

## ABSTRACT

In today's digital age, the widespread prevalence of fake news and fake images, whether generated by humans or automated systems, poses significant challenges to society at both political and social levels. The rapid dissemination of news through social networks exacerbates the difficulty of promptly verifying its accuracy. Recognizing this pressing issue, the project aims to address the challenge by leveraging Principal Component Analysis (PCA) and chi-square techniques to reduce the dimensionality of feature vectors. By doing so, the processing of information becomes more streamlined, allowing for more efficient analysis and detection of fake news and fake images. To support this investigation, a comprehensive dataset encompassing four stance types: agree, disagree, discuss, and unrelated—was meticulously collected from the Fake News and Fake Images Challenges (FNC) website. This dataset provides a rich source of labelled examples, enabling researchers to train and evaluate machine learning models effectively in distinguishing between genuine and deceptive content in news articles and accompanying images. Through the utilization of advanced analytical techniques and curated datasets, the project endeavours to contribute to the development of robust methodologies for combating the proliferation of fake news and fake images in today's digital landscape.