PhD fellow in Drone borne LiDAR and Artificial Intelligence for assessing carbon storage (MapCLand)

Deadline for applications is 1st of October 2019.

The fast development of computational tools and instrumentation technology that monitors air-surface characteristics underscores the natural relationship between environmental and computer science in order to better predict environmental functions and design effective strategies for climate change adaptation.

MapCLand project aims to utilize the newly developed drone based Lidar (Light and Detection Ranging) scanners to measure above ground biomass, and estimate the terrestrial carbon sequestration in Danish agricultural and forest areas.

The ambition is that a collaboration between environmental- and computer scientists can lead to the development of the first-ever standardized protocol for automated processing of Lidar data utilizing drones as platforms and Artificial Intelligence capabilities. If successful, we can provide very accurate information of the bare-earth and vegetation structure, and based on the retrievals the spatial distribution of biomass and its non-linear relationship with vegetation dynamics and surface topography can be assessed with high temporal and spatial resolution.

The PhD project will be focused on the development of a research tool that will improve the quantification of carbon sequestration of vegetation and forests by utilizing precise 3-D information of ecosystem structures and the potentials of deep learning techniques to automatically analyse multidimensional data for making categorizations and processing point clouds.

The objectives will require the elaboration of aerial campaigns using available research facilities at existing agricultural and forest experimental sites to collect point cloud datasets, the design of deep network architectures appropriately adjusted for the highly dense point cloud data and assessment of mathematical validation strategies to address different sources of discrepancies between ground-truth and remote-sensed data.

Qualifications

Candidates should hold a master’s degree preferably in the field of environmental science, physical geography, computer science, engineering or similar.
It is expected that the applicant has qualifications and interests in field-based ecosystem manipulation experiments and/or in scientific programming (Matlab, Python or similar).

Experience with machine learning and/or point cloud data processing is an advantage, but not a requirement.

Candidate has obtained excellent grades in his/her Bachelor and Master educations and has good communication skills in both spoken and written English.

Further information

For further information about the position, please contact:

**Dr. Katerina Trepekli**  
Department of Geosciences and Natural Resource Management, University of Copenhagen  
Mobile: +45 81 93 01 72  
Phone: +45 35 32 67 98  
E-mail: atr@ign.ku.dk