

## MATHEMATICAL TECHNIQUES FOR FRAGMENT ANALYSIS AND RECOGNITION

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Archaeological excavations return artefacts that often are damaged with parts that are fragmented into more pieces or missing. The comparison of fragments cannot simply be based on the geometric shape, as material, colour, decorations or features, etc. are important factors that concur with this concept [1]. The decorative elements present on an artefact, the thickness of the fragment and the marks left on the object by the tools used to shape it are indicators of the origin and production techniques used and an important element in its cataloguing.

In this talk, we present techniques developed at CNR-IMATI to quantitatively support the analysis, classification and recognition of the fragments found in an archaeological excavation [2, 3]. Our methods range from the identification of geometric features peculiar to a group of objects to the recognition of specific configurations or structures, and the identification and classification of parts with a particular decoration or feature.

### References

- [1] E. Moscoso Thompson, S. Biasotti, M. Spagnuolo, *Context-adaptive navigation of 3D model collections*, *Computers & Graphics*, 79 (2019), 1–13.
- [2] C. Romanengo, S. Biasotti, B. Falcidieno, *Recognising decorations in archaeological finds through the analysis of characteristic curves on 3D models*, *Pattern Recognition Letters*, 131 (2020), 405–412.
- [3] E. Moscoso Thompson, S. Biasotti, *Description and retrieval of geometric patterns on surface meshes using an edge-based LBP approach*, *Pattern Recognition*, 82 (2018), 1–15.