unique Industry Collaboration: The scholarship provides a unique opportunity to work closely with an industry partner toward developing translational and impact-driven research, bridging the gap between theoretical research and practical applications.

Experimental Rigor: Experimental rigor would be a critical part of this project. You will have the unique opportunity to test, tune and evaluate your algorithm in a living lab environment, providing the unique opportunity for hands-on experimentation.

Real-Word Implementation: Field implementation will be an important aspect of this work. We will offer the candidate the unique opportunity to deploy and validate their research in a real-world setting with actual building occupants.

Qualifications:

- Education background in Mechanical Engineering, Building Technology, Computer Science, or a related field.
- Strong interest in HVAC systems and advanced building controls.
- Strong interest in experimentation, implementation, and ensuring scientific rigor.
- Proficiency in data science and machine learning with demonstrated skills in programming languages such as Python and/or R.
- Good scientific writing, communication and learning skills.

Application (Open until filled)

Interested applicants are invited to email the following to Adrian Chong at adrian.chong@nus.edu.sg

- A detailed CV outlining your academic background, relevant experience and publications.
- A cover letter explaining your interest in the project, your research interests, motivations for undertaking a PhD, and how you believe your skills and experiences align with the project objectives.