

# Cracks Detection of Ancient Objects using Neural Network

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**Abstract:** Preserving and maintaining the structural integrity of ancient architectural features is of crucial importance for cultural heritage conservation. Over time, these historical sites often acquire fissures and structural problems, offering considerable obstacles for restoration and protection initiatives. In this paper, we offer a novel strategy to solve the essential issue of crack detection in historic sites by employing Deep Convolutional Neural Networks (CNNs). To evaluate the model's performance, we conducted trials on a wide range of photos documenting ancient places from throughout the world. The application of deep CNNs in fracture detection for ancient places promises to be a valuable tool for cultural preservation, enabling more efficient and preventive maintenance measures.

**Keywords:** Ancient Places, Deep Convolutional Neural Networks, Cultural Heritage, Structural Integrity, Image Analysis, Historical Landmarks, Structural Monitoring, Real-time Alerts

## REFERENCES

- [1] Historical-crack18-19: A dataset of annotated images for non-invasive surface crack detection in historical buildings Esraa Elhariri, Nashwa El-Bendary, Shereen A. Taiea,
- [2] Automatic crack classification and segmentation on masonry surfaces using convolutional neural networks and transfer learning Dimitris Dais, Ihsan Engin Bal, Eleni Smyrou, Vasilis Sarhosis
- [3] DeepCrack: Learning Hierarchical Convolutional Features for Crack Detection Qin Zou, Member, IEEE, Zheng Zhang, Qingquan Li, Xianbiao Qi, Qian Wang, Member, IEEE, and Song Wang, Senior Member, IEEE.
- [4] CrackNet: A Convolutional Neural Network for Automatic Crack Detection in Railway Tracks Yadav, R., Siddiqui, M. K., & Ravi, V.
- [5] Crack Detection in Masonry Structures Using Convolutional Neural Networks Barazzetti, L., Banfi, F., Brumana, R., Previtali, M., & Roncoroni, F.