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Department: Electronics and Communication Engineering

Project Title: Combating the cyber mirage: Advanced research in misinformation, deepfakes, and AI-generated fakes

Funding Agency: Cyberpeace Foundation, Ranchi

Sanction Amount: 35.4 Lakhs

Tenure: 1 Year

Abstract: In the digital and innovation, and now in particular AI generation, it's completely inverted the media model. Cool stuff, yeah, but also pretty sketchy. Then along came deepfakes. These things are insane: artificially generated profile photos, video, and audio content produced by artificial intelligence that is nearly indistinguishable to the average viewer or listener. The term "deepfake" is in fact derived from the process, deep learning, combined with the word fake. Not the most original nomenclature but rather indicative nonetheless.

The main purpose of the project is to design and test a reliable deepfake image detection model, which will detect true content from false false images that is not necessarily manipulated. From its conceptual standpoint, the project seeks to bring forth a coherent convolutional neural network-based classifier that provides both visual and metadata information and, by demonstrating the capacity it can identify manipulation in settings where real-world use is comparable. The purpose of the project primarily focuses on clarifying the behaviour of the proposed model for standard scoring measures such as accuracy and confusion-matrix analyses, so that it has a clear and tangible picture of its strengths and limitations. In particular, attention is paid to how the model responds to different types of deepfake, whereas how it responds to performance when it is confronted with previously known data. Finally, our goal is to offer a practical empirically validated detector that can support larger efforts in deepfake and AI-mediated media awareness, mitigation, and responsible deployment.