Micro 3D Scanner - Existing Research

Medium
Microscope Objectives
Computer Vision
Robotics
Photogrammetry
Gaussian Splatting

Date
2024-2025

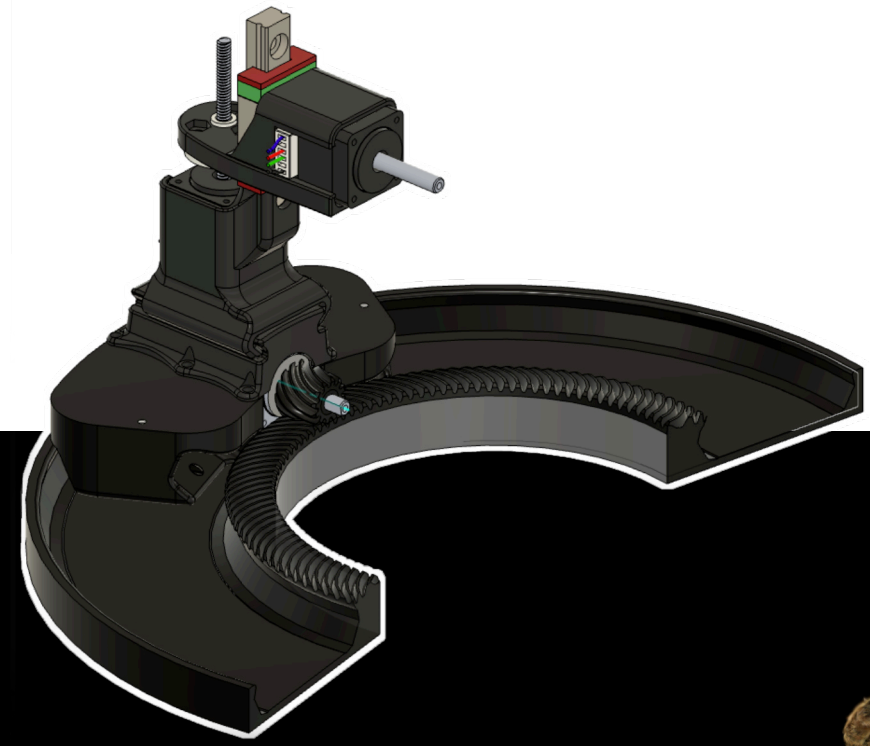
Type
Tool
Research in progress

Microscope system to generate high resolution 3D models using computer vision and photogrammetry.

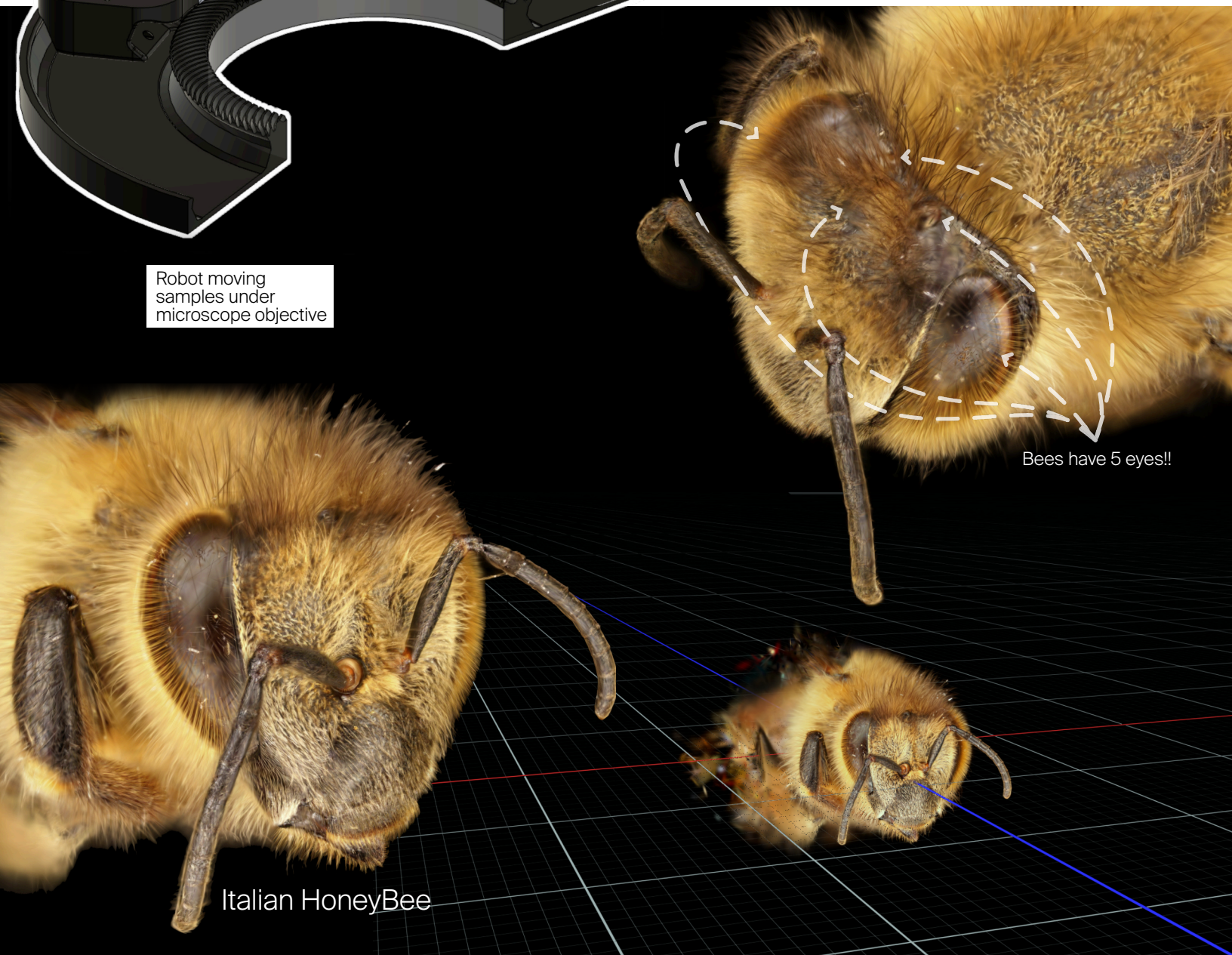
The 3D microscope is a tool we are currently developing. It is composed of motorized system tov orbit and move a sample under a camera with a microscope objective. The system will automatically take thousands of images that later go through a partially manual, partially automated, workflow to create a 3D view of the sample.

There are currently a couple of challenges that I believe could be solved though a collaboration with Dr. Averbuch-Elor. In particular regarding the processing of focus (DOF) masks to accelerate the model re-creation.

Here are images and links to the current state of the research.

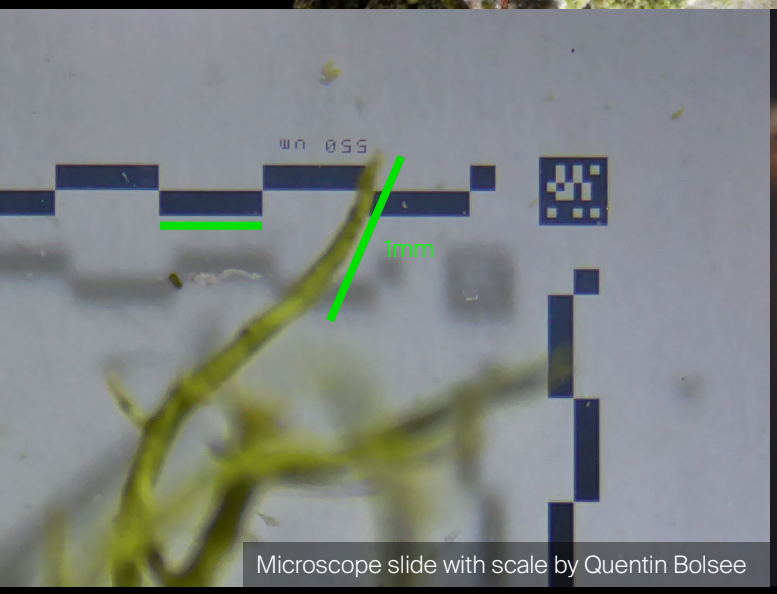


Robot moving samples under microscope objective



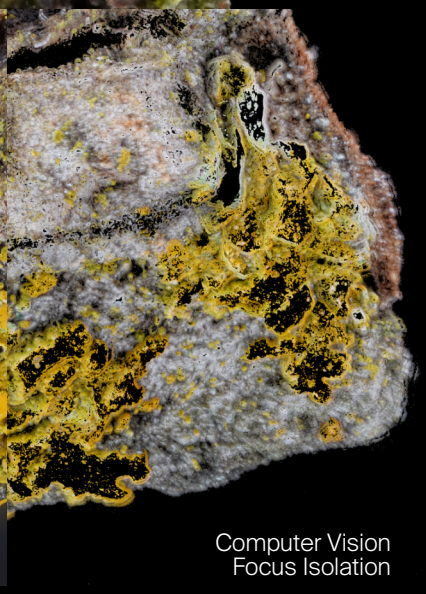
MORAKANA

Lichens growing on tree bark



Microscope slide with scale by Quentin Bolsee

Computer Vision Focus Stack



Computer Vision Focus Isolation

Lichen (Usnea hirta)

Lichen, finger for scale