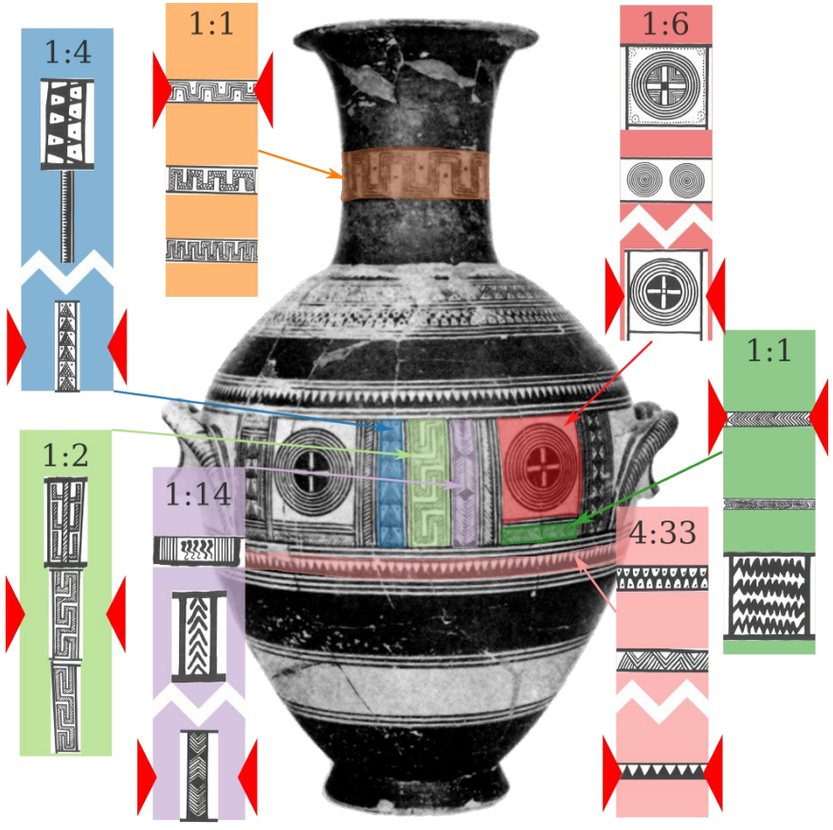
2026-T1 Recognition and Classification of Geometric Patterns on Ancient Greek Pottery

Bachelor Thesis
Master Thesis
Project

Independent from culture or historical period, pottery represents by far the largest group of excavated material. As such it is one of the most essential aids, to allow domain researchers insights into ancient trade routes and establish relations between ancient civilizations. A prime example is the first artistic phase of Greek pottery art – the aptly-called "Geometric" period, lasting from 900 to 700 BCE, dominated by vase paintings comprised of geometric shapes like spirals, circles, triangles, swastikas, zigzags, meanders and the like.
Due to this structured appearance, the vase paintings on Geometric pottery are an optimal candidate for automatic recognition and classification approaches. While the amount of available labeled training data is limited, we reason that it can be generated synthetically in a generative manner.
Based on such synthetic training data, a classifier should be trained and evaluated on actual excavated pottery objects. Additional challenges include the segmentation of surfaces into structuring elements such as registers, pattern sequences, and distinguishable individual patterns.



Annotated and classified Geometric patterns on a belly-handled amphora.
Source: [1].

[1]Lengauer, S., Houska, P., Preiner, R., Trinkl, E., Karl, S., Sipiran, I., Bustos, B., Schreck, T., "Interactive annotation of geometric ornamentation on painted pottery assisted by deep learning," *it - Information Technology*, vol. 64, no. 6, pp. 217–231, 2022. https://doi.org/10.1515/itit-2022-0007
Contact: s.lengauer@tugraz.at, Version: 1.0, 2026-03-25

INSTITUTE OF VISUAL COMPUTING