UQÀM | Chaire de recherche sur la forêt urbaine

JAKARTO CARTOGRAPHIE HD

PHD OR POSTDOC POSITION

Using mobile LiDAR remote-sensing to increase capacity to sample the urban forest

Despite a large proportion of the population living in cities and the recognized importance of urban forests in providing benefits to people, we still know surprisingly little about them. In a future with more frequent and intense heatwaves, urban trees will be key in ensuring the livability of cities. Urban planning must also account for social inequities. Our ambitious project will provide working answers to these challenges, while developing novel techniques to sample and track change in urban forests, and knowledge towards adaptation to global change.

As part of this project, we are currently looking to increase capacity to sample the urban forest. A comprehensive inventory of the UF at the city scale is not a trivial effort. Trees on private land are a large part of the UF cover yet are nearly never included. Thus, we rely on partial and unrepresentative datasets to make important decisions. UF mapped at the individual tree level enhance management, decision-making, and improve understanding of the spatial distribution of ecosystem services.

The integration of high-resolution aerial laser scanning and geospatial modelling has already led to new cost-effective UF monitoring. However, ground-based remote-sensing such as terrestrial or mobile laser scanning (MLS), is better adapted for describing individual trees and integrates much more information, allowing for better estimated tree parameters and species discrimination. Merging MLS and aerial scans will allow for more complete inventories and characterization of individual trees, and thus accurate estimates of tree characteristics that are associated with ES. In close collaboration with our partner Jakarto, we will use urban LiDAR scanning data to derive tree characteristics including crown and stem dimensions, leaf area, volume and biomass partition. The candidate will i) use newly developed approaches to isolate trees from the scans and apply quantitative structural model to extract tree features; ii) estimate crown density; and iii) develop a robust tree species classifier using machine-learning approaches trained by the extracted tree features as predictors.

The selected candidate will contribute to an interdisciplinary project led by an expert team of researchers from different universities, and partners from municipalities, private companies, and non-profits, thus broadening their professional network. Prospective students should contact us (paqlab@uqam.ca) with the following information: **letter of interest, CV, unofficial transcripts, and contact information for references**. Informal inquiries are welcome. Please don't hesitate to share any career interruptions or personal circumstances that may have had an impact on your career goals. Position will be at UQAM (Alain Paquette and Dan Kneeshaw), in collaboration with researchers at Jakarto, to start as early as winter 2023. Full scholarship and support such as French language classes and maternity leave is offered.

Think you're out of luck because of your background, a disability, or the way you dress? Relax, we don't care, because innovation is born from diversity. Our team offers an inclusive, equitable, respectful, healthy, and open-minded work environment - because we work there too! **An exceptional opportunity to join a dynamic and welcoming research group! We want happy people**.

Learn about us here : PaqLab.uqam.ca | www.jakarto.com