Postdoctoral Fellow Positions

Integration of EV charging with building management systems

The Department of Mechanical Engineering at the University of British Columbia (UBC), Vancouver campus (http://www.mech.ubc.ca), invites applications for 2 full-time, postdoctoral fellows on integration of EV charging infrastructure with building management systems and forecasting tools for electric vehicle integration to city systems. This postdoctoral fellowship is funded by a collaboration with BC Hydro.

Transportation Futures at UBC http://transportation.apsc.ubc.ca is looking for qualified candidates to develop methods and software to integrate electric vehicle charging infrastructure with building management systems. The initiative recently received funding to deploy the Clean Connected and Safe Transportation Testbed (CCSTT). The CCSTT is a city-scale, living laboratory that will emulate critical links between energy, transportation, ICT, and urban design. The CCSTT will be a unique-in-Canada platform to develop and deploy the next generation of transportation systems for businesses and communities across the country. Our world-leading approach reflects the evolution in transportation systems: from passive, distinct entities into an interconnectedness of people, information, technologies, devices and products. BC Hydro will be supporting some components of this work, as outlined in the scope below.

1. Integration of charging infrastructure to building management system (BMS) to optimize energy use and demand:
   a. Propose advanced EMS solution(s) for buildings and EV charging stations that can be integrated with systems such as BMS and BESS.

2. Reshaping charging profile of existing infrastructure, dynamic or fixed methods — study the flexibility and range of charging loads, per Project I:
   a. Test various types of smart charging scenarios by taking load flexibility into account. Different EV penetration levels and its impact on load flexibility are studied as well.
   b. Find optimal load management scenarios for each operating time interval (especially during peak hours) using advanced optimization techniques.
   c. Perform sensitivity analysis to understand correlations between charging behavior and load flexibility level.

3. Provide building electricity load forecasting (Energy Information System) tools, along with increased granularity of the individual components that comprise the building load:
   a. Leverage existing BC Hydro software to be able to forecast building load profile, and subsequently forecast optimal EV charging (and/or discharging) times.
   b. Integrate the building level meter with a networked lighting control system in order to better understand lighting system use and contribution to peak, and potential synergies with EV charging.

4. Develop a web hosted report showing electricity load profile of a whole building, overlayed with granular (fixture level) lighting energy use.

The fellowship will be for a one-year appointment, renewable for one additional year, subject to a performance assessment. There is the potential for the position to be extended beyond two years as a Research Associate. The position is available from now until it is filled. Review of applications will begin on May 30th, 2018. Interested candidates with a Ph.D. in computer science, electrical and computer
Applications must include a cover letter, curriculum vitae and names and contact information of three references and can be submitted to Dr. Omar Herrera at omar.herrera@ubc.ca.

Applicants are asked to complete the following equity survey: https://ubc.ca1.qualtrics.com/jfe/form/SV_4Z5mfmZ1g7fFbWB. The survey information will not be used to determine eligibility for employment, but will be collated to provide data that can assist us in understanding the diversity of our applicant pool and identifying potential barriers to the employment of designated equity group members. Your participation in the survey is voluntary and anonymous. This survey takes only a minute to complete. You may self-identify in one or more of the designated equity groups. You may also decline to identify in any or all of the questions by choosing "not disclosed".

Equity and diversity are essential to academic excellence. An open and diverse community fosters the inclusion of voices that have been underrepresented or discouraged. We encourage applications from members of groups that have been marginalized on any grounds enumerated under the B.C. Human Rights Code, including sex, sexual orientation, gender identity or expression, racialization, disability, political belief, religion, marital or family status, age, and/or status as a First Nation, Metis, Inuit, or Indigenous person.

All qualified candidates are encouraged to apply.