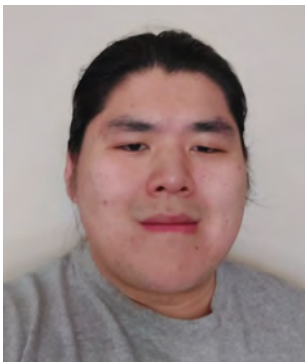# GRADUATE EXIT SEMINAR

TYLER WONG

Estimation of grain sizes in a river through UAV-based SfM photogrammetry

Unmanned aerial vehicles (UAVs) have an increasingly relevant role in the field of hydrology and water resources management. Their affordability and ease of use in comparison to traditional field-based methods have made research on their applications increase rapidly in the past decade. One application of UAVs to the hydrology of river systems is the estimation of particle sizes within a channel. This project investigated the ability of UAV imagery and Structure-from-Motion (SfM) photogrammetry to estimate grain-size distributions within a reach along the Olentangy River. While previous literature has suggested that topographic roughness metrics outperform image textural metrics for statistical grain size estimation, our approach for validating the accuracy for these models showed that the statistical models that were calibrated based on image textural properties performed better than those that were calibrated based on point cloud roughness properties. The results of this study suggest that topography-based grain size estimation may not be adequate for all sites, and further work on analyzing the range of grain size characteristics for which topography-based and image-based techniques perform better should be done to improve the applicability of these techniques. Doing so will help river scientists and managers to easily assess the physical, chemical, and biological dynamics that occur within rivers.

Advisor: Dr. Steve Lyon

TUESDAY, JULY 12, 2022
10:00 A.M.

Join the seminar via Zoom:
https://osu.zoom.us/j/96263336338?pwd=QmdpeVl0UzMwWFh1bXI2eFcwcERvZz09
Meeting ID: 962 6333 6338 Password: 847662

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