2025-26 HIVE Summer Internship Project

Making the maybe oldest footprints from a hominin interactive available for researchers and tourists

Primary Academic Supervisor
A/Prof. Petra Helmholz

Project Background
The Trachilos footprints are possibly tetrapod footprints which show hominin-like characteristics from the late Miocene on the western Crete, close to the village of Trachilos, west of Kissamos, in the Chania Prefecture. The tracks were originally discovered by Gerard D. Gierliński in 2002. In 2012 Gierliński received permission from the Greek government to research the area, returning to Trachilos with other researchers to explore the tracks in detail. It looks like they may be from a hominin – a member of the human species after separation from the chimpanzee lineage. But the findings are highly controversial, suggesting human ancestors may have existed in Crete at the same time as they evolved in Africa.

Shortly after the research about the footprints was published, eight prints were chiselled out of the rock and stolen. To protect the footprints from damage, the prints are usually covered making it impossible for tourists to inspect. The site is a significant tourist spot for Kissamos.

In 2012, researchers used methods such as laser scans and 3D imaging of the footprints, and compared them to apes and bears as well as humans. In 2025, a team from Curtin University returned to the site to capture additional scans, 3D images and photo-mosaic of the site.

Project Description, Expected Outputs, Possible Stretch Goals
The project aims to make the footprints accessible for visitors and researchers interested in the topic.

The objectives are:
- To process captured 3D data to make them available in Sketchfab
- To process the data further developing an AR app to enable tourists to inspect the footprints while they are covered to prevent further damage

The 3D data were captured using the Artec Space Spider 2, which enables the creation of high-detail meshes. Those meshes should be created for the footprints discussed in the original publication by Gierliński in 2012.

Furthermore, lower resolution VectraH2 meshes were captured. Those meshes should be processed for all additional captured data in 2025.

A photomosaic using SLR cameras of the site should be created to provide context and location information of the Artec Spider 2 and VectraH2 meshes. Additionally, label information will be provided.

The data should be made accessible for researchers and interested people using Sketchfab and AR.

Links to background reading and any relevant recent work in the field
https://www.sciencedirect.com/science/article/pii/S001678781730113X?via%3Dihub

https://www.sciencedirect.com/science/article/abs/pii/S0262407917317475?via%3Dihub

https://kolymbaricourier.com/2025/05/27/new-light-on-ancient-footprints-in-kissamos/#:~:text=A%20team%20of%20scientists%20from%20Curtin%20University,to%20make%20a%20new%20study%20of%20the

What type of visualisation will the student develop or produce?
3D models based on the data captured in 2025.

VR and AR to make the data accessible.

How will the visualisation contribute to your research outcomes?
The Trachilos footprints may be from a hominin – a member of the human species. The findings are highly controversial, suggesting human ancestors may have existed in Crete at the same time as they evolved in Africa. Making the data easily available for researchers contributes to the scientific significance of the footprints.

If the project is successful, where would you consider publishing the results?
As the focus of the project is on VR, a conference proceeding, e.g. of ISPRS WG IV/5 - Extended Reality and Visual Analytics. The target conference is GSW 2027.

Draft Project Timeline:

Week 1

Nov 10 - Full day HIVE induction
Nov 11 - Area and Project Induction with Primary supervisor
Develop project plan with HIVE and academic team
Literature and relevant project review

Getting familiar with the project and the cameras used

Week 2

Processing of Artec images

Week 3

Processing of Vectra H2 images

Week 4

Processing of photo-mosaic

Week 5

Making data available on sketchfab

Week 6

Preparing data for VR/AR

Week 7

Implementation of VR/AR

Week 8

Implementation of VR/AR

Week 9

Focus on report writing and presentation preparation

Writing report, presentation prep, final steps of the project

Week 10

Focus on report writing and presentation preparation
30th Jan Final Presentation Showcase Day and final report due

Writing report, presentation, final steps of the project

Student Experience and Supervision:

How often will you meet with the student over the 10-week period?

Minimum once a week. Ad-hoc as needed.

Your work desk location and the location of student desk

Building 207. PhotoLab 2nd floor.

Student Attributes:

Please indicate any preference for student's academic discipline or field of study

Knowledge in AR/VR is essential.

Knowledge in photogrammetry and spatial sciences is desirable.

What competencies are required to start this project

Beginner - 3D modelling software (e.g. Blender, 3ds Max)
Intermediate - Unity 2D/3D Artistry (assets, lighting, cameras, materials implementation)
Beginner - Unity Programming (C# coding, animation syntax, debugging, problem-solving)
Advanced - Unity Virtual Reality Development (rendering pipelines, scene content design, interaction)
Beginner - Data structures, analytics, statistical modelling

Do you have any other student attributes you think are important to the project?

NA