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| <p>AWARE Quarterly Progress Report Project ID: Question 16 Core Site: Newfoundland Title: What is the best approach to map new “value-based” forest attributes combining conventional forest inventory and LiDAR data?</p> | <p>Institution: USherbrooke Project Supervisor: Fournier, R HQP Name: Xavier Gallagher-Duval</p> |
| <p>Report Period Year: 4 <input checked="" type="checkbox"/> S4 <input type="checkbox"/> S2 <input type="checkbox"/> S3 Jan- May- Sep- Apr Aug Dec</p> | <p>Committee Members</p> <ul style="list-style-type: none"> <input type="checkbox"/> See Progress Report Year: _____ Q _____ <input type="checkbox"/> Names: _____ |
| | <p>Number of Courses Left to Complete</p> <p>0</p> |
| <p>Research Progress During this Reporting Period</p> <p>----- Semester 3 Sep-Dec 2018 -----</p> <p>Milestone: Get familiar with the AWARE Project and vision</p> <ul style="list-style-type: none"> • Deliverable: Skype Meeting with the Corner Brook NRCan co-directors • Status: Completed <p>Milestone: Prepare the Msc proposal which includes literature review and a proposed methodology to the Supervisors Richard Fournier, Olivier Van Lier and Joan E. Luther.</p> <ul style="list-style-type: none"> • Deliverable: 5 pages project documents • Status: Completed <p>Milestone: Complete the registration procedures for the PhD in program “Maitrise en Géomatique” at Université de Sherbrooke under the supervision of Richard Fournier</p> <ul style="list-style-type: none"> • Deliverable: Submit my application case load and get accepted • Status: Completed <p>Milestone: Complete 2 of 3 courses</p> <ul style="list-style-type: none"> • Deliverable: 2 courses completed of 3 required for the Msc. • Status: Completed <p>Milestone: Complete initial literature review on Stem Diameter Distribution (SDD) modelling, textural metrics extraction, and non-parametric modelling to predict forest attributes.</p> <ul style="list-style-type: none"> • Status: Completed <p>----- Semester 1 Jan-Apr 2019 -----</p> <p>Milestone: Building Core site Stem Diameter Distribution (SDD) exploration and classification as unimodal or multimodal, with the best classification technic.</p> <ul style="list-style-type: none"> • Deliverable: Classification of the SDD and selection of the classification technic. • Status: Completed at the beginning of march. <p>Milestone: complete 3 of 3 courses.</p> <ul style="list-style-type: none"> • Deliverable: Complete the 3th course needed for the Msc. • Status: Completed. <p>Milestone: Complete the methodological proposition (GMQ800) for the Msc. project.</p> <ul style="list-style-type: none"> • Deliverable: The proposed methodological approach document delivered to the faculty and a | |

presentation of the proposition.

- Status: Completed at the end of April.

----- **STARTED & ON-GOING FOR NEXT SEMESTER** -----

Milestone: Creating a predictive model that separate SDD by their general shape (unimodal and multimodal) using Canopy Height Model textural metrics and point cloud metrics.

- Deliverable: Separation model of the SDD general shape
- Status: Started and to be completed by the end of May.

Milestone: Asses the importance and significance of the textural metrics in the SDD separation model

- Deliverable: Performance analysis of the different metric groups
- Status: Started and to be completed by the end of May.

Milestone: Test the different Weibull fitting technics to extract the unimodal SDD shape parameters.

- Deliverable: Selection of the appropriate fitting technic.
- Status: Started and to be completed by the end of June.

Milestone: Modelling the shape parameters from the Weibull fitting using textural and point cloud metrics.

- Deliverable: Selection of the best metrics suited for the predictions.
- Status: Started and to be completed by the end of June.

----- **PLANNING AHEAD** -----

- Explore options for non-parametric and Bayesian modelling/prediction of Multimodal SDD shape parameters
- Poster session for methodology and preliminary results (Centre d'étude sur la forêt May 1-3rd and Association Québécoise de télédétection May 17th, Canadian Symposium on Remote Sensing and Geomatics Atlantic 2019 on June 6-7)
- Work on a first manuscript for scientific publication on the use of texture to predict forest attributes using ALS.
- Participation to a R workshop on Bayesian regression at the Colloque du Centre d'étude de la Forêt, Chicoutimi, May 1-3rd.

Presentations Done

AWARE Student Forum #9 (September 15th 2017)

Papers Submitted : none

Annual General Meetings

AGM1

- Attended
- Reported results

AGM2

- Attended
- Reported results


AGM3

- Attended
- Reported results

Research Targets for next Reporting Period

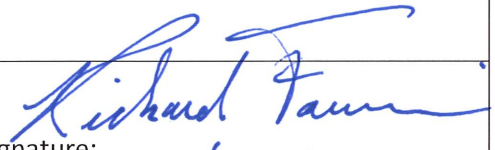
Determining the best ABA model to separate unimodal and multimodal distribution. Comparing different metric grouping when predicting Weibull shape parameters.

HQP Signature:



Date: April 16, 2019

Project Supervisor Signature:



Date: 17/04/2019