

Feature Extraction for eMaintenance of Runestones*

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ABSTRACT

Runestones are popularly associated with the Scandinavian culture of the Viking period (750-1050). More than 4000 Swedish runic inscriptions are still preserved and form an important part of the Swedish heritage as well as the main source of study of the Swedish language before the Middle ages. Runestones were often erected at ancient crossroads as public memorials for the dead or commemoration of important events. Most of the preserved runestones are still in their original place. This means that runestones are often disperse and occasionally at remote locations far from roads.

The maintenance of runestones is governed by the standard SS-EN 15898: 2011, which includes definitions for care, conservation, maintenance, cleaning, restoration and reconstruction. Preventive measures avoid growth which may damage permanently the inscriptions such as moss, lichen and algae. Therefore, contaminants such as soil, dust, leaves or bird droppings must be cleaned regularly. The surroundings of the stone must be maintained to remove water ponds or trees and shrubs which grow too close. Maintenance plans include

corrective and restoration measures such as cleaning with adequate chemicals and painting the carvings.

The vision in this paper is to boost digitalization of the Swedish runestones by crowdsourcing information (such as images) through a social network app. Such information would allow maintenance contractors to receive updated images of runestones and their surroundings in order to plan maintenance actions.

The acquisition of image datasets will allow the training of Artificial Intelligences to e.g.: i) prescribe maintenance actions (e.g. repainting of the carvings), ii) enhance the visibility of degraded runestones through Augmented Reality, iii) use Extended Reality to create a virtual reconstruction of fragmented runestones.

Within the context of this vision, this paper focuses on the exploration of computer vision algorithms to extract features from runestone images such as the pattern of their carvings.



* Extended Abstract