03   EXTRACTING GEOMETRIC FEATURES AND 3D REPRESENTATIONS OF POTTERY FROM PAPER CATALOGUES DRAWINGS

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The classification of pottery sherds is a complex procedure. The experts are supported by a set of reference catalogues that are used to assign each sherd to a class.
The paper catalogues provide a structured (while not always coherent) description of each class, that includes also a visual depiction that essentially describes the profiles of the elements of the class, and possibly some examples of the decorations (if available).
One of the goals of the Archaide EU project is to digitize a set of catalogues associated to a few typologies of pottery, so that a coherent digital description of their shape can be used not only for archival purposes, but also to help the development automatic systems that support the archaeologists with their work on-the-field.
We present the first results of a method that automatically analyzes the drawing of a class, digitized from a paper catalogue. The method is able to extract a set of descriptive geometric features (profiles, key-points, scale) and save them in an SVG file with a simple but exhaustive format. The geometric features will be the guiding data for an automatic system, able to extract information from a single image of a sherd, and use it to provide a list of possible candidates for its classification.
Additionally, the extracted features are used to automatically produce a 3D representation of each class. The 3D models are not only a valuable source for the description, study and comparison of the different classes. They will also be used to automatically create a massive amount of "synthetic sherds", that will be used (together with real data) to train and test the classification system.
The proposed approach has been applied on three typologies of pottery, but it aims at being a possible solution for a number of archaeology related artifacts.