

# MakerLab

Brandeis

## Robots on the Dig: 3D Scanning for Archeology & Material Culture

# Brandeis

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LIBRARY

Research Technology  
and Innovation

Ian Roy

Director for Research Technology and Innovation

Founding Head of Brandeis MakerLab

Adjunct Professor at Brandeis International Business School

Lecturer in Anthropology

[ianroy@brandeis.edu](mailto:ianroy@brandeis.edu)



# What is Research Technology and Innovation?

# WHAT IS RTI?

## What we do



### Teaching & Learning

Curricular lectures in emerging technology, weekly trainings, and workshops.



### Research Technology

Prototyping physical objects and new workflows, digitization, and digital fabrication.



### Hackathons & Events

24 hour programming challenges and prototyping challenges, speaker series, and sponsored maker in residence projects.



### Outreach

Talks, tours, and building community.

## Tools we use



### Digital Fabrication

Tools that physicalize the digital world (3D printers, laser cutters, CNC).



### Digitization and 3D Scanning

Tools that digitize the real world (3D scanning, computer vision).



### Virtual and Augmented Reality

Hardware and software for virtual reality and augmented reality (HMD, touch, gesture, and multiscreen environments).



### Embedded Systems

Hardware and software for prototyping embedded systems and robotics.



# WHAT IS RTI?



**MakerLab**

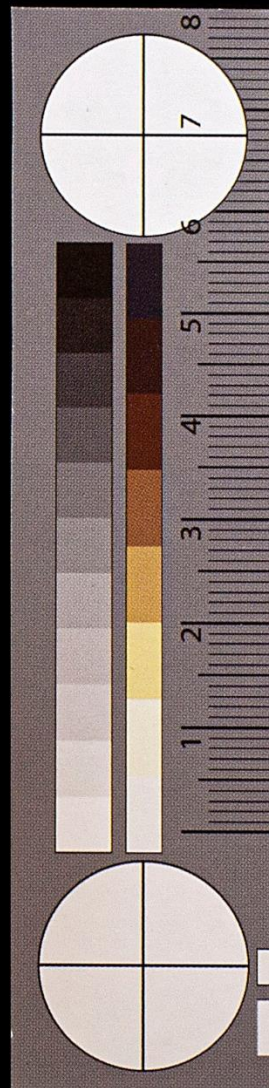


**AutomationLab**

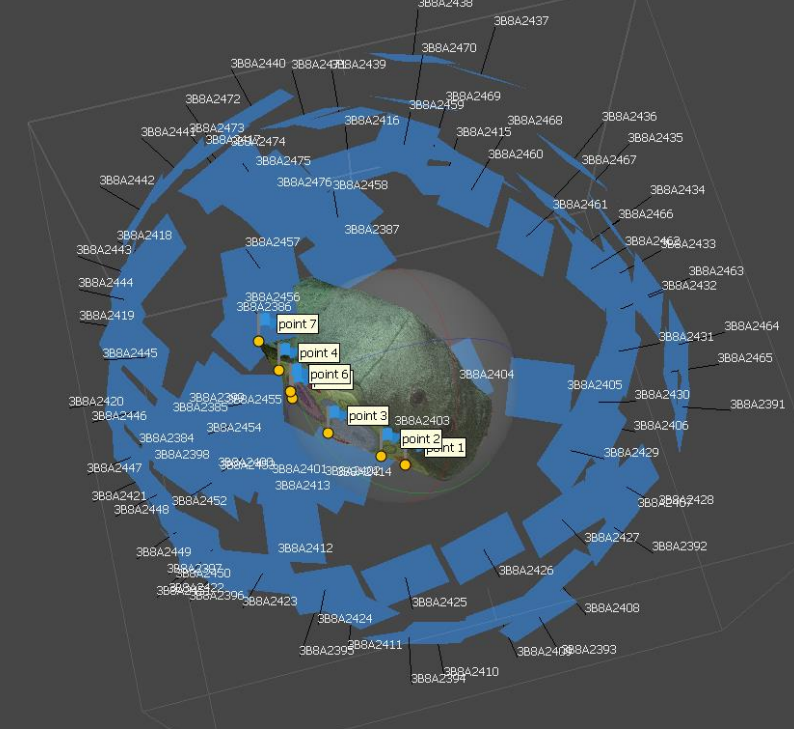
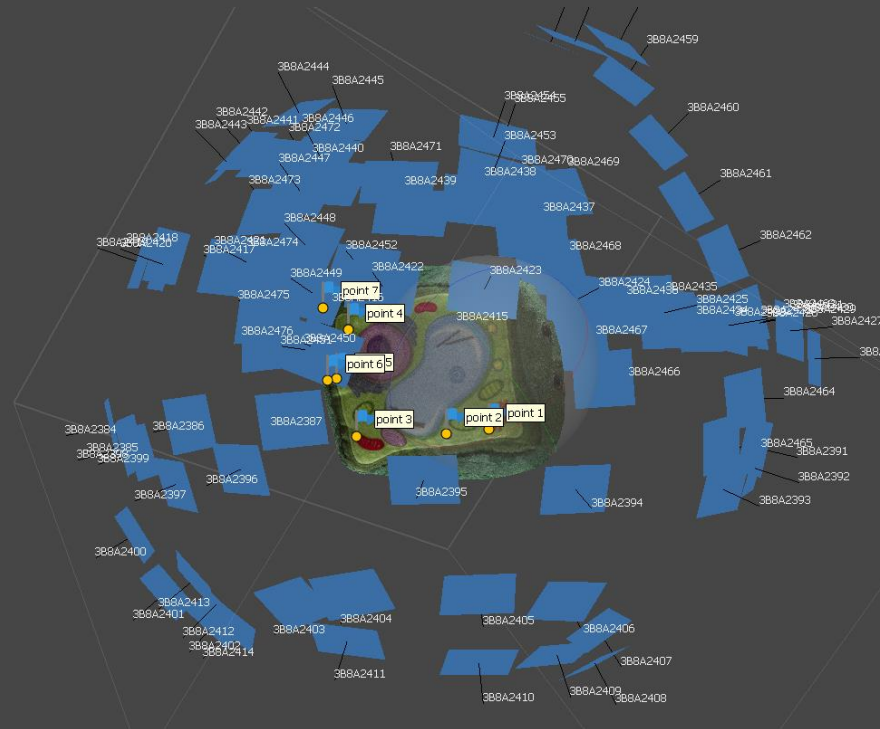
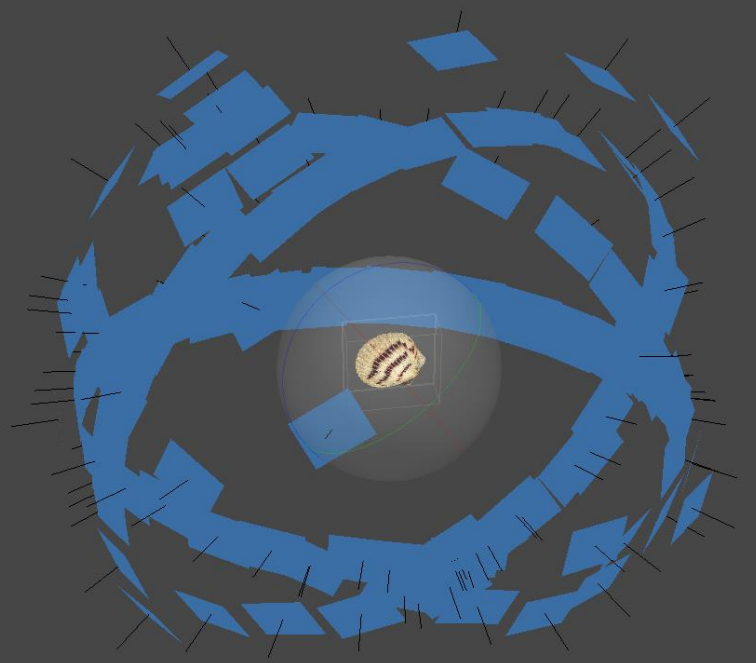
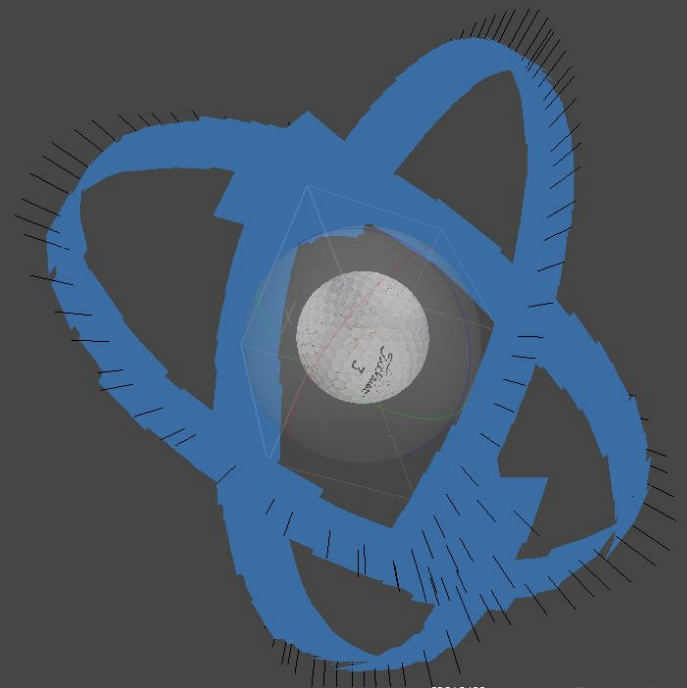
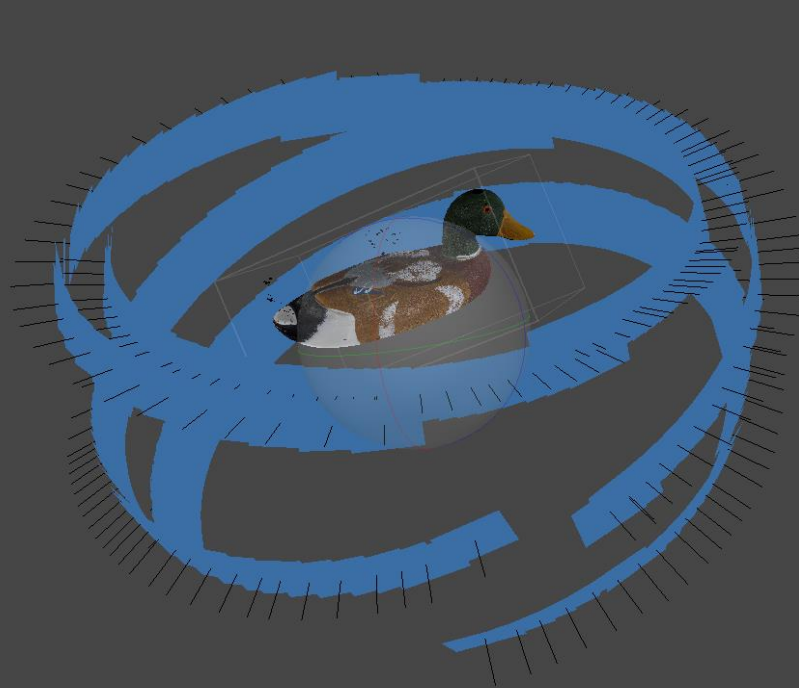
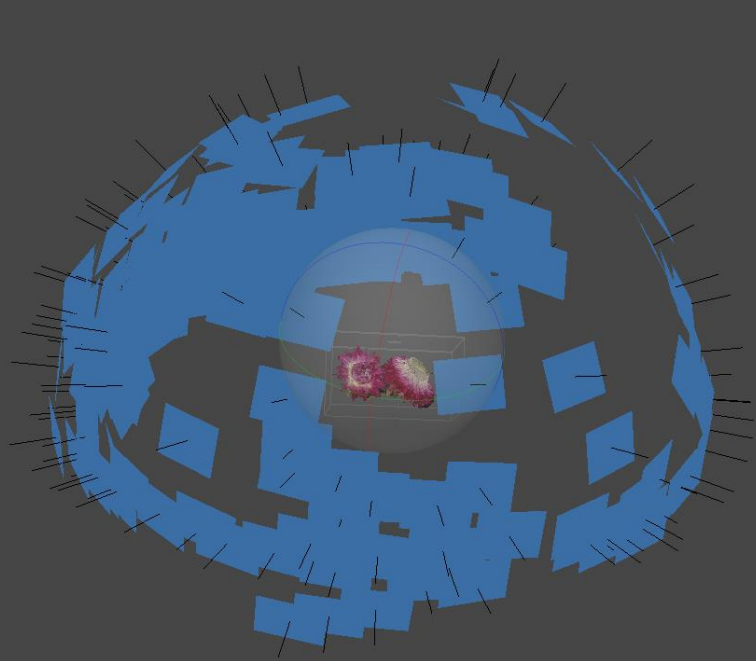


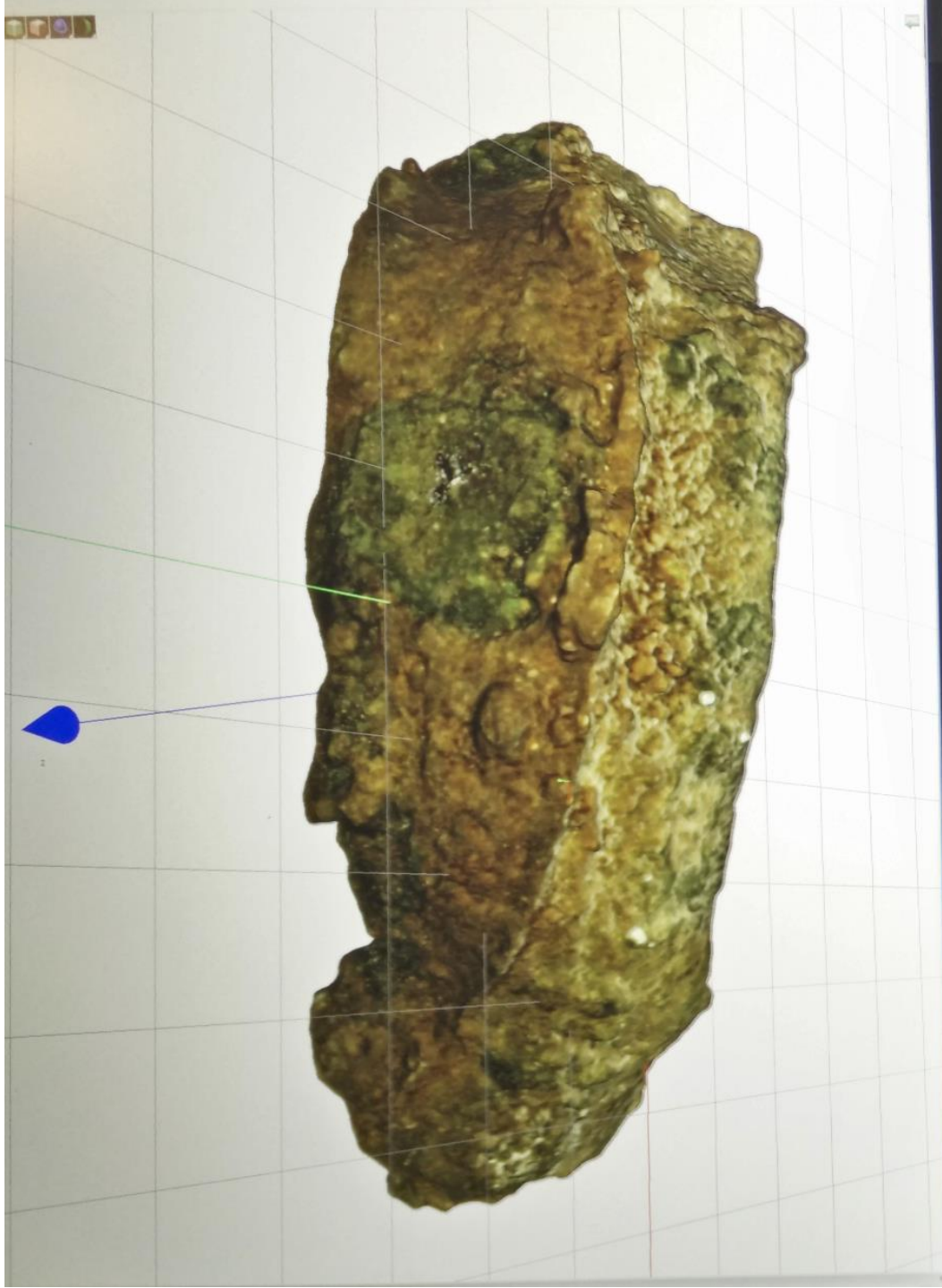
**DigitalScholarshipLab**



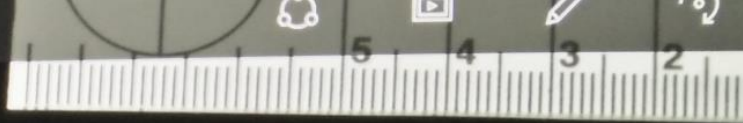








View all photos























Going to land...

©Mapbox ©OpenStreetMap Improve this map



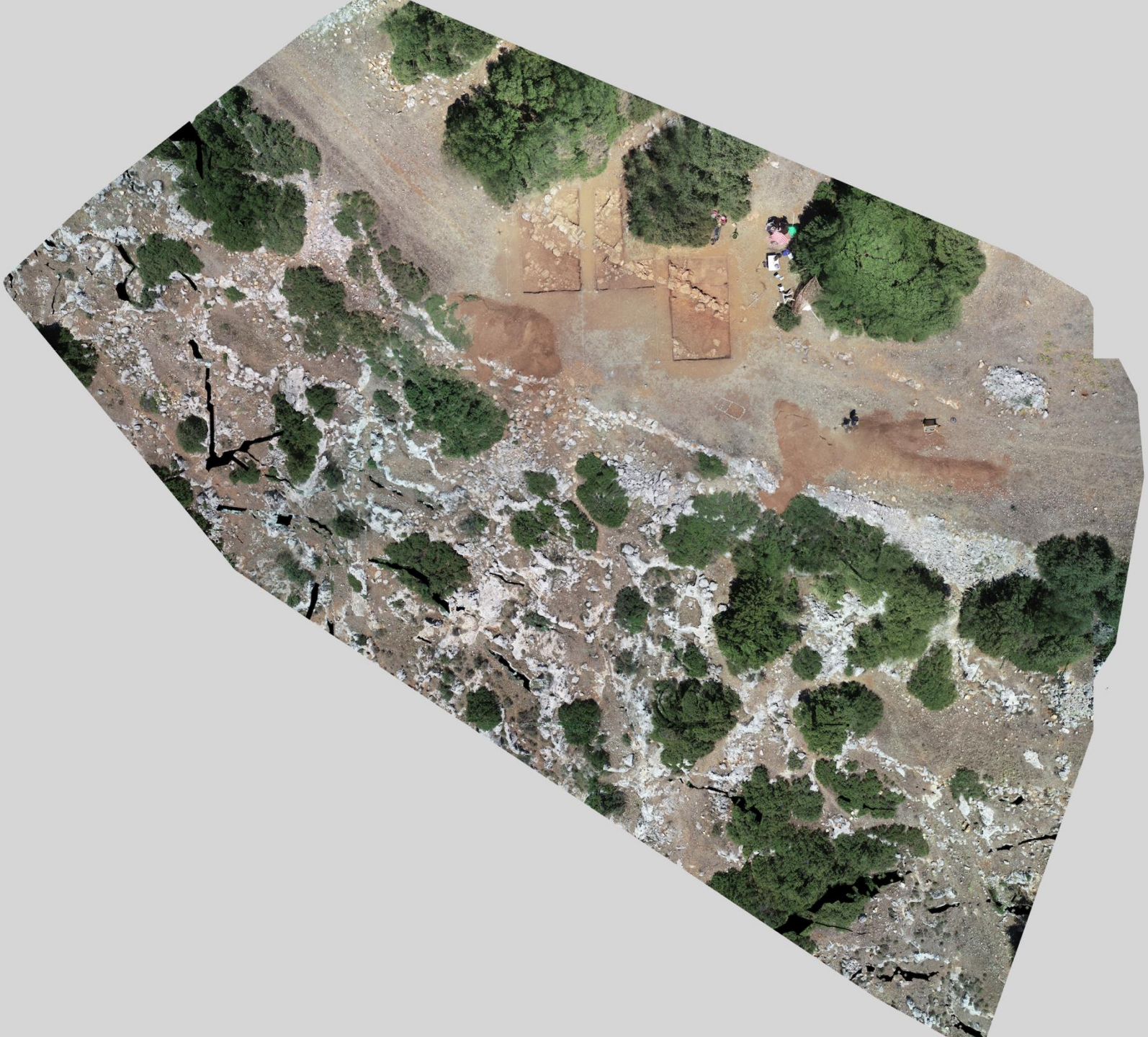
Phantom 4 Pro  
Phantom 4 Pro C...  
77%  
90%  
17  
16.02 GB  
Speed: 4.9 m/s  
Alt: 20.0 / 15.0 m  
N/A m away



53 x 36 m  
6 min : 32 s

PAUSE

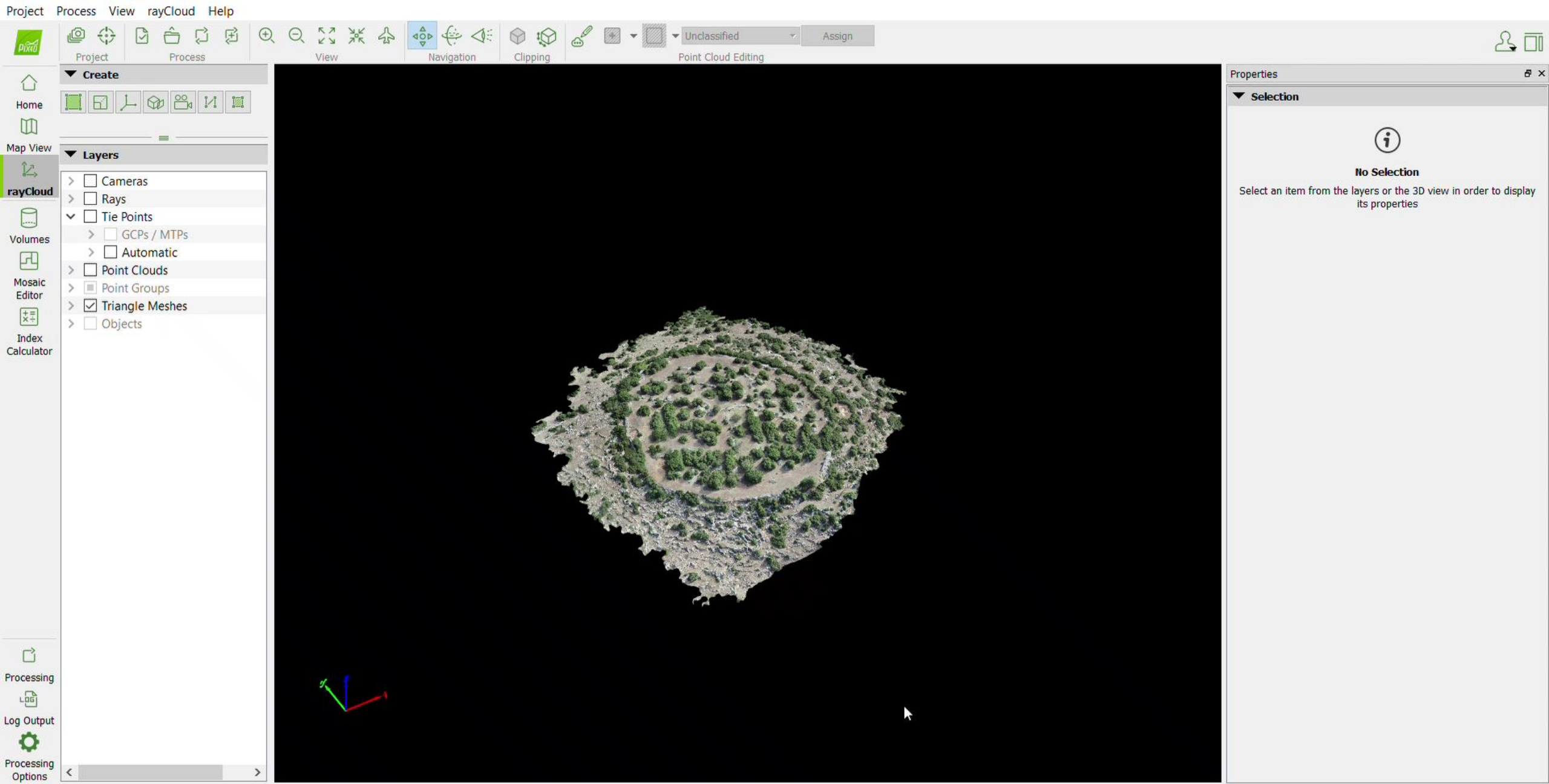






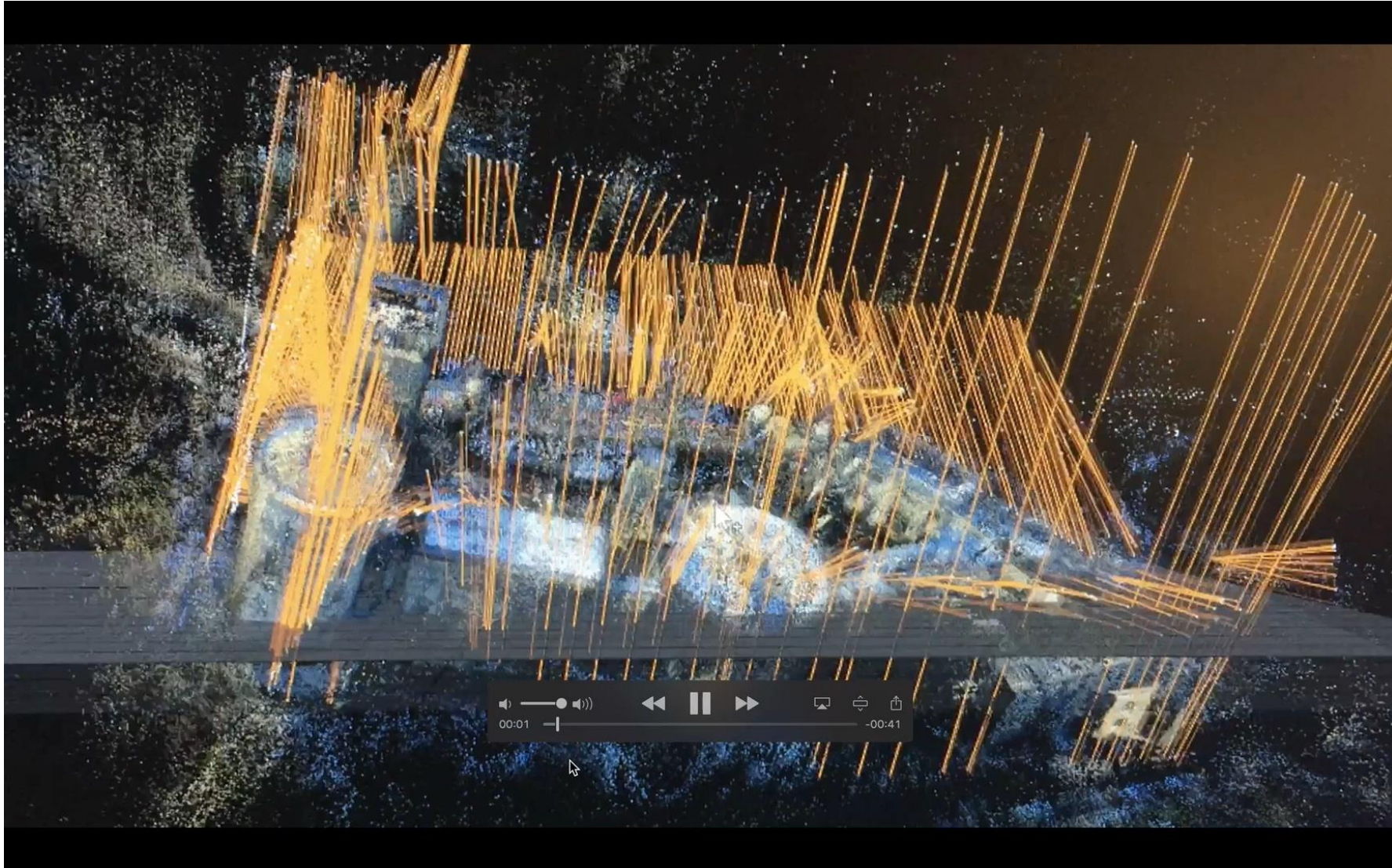




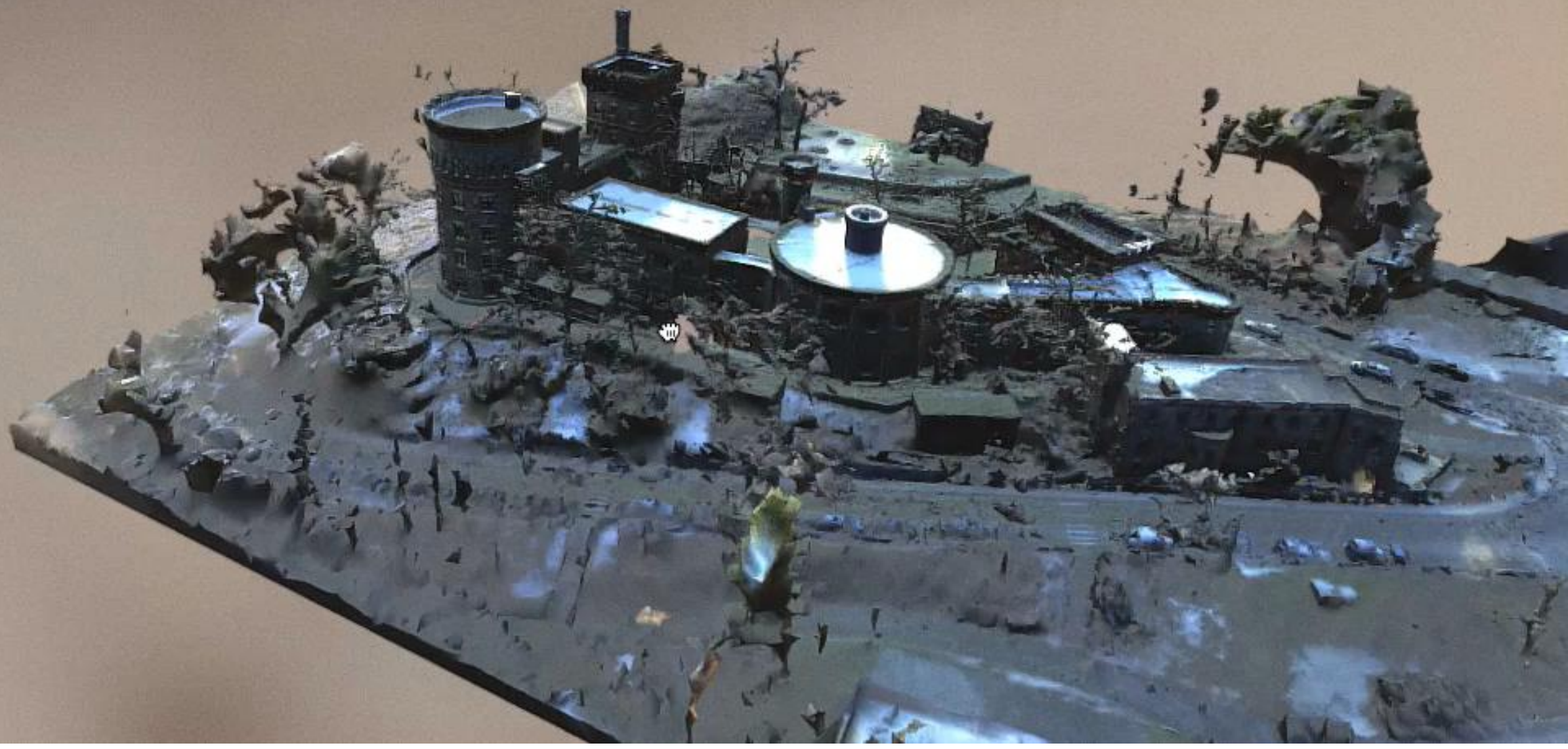




# CASTLE DATA – 1000+ PHOTOS ALIGNED

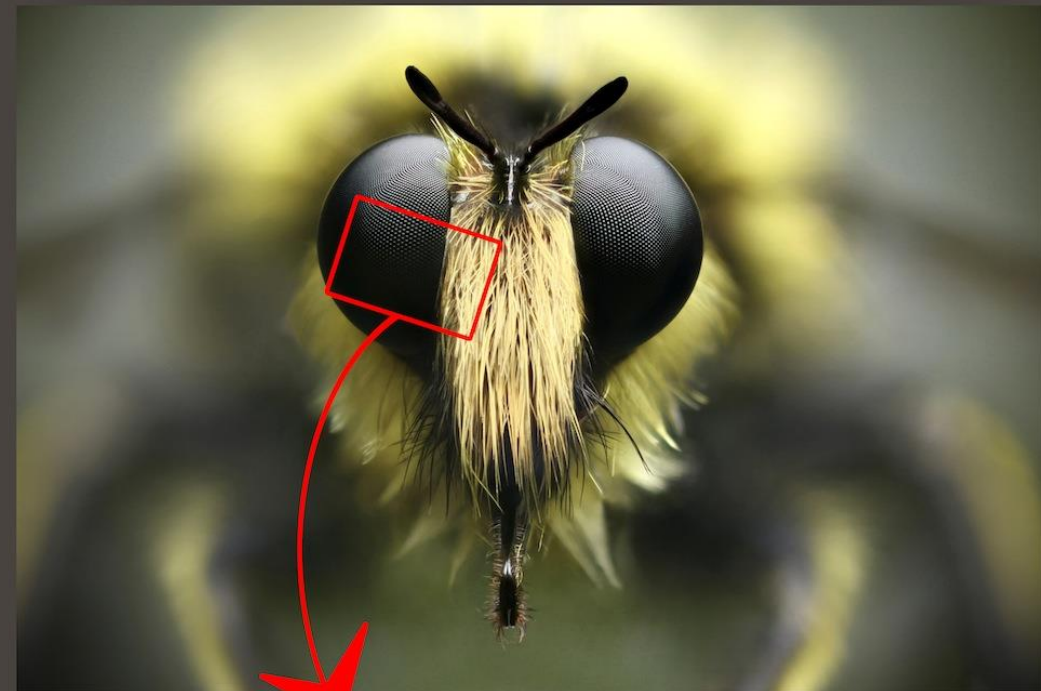
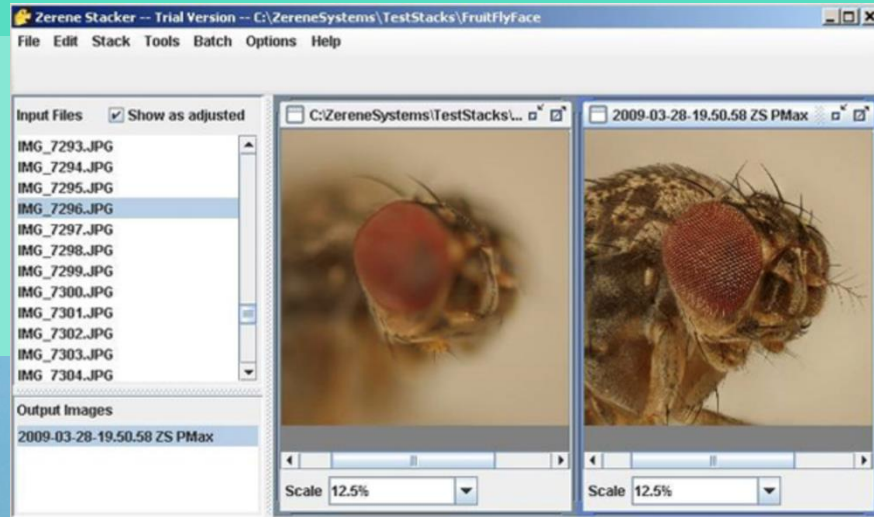




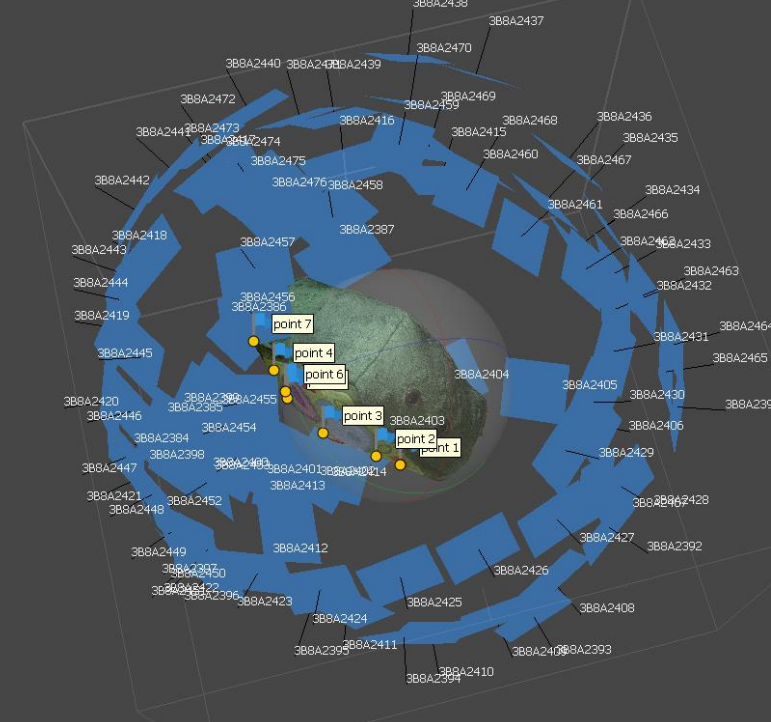
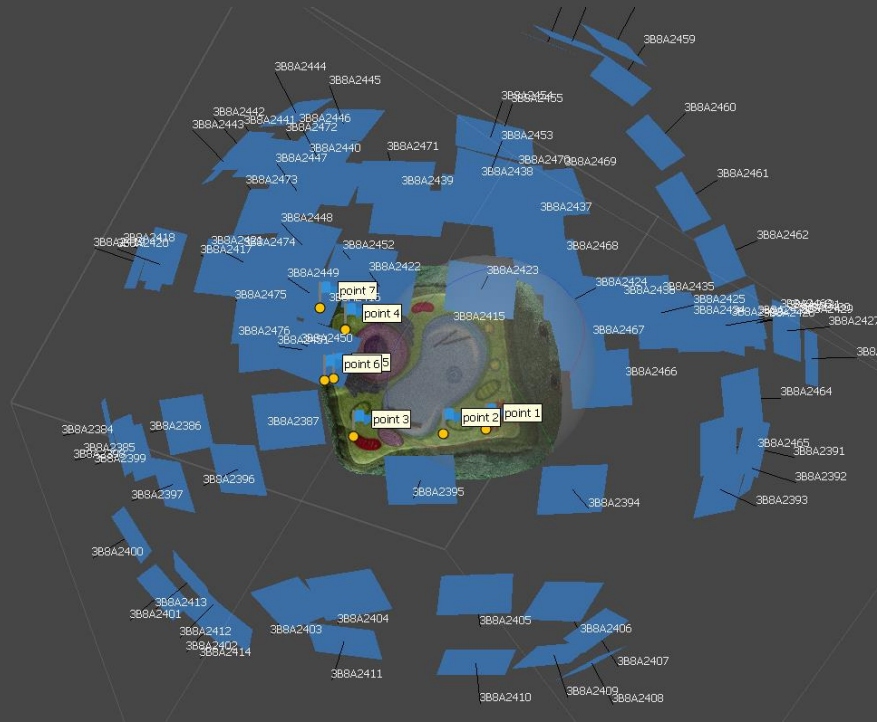
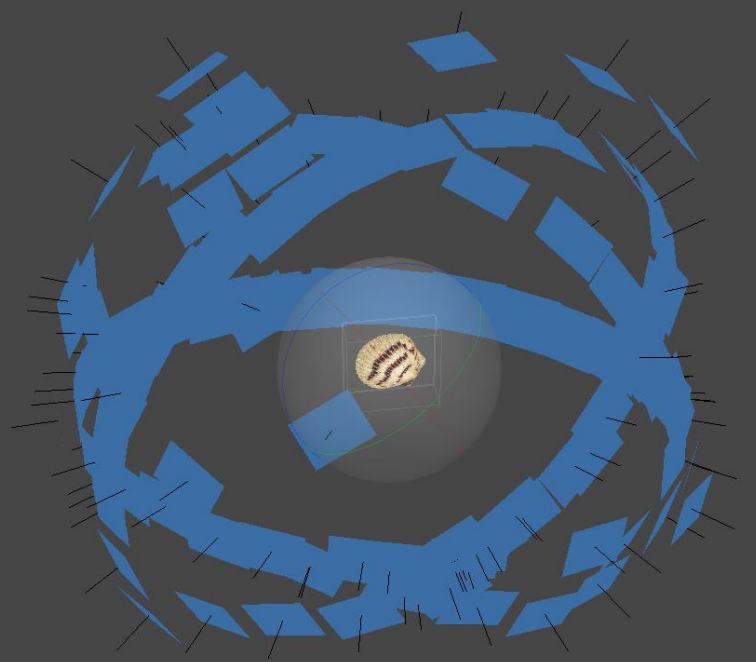
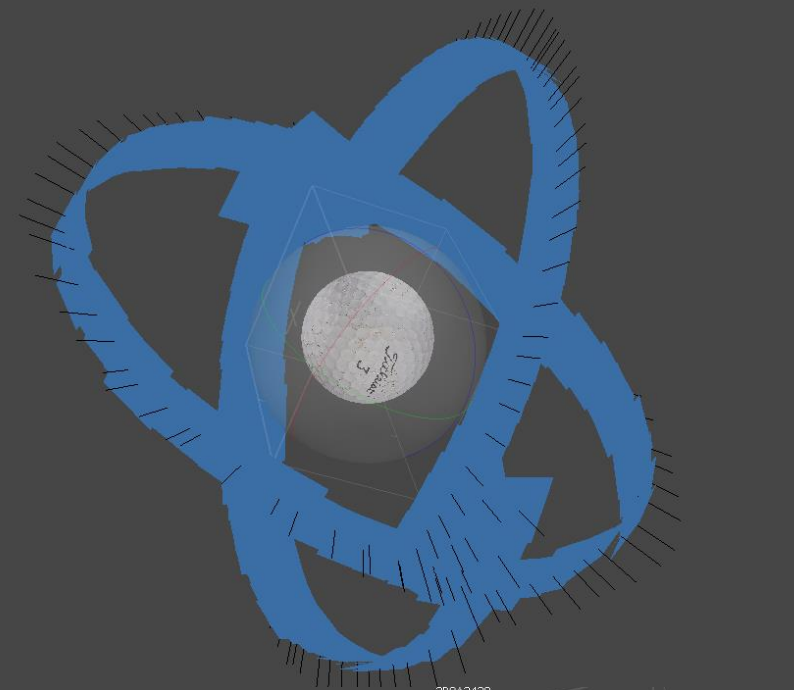
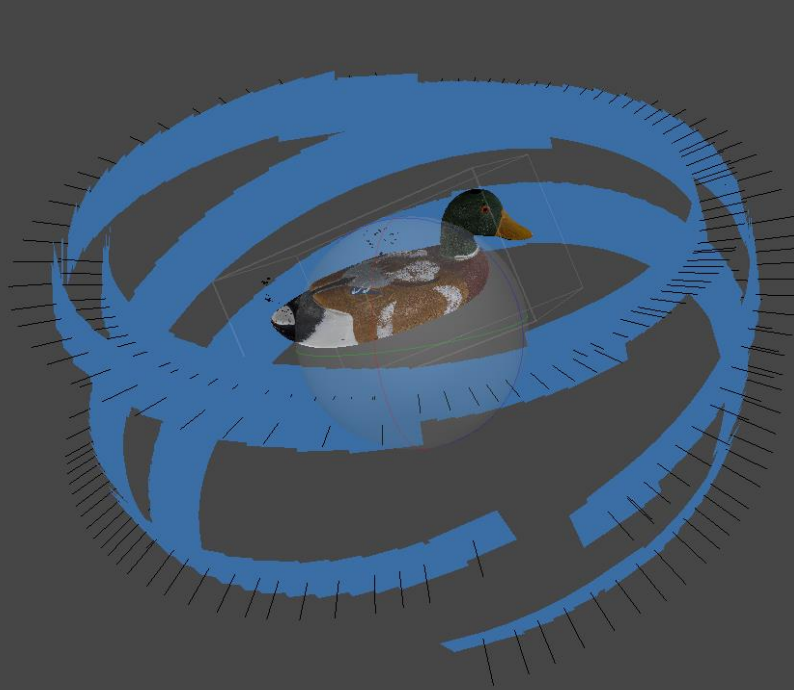
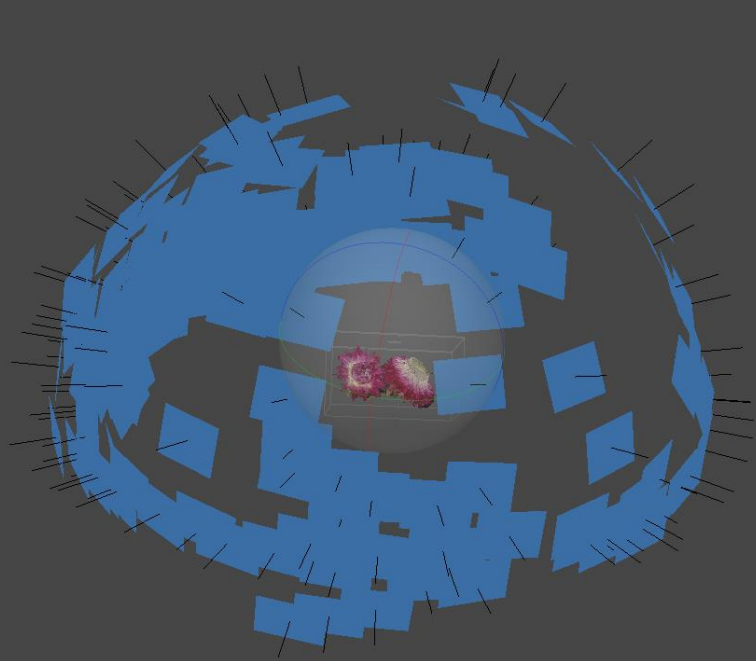




# EXTREME MACRO









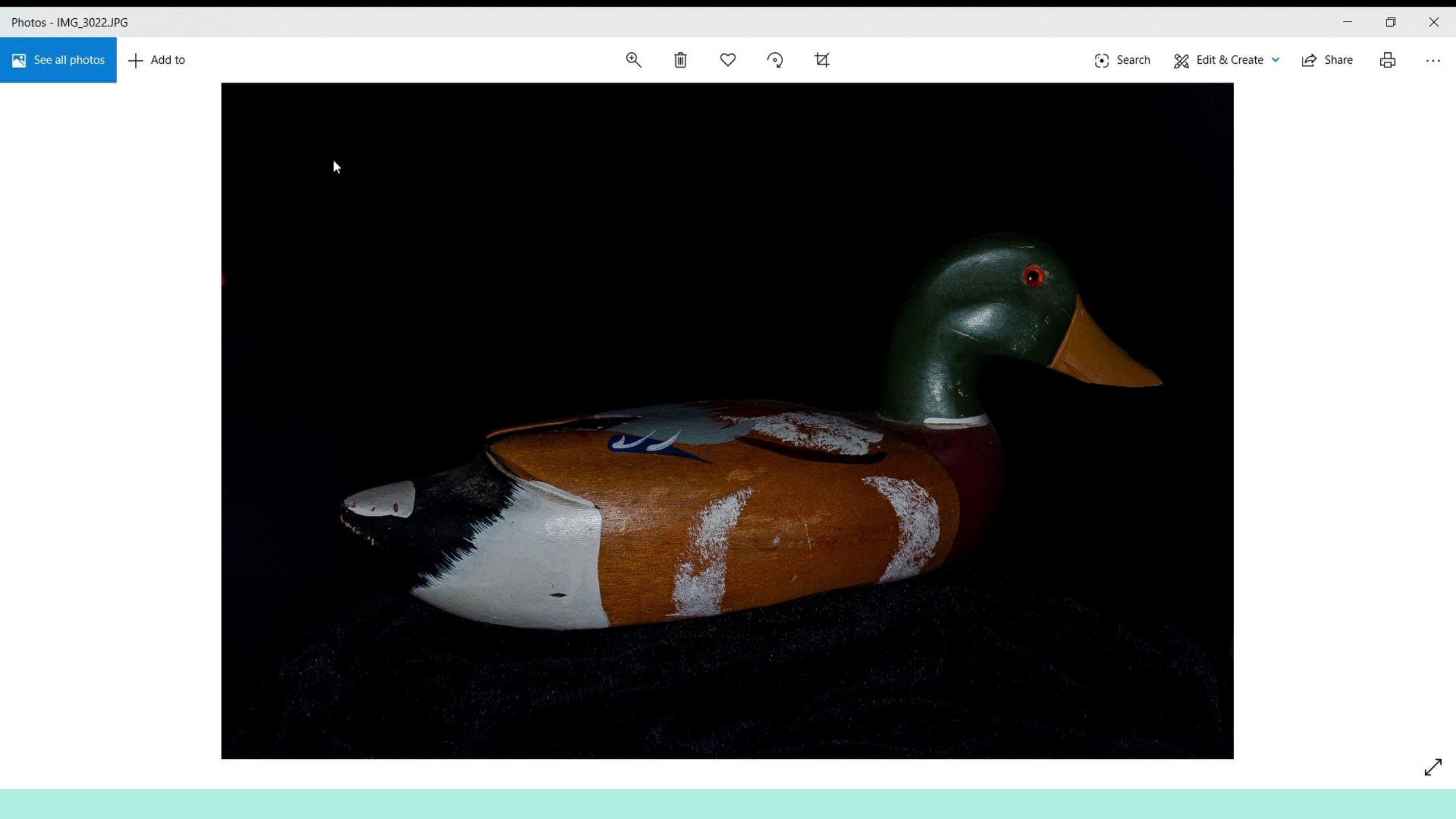




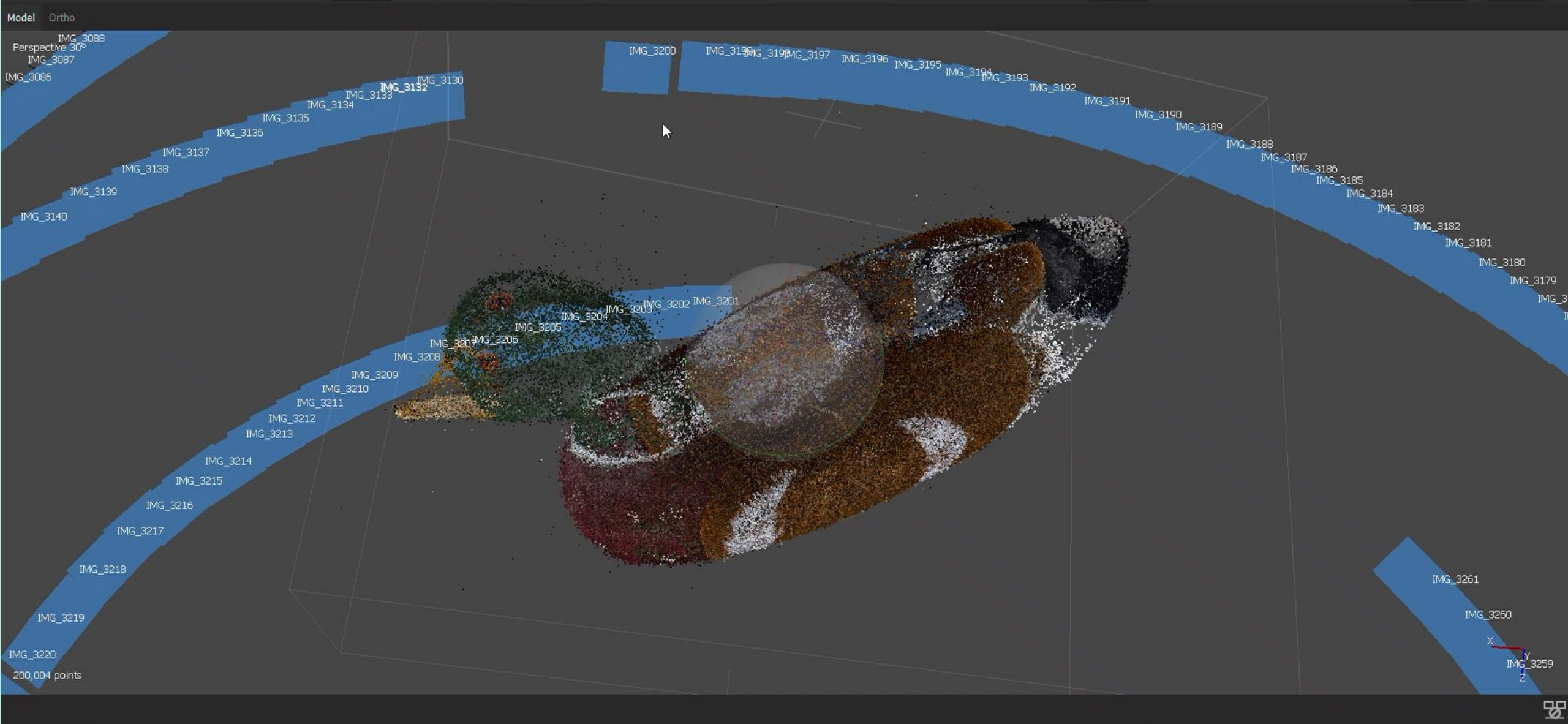
- Canon T4i
- 24mm lens
- F8
- 1/4 sec
- ISO 100
- 371 pics











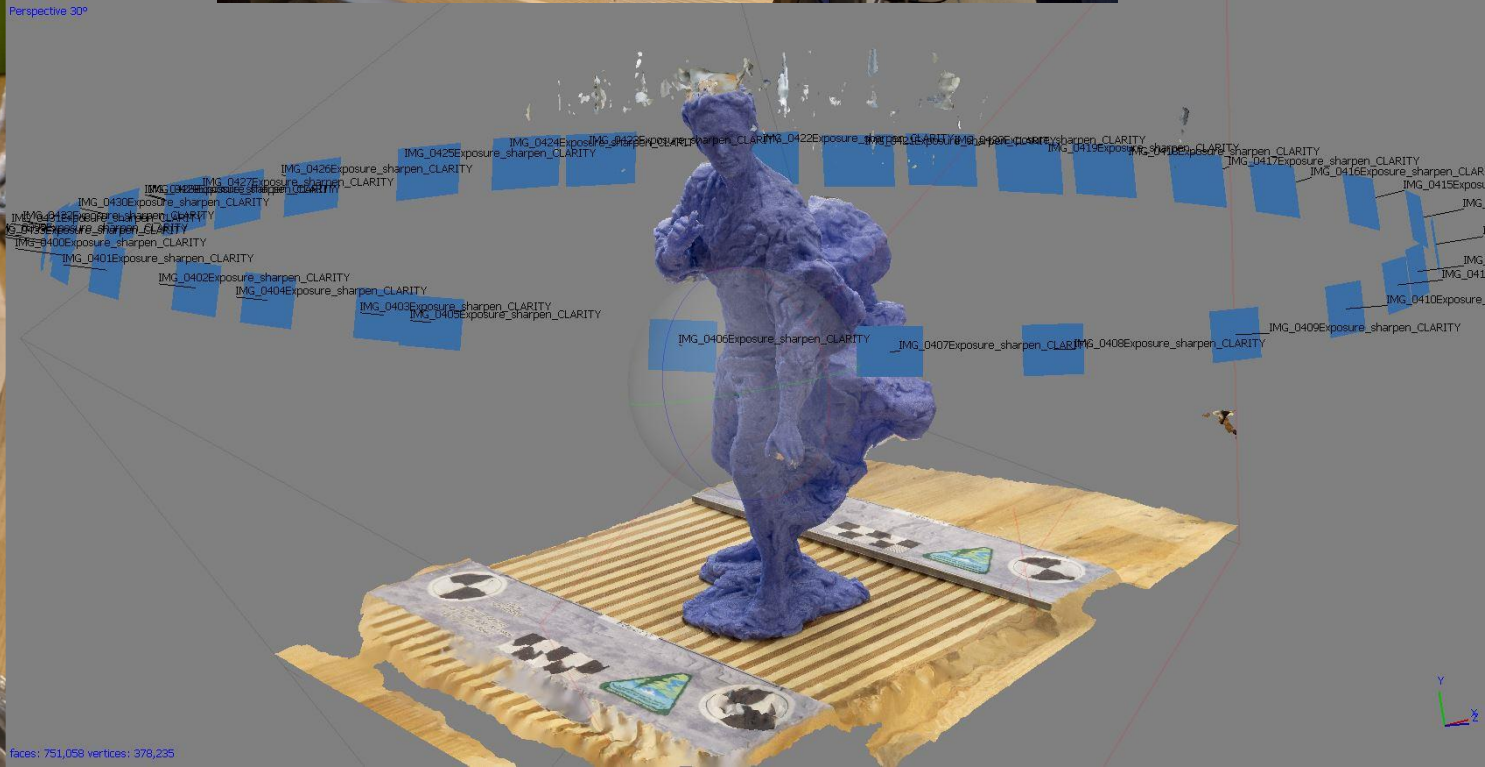


# The SCAPP bot





Perspective 30°

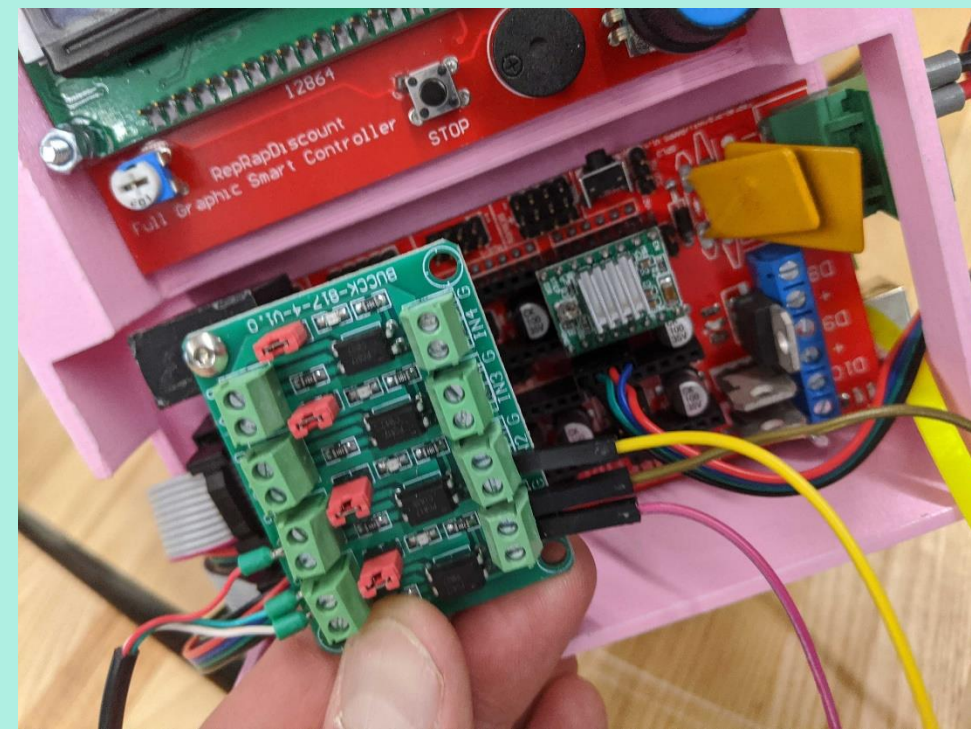
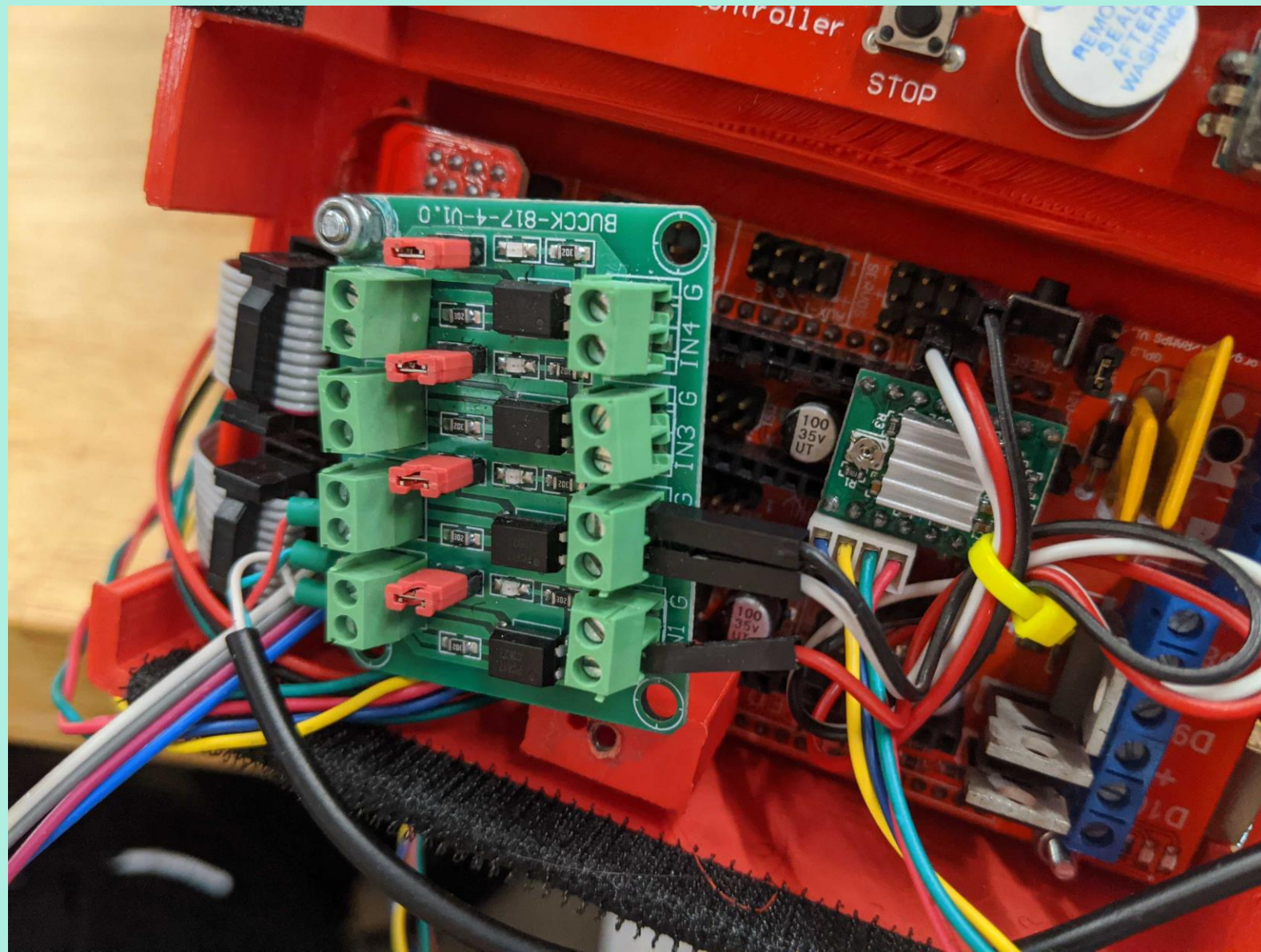


Faces: 751,058 vertices: 378,235

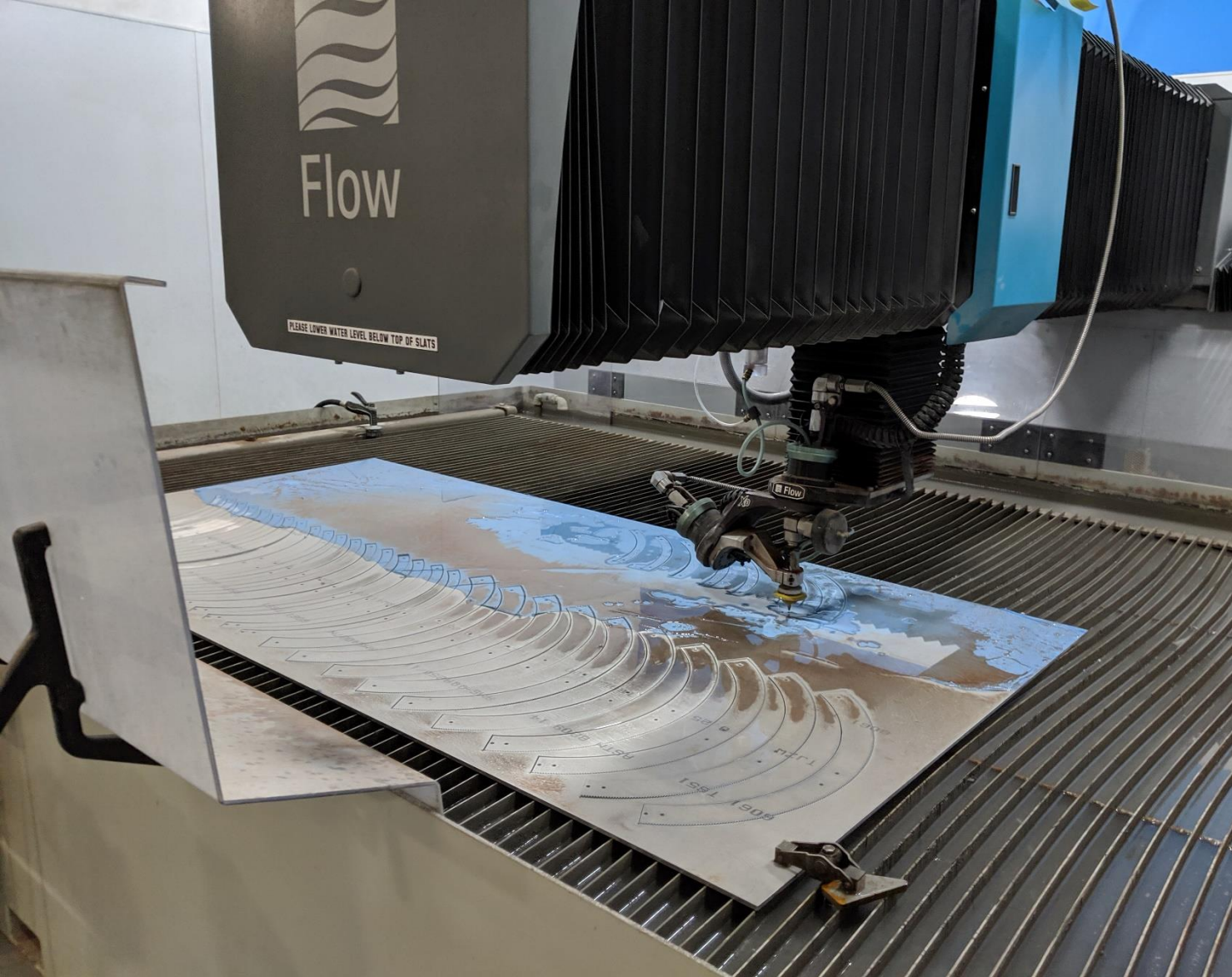














carriage\_stepper\_V2

Ian Roy

Part Stats

Print Time	5d 1h
Onyx	367.62 cm <sup>3</sup>
Carbon Fiber	258.47 cm <sup>3</sup>
Material Cost	857.08 USD
Final Part Mass	592.5g

This model is displayed at lower resolution to ensure performance.

Select one or more layers to edit

Materials

carriage\_stepper\_V2

Ian Roy

Part Stats

Print Time	2d 20h
Onyx	387.23 cm <sup>3</sup>
Carbon Fiber	14.31 cm <sup>3</sup>
Material Cost	134.12 USD
Final Part Mass	274.01g

This model is displayed at lower resolution to ensure performance.

Select one or more layers to edit

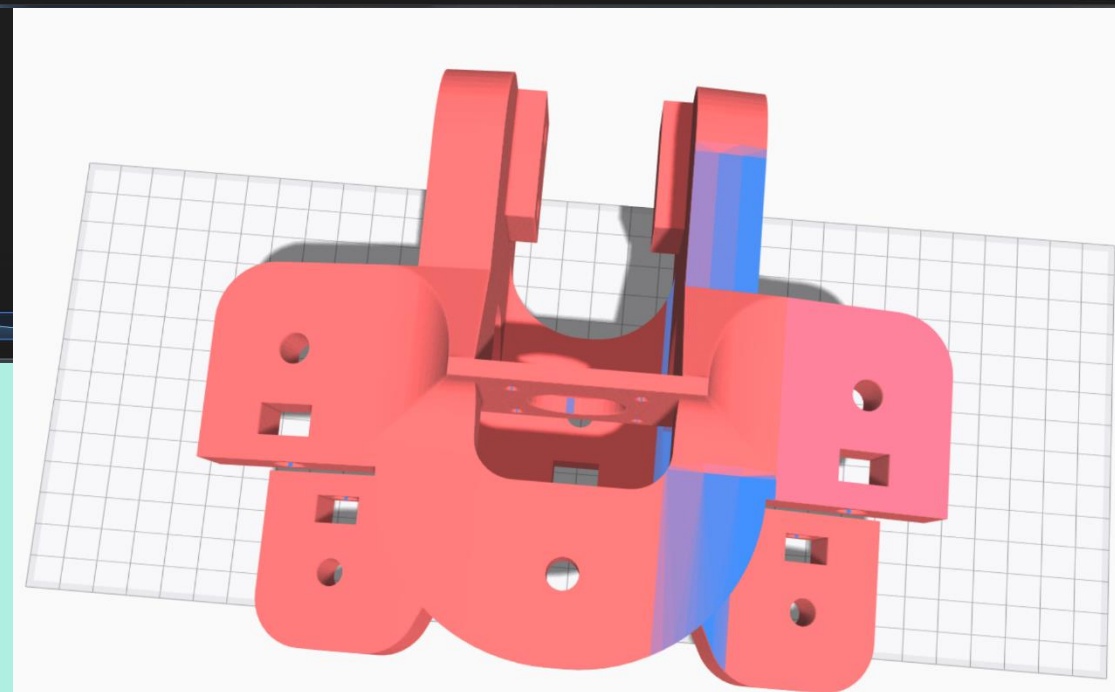
Materials

Revert

Save

Part View

Print



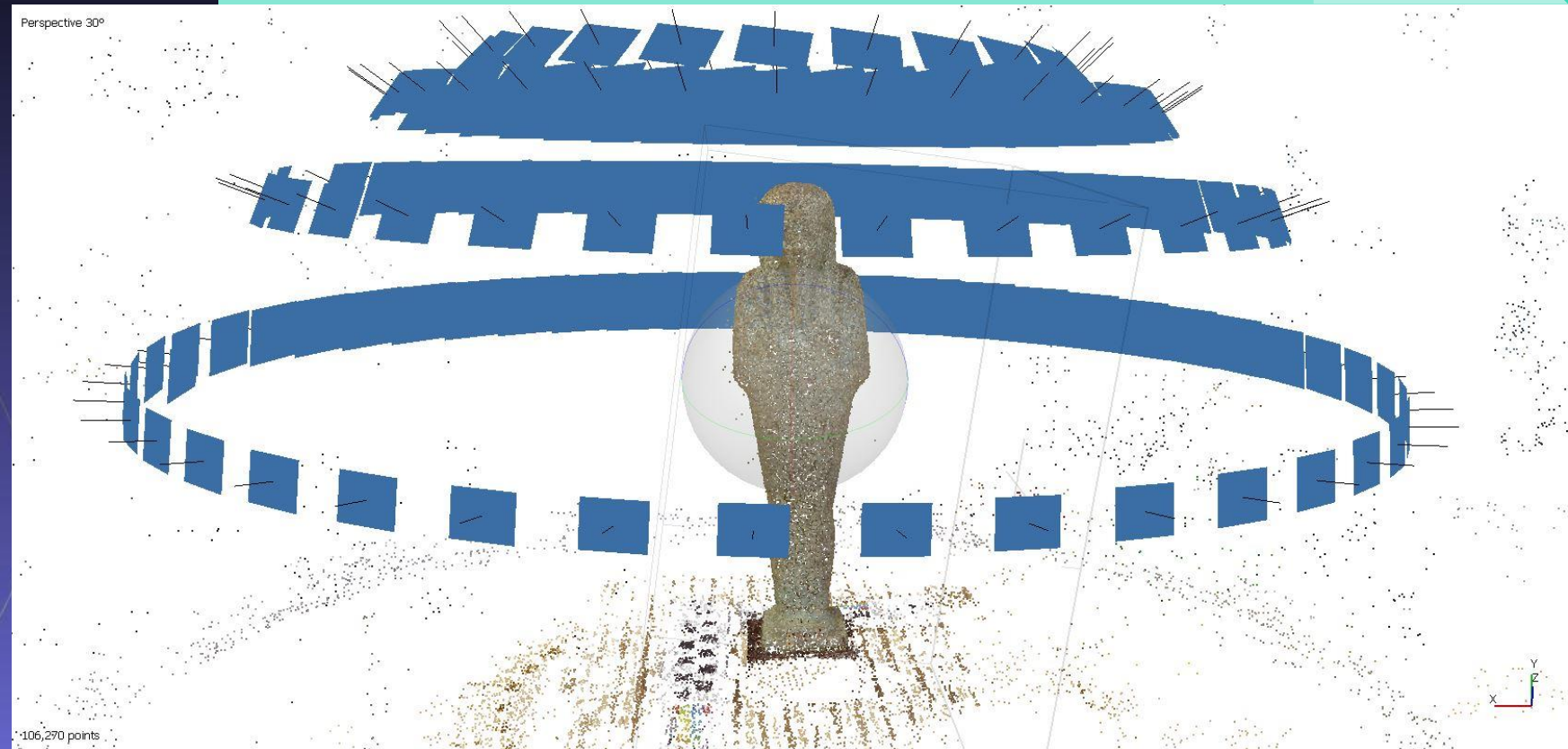








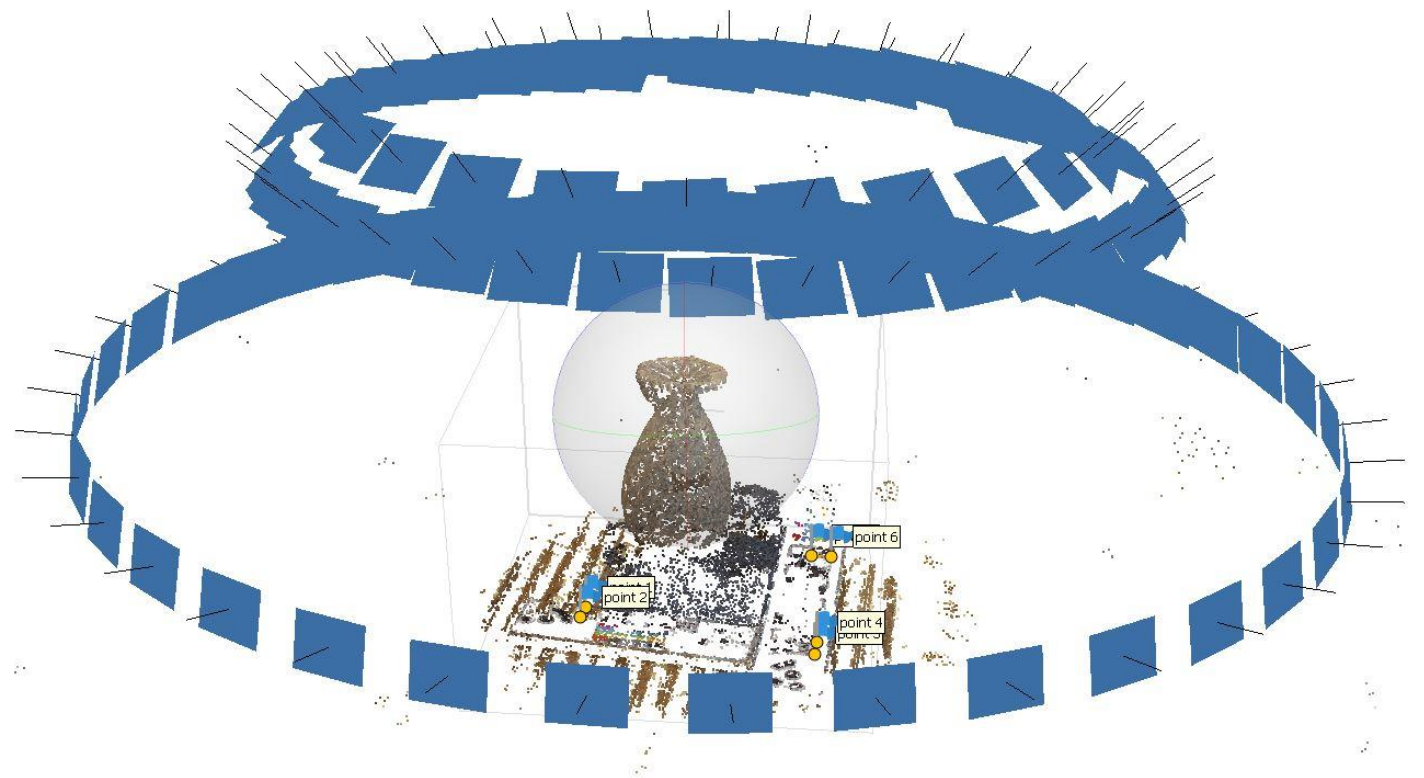
Mesh: CLARFigurine\_9-16-2019.obj  
Vertices: 285,297  
Faces: 567,939  
Selection: v: 0 f: 0  
VC FC WT







Perspective 30°



50,487 points

Mesh: MediumEverything\_OUTPUT.obj  
Vertices: 180,465  
Faces: 359,448  
Selection: v: 0 f: 0  
VC FC WT

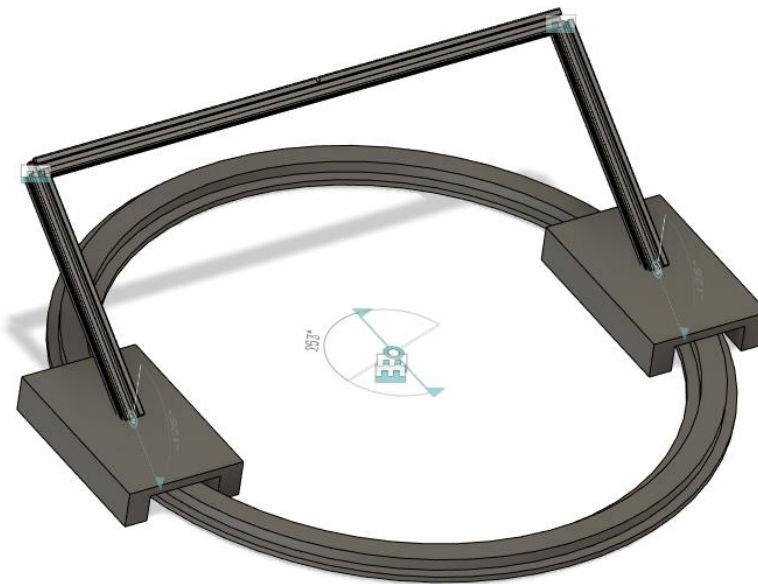
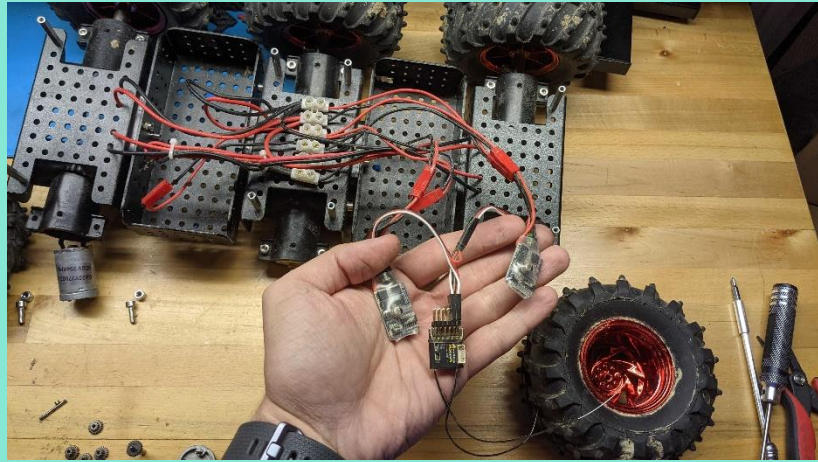














# MakerLab

## Brandeis

### Questions?



ianroy@brandeis.edu



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