The University of Hong Kong
School of Biological Sciences

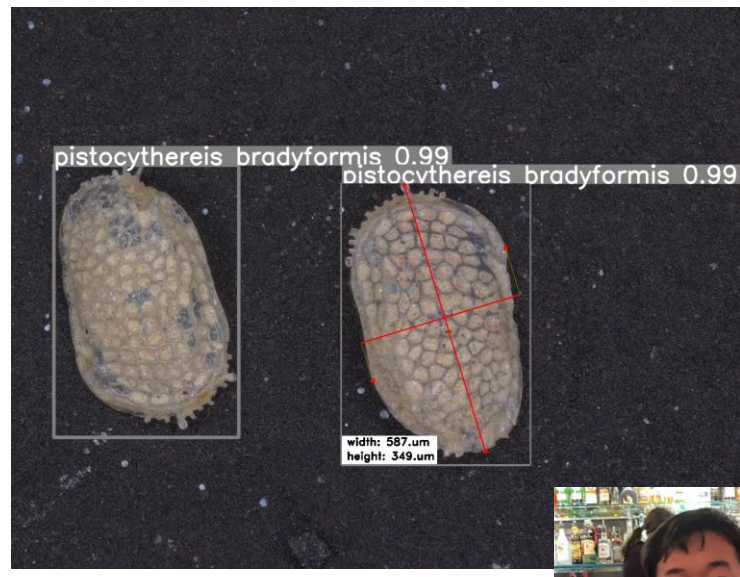
Qualifying Seminar

Detecting, Identifying and Measuring of Ostracods Automatically with Deep Learning

Date: 31 Oct 2023

Time: 11:00 am HKT

Venue: 6N11 & Zoom



About the speaker:

HU Jiamian is PhD student in Dr Moriaki Yasuhara's Lab. He is working on finding applicable workflow for biological science researchers.

ZOOM Link

Abstract:

Microfossils of ostracods provide valuable insights into past climate and environmental changes. However, the identification and measurement of large numbers of ostracod specimens can be time-consuming for researchers. Recent advancements in digital microscopy and deep-learning technology have opened opportunities to automate micro-paleontological identification processes. In this seminar, we will present a workflow that integrates deep learning technology as an automation tool for ostracod genus and species identification, detection, and segmentation. The workflow will cover image data preparation and quality control, annotation processes, framework setup and model selection, model training acceleration, and integration into actual research workflows. Through this workflow, we have achieved over 92% accuracy in identifying 139 species of ostracods and have developed an initial automatic workflow that can automatically count, identify, and measure ostracods through the integration of detection, identification, and segmentation models. These promising results demonstrate the potential of deep learning to enhance future analyses and automation in ostracod and biological research workflows.