MSc Position in 3D Digital Mapping at the Urban Ecology & Analytics Lab

We are seeking a highly motivated student to pursue a Master of Science (MSc) degree in the Department of Geography at Memorial University, located in St. John's, Newfoundland and Labrador, Canada. The successful applicant will contribute to a larger, multi-phase research project funded by a SSHRC Insight Grant, which explores early modern wastewater management systems in colonial North America through the integration of archaeological and civil engineering approaches and also advances urban ecological/climatological research by evaluating the potential of 3D modelling of urban landscapes.

The MSc project consists of two distinct, yet methodologically related components, integrating cutting-edge technologies and methods from geomatics to understand the past and present—setting the foundation for better understanding future environmental dynamics.

Component 1:
The MSc student will focus on investigating subterranean drainage systems associated with early 17th-century structures at the Ferryland archaeological site, one of the most significant and best-preserved colonial sites in North America. Working under the supervision of Dr. Mahyar Masoudi and Dr. Joseph Daraio, the student will generate a 3D digital reconstruction of drainage features using UAV-based photogrammetry. This project represents a pioneering collaboration between archaeology, geomatics, and civil engineering in Canada, offering a unique opportunity to gain interdisciplinary research experience.

Component 2:
Building on the skills developed in Component 1, the MSc student will further integrate 2D and 3D landscape modeling techniques for urban ecological and climatological research. Focusing on a representative sample of neighborhoods with varying spatial structures in St. John's, the student will combine UAV-based LiDAR data with existing 2D datasets and apply advanced analytical techniques, including object-based image analysis and machine learning algorithms, to map urban structures in high resolution. Under the supervision of Dr. Mahyar Masoudi, the student will generate and analyze 3D metrics to investigate the additional insights gained by incorporating 3D data.

Requirements:
Applicants should have a strong academic background in geomatics, particularly in GIS, remote sensing, UAV photogrammetry, and 3D point cloud data. Familiarity with drone operation and relevant software—including Agisoft Metashape (or similar photogrammetry software), remote sensing tools (e.g., ENVI), point cloud software (e.g., CloudCompare or Autodesk ReCap Pro), and ArcGIS Pro—is required. Python scripting experience is highly desired. Strong technical, organizational, and communication skills are essential.

Application Instructions:
Interested candidates should submit the following documents as a single PDF file:

1. A one-page cover letter outlining relevant experience and research interests
2. A current CV
3. Academic transcripts (unofficial)
4. A writing sample
5. Contact information for two references (at least one must be academic)

Applications should be emailed to Dr. Mahyar Masoudi at mahyar.masoudi@mun.ca. Shortlisted candidates will be invited for an interview.

The position is expected to begin in January 2026 (Winter 2025-26 semester), with possible fieldwork opportunities from May to August 2026. Review of applications will begin immediately and continue until a suitable candidate is found.

Compensation:
The successful candidate will receive a funding package of $22,500 per year. Annual tuition fees for MSc students at Memorial University are $4,833 for international students, $3,717 for Canadian students, and $2,859 for Newfoundland and Labrador students—among the most affordable tuition rates in Canada (https://www.mun.ca/become/graduate/tuition-fees-and-funding/). Additional funding opportunities, such as teaching assistantships and scholarships, may be also available.