η lab
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THE UNIVERSITY OF BRITISH COLUMBIA

POST-DOCTORAL RESEARCH FELLOWSHIP

Novel approaches to designing, constructing, and operating large net-zero energy buildings

The Energy, Technology, and Architecture (ETA) Lab is a new research group at UBC, based at the UBC Centre of Interactive Research on Sustainability (CIRS) and part of the UBC School of Architecture and Landscape Archtiecture (SALA) and Department of Mechanical Engineering. The Lab seeks to develop and test state-of-the-art computational, data-driven techniques to assess and improve the design, construction, and operation of high-performance buildings and cities.

The ETA Lab is seeking a full-time postdoctoral fellow to provide research leadership on a new building demonstration project at UBC that will realize the design and construction of Canada's largest net-zero energy residential building on the university's Vancouver campus. The full-time fellowship is aimed to begin June 2019. For additional information about postdoctoral fellow appointments at the university, please see: http://www.postdocs.ubc.ca.

The successful candidate will contribute to a funded research project investigating the design, construction, and operation of a 6-storey, 100,000 ft^2 multi-unit residential building (MURB) that will generate its annual energy requirements on-site. As part of this project, the Fellow will supervise a small team of graduate student researchers (up to 6) engaging with various research topics related to the design and operation of high-performance buildings. This may include contributing to supervision of research on building performance data analytics, computational optimization for net-zero energy building design, post-occupancy evaluation, and machine-learning driven control strategies for building-integrated energy systems. Supplementary part-time teaching roles within the UBC School of Architecture and Landscape Architecture and/or Department of Mechanical Engineering may also be considered. The ideal candidate will embrace working in a team-based work context and appreciate the challenge of working in a cross-disciplinary research environment.

Qualifications:

Candidates must hold a recent (within 5 years) Ph.D. degree in an engineering discipline, architecture, or a related field. It's expected the candidate will possess deep technical and theoretical knowledge in building science or energy systems analysis in the built environment context. Preference will be given to candidates possessing additional knowledge within the following fields of data visualization, risk factor analysis, Bayesian methods for inference and prediction, machine learning, artificial neural networks, as well as longitudinal and time-series data analysis. Excellent communication skills in English are required, including a track record of high-quality peer-reviewed journal publications.

Overall, the successful candidate will have demonstrated research expertise to pursue independent research in one or several of the following subject areas:

- Performance evaluation of large energy-efficient building demonstration projects using data analytics and/or calibrated simulation models
- Detailed life-cycle cost and risk assessment of zero-carbon building construction projects in North America

- Development and application of learning-driven control processes for distributed energy systems that include building energy services and electric vehicle charging infrastructure
- Optimization of design and construction processes to deliver large, net-zero energy buildings.
- The use of Bayesian science to inform investment decision-making for low-carbon buildings and energy systems
- The study of climate change risks to future building energy performance and thermal comfort
- Simulation and experimentation with electric vehicle charging systems that are interconnected with building energy systems.
- *Other similar topics, as relevant to overall project*

Further information and application deadline

For further information regarding the position, or to submit a CV and cover letter, please write to Dr. Adam Rysanek (arysanek@sala.ubc.ca). The position's application deadline is February 14th, 2019.

About UBC and Vancouver

The University of British Columbia is consistently ranking among the 40 best globally, and now places among the top 20 public universities in the world. UBC strives to create an exceptional learning environment that fosters global citizenship, advances a civil and sustainable society, and supports outstanding research to serve the people of British Columbia, Canada and the world. It offers affordable, competitive tuition fees and a number of scholarships, awards, top-ups to external awards, entrance fellowships, Research Assistantships (RA's) and Teaching Assistantships (TA's) to its students. The Metro Vancouver area is an internationally-renowned city – and the 3rd largest in Canada. Consistently ranked one of the world's most livable cities, it is where snow-capped mountains meet the ocean, breathtaking views greet you around every corner, and a diversity of communities, cultures, and ethnicities meet you at its core.

The University of British Columbia, Vancouver campus