

ABSTRACT

The rapid development of artificial intelligence technology has not only opened many opportunities in various fields, but also brought new challenges, especially those concerning digital image manipulation or what is known as deepfake. This technology can produce a fake image or video with high precision using the help of GANs (Generative Adversarial Networks) which can cause massive concerns in society, especially those related to digital security and privacy as well as the dissemination of hoax news or content that is easily misused by certain parties. Accurate classification methods for real and deepfake facial images are urgently needed to address this problem. Therefore, this research aims to develop a classification model for real and deepfake facial images using transfer learning with the Xception architecture. The Xception architecture was chosen because of its excellent ability to differentiate between real and deepfake facial images that have quite complex features with efficient performance. The application of transfer learning with the Xception architecture was carried out using the Deepfake Faces dataset obtained from Kaggle. In this research, 20,000 images were used which were divided equally into two classes, namely real and deepfake. The results of the research show that Xception architecture can produce high classification performance, with the highest accuracy reaching 90.78%. This research is expected to provide positive contributions in digital security, media forensics, and efforts to eradicate fake or hoax content in society which is quite complicated to overcome.

Keywords : Deepfake, Facial Image Classification, Transfer Learning, Xception Architecture