

# Characterization of cracks in adobe historical buildings using image processing techniques

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## ABSTRACT

Cracks are one of the most important structural pathologies in historical buildings, due to the risk they represent to the structural integrity. The methodologies commonly used to detect cracks are based on visual inspections or in intrusive techniques that involve removing external layers. The main objective of this study is to develop a semi automatic and non destructive tool that helps the user to analyze the position and growth of the cracks in adobe within a monitoring test. The tool is based on image processing to plot a curve of the crack area over time. The images are acquired with a camera with automated processes and without intrusive mechanisms for the structure. As a case of study this research uses cubes made with adobe submit to the work of a compression machine. This research resulted in approximately 95% accuracy of characterization with respect to manual measurements. Also, it was demonstrated that the tool provided by this research allows a great primary knowledge about the growth of a crack without taking much time from the user. Therefore, it could be used as a supporting tool to evaluate different aspects in the behavior of cracks in adobe.

Key words: cracks monitoring, image processing, adobe.