

SES Seminar Series

Guest Speaker: Dr. Asim Biswas

(University of Guelph, SES)



"Machine Learning and Computer Vision applications in Proximal Soil Sensing"

Characterization and quantification of soil properties are important for the optimum use and management of our soil. Traditional methods for estimating soil properties are time consuming and laborious. In contrast, recent technological developments around proximal soil sensing has been showing great promise to meet the high-resolution spatial and temporal data demand for modern-day precision agriculture. More recently, with the advancements and developments in imaging techniques and computational powers of modern computer and handheld devices to process high resolution images have been gathering interest to characterize soil properties. Often the color and the surface textural characteristics of an image and image pixels is nothing but the presentation of the characteristics of that soil. Developing a relationship between the colors and the image surface textural properties as derived from an image with laboratory-measured soil properties show strong promise of image-based soil characterization. Image processing and various machine learning and computer vision algorithms provide the basis for developing these relationships. This paper brings together some examples from current studies on imaging soil in laboratory and in field conditions using various devices including handheld microscope, cell phone camera and digital camera and various image processing techniques including geostatistical, artificial neural network, support vector machine, wavelet transform to characterize soil texture and organic matter. Design and development of image acquisition systems, collection of soil images, processing and extraction of image parameters and development of models will provide information on the use of machine learning and computer vision applications to develop new proximal soil sensors.

February 7, 2019– 12:00pm–1:00pm
Alexander Hall Rm 265

All are welcome to attend!

ses

school of environmental sciences



Ontario Agricultural College

Food
Agriculture
Communities
Environment