

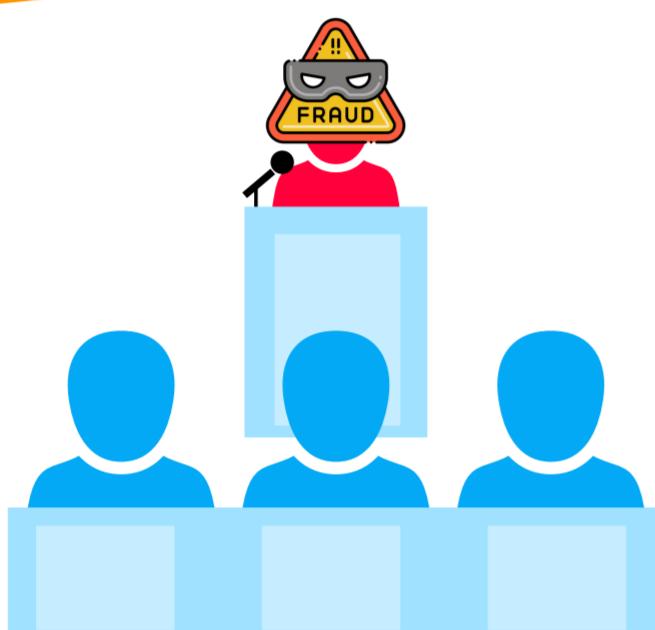


DETECTING GAN GENERATED IMAGES

Current Techniques & Future Directions

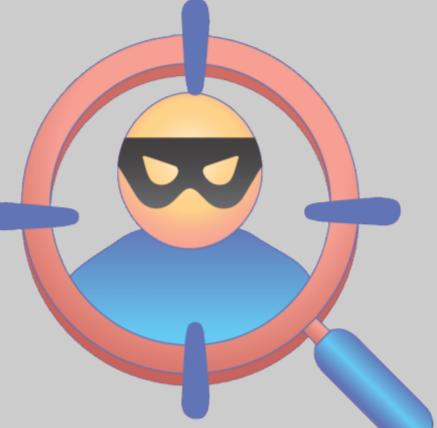
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INTRODUCTION



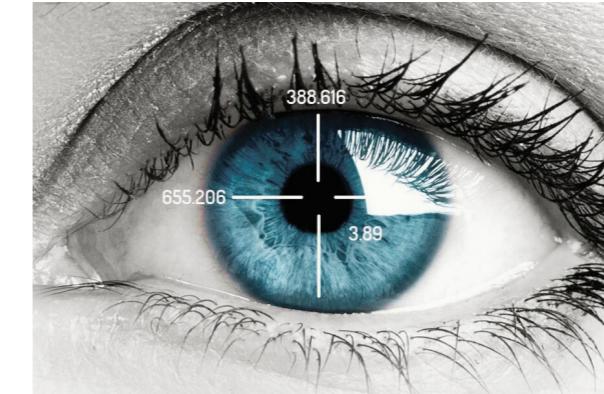
GANs have the ability to generate realistic images, which can have negative consequences if used to mislead the public, violate copyright laws, or engage in fraudulent activities.

OBJECTIVE

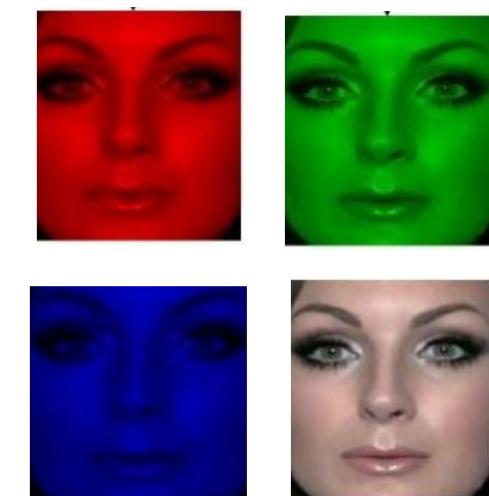


Explore the current techniques for detecting GAN-generated images and to ensure the authenticity and trustworthiness of images encountered

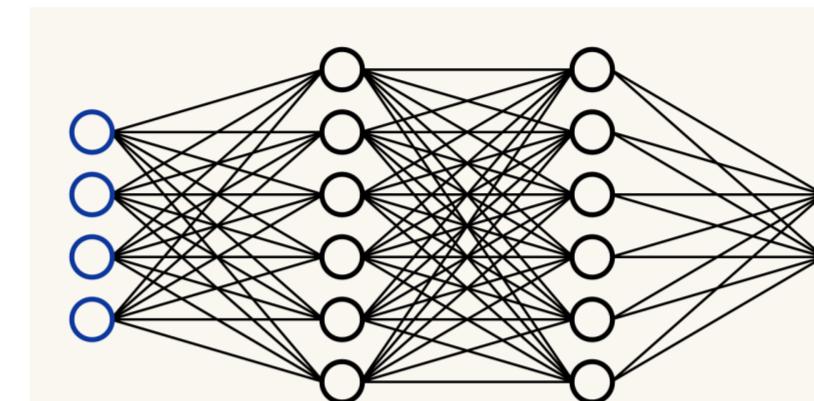
METHODS



1. EYE DETECTION SYSTEM TRAINED AND TESTED WITH HAAR CASCADE ALGORITHM.



2. USE OF A CNN TO EXTRACT RGB FEATURES AND CROSS-BAND CO-OCCURRENCES



3. FREQUENCY ANALYSIS USING DEEP NEURAL NETWORK



4. SVM CLASSIFIER TO DISTINGUISH BETWEEN REAL AND GAN BASED ON THE LANDMARK LOCATIONS OF FACIAL FEATURES

RESULTS



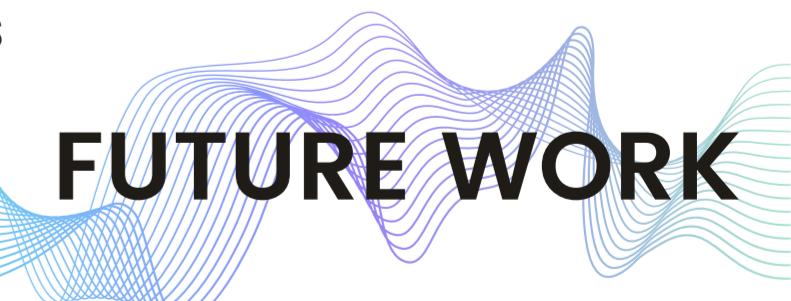
Method	Accuracy
RGB feature Analysis	94.32
SVM classifier (Landmark Locations)	95.69
Frequency Analysis	89.50

Included images displaying our model's classification and a table showing accuracy

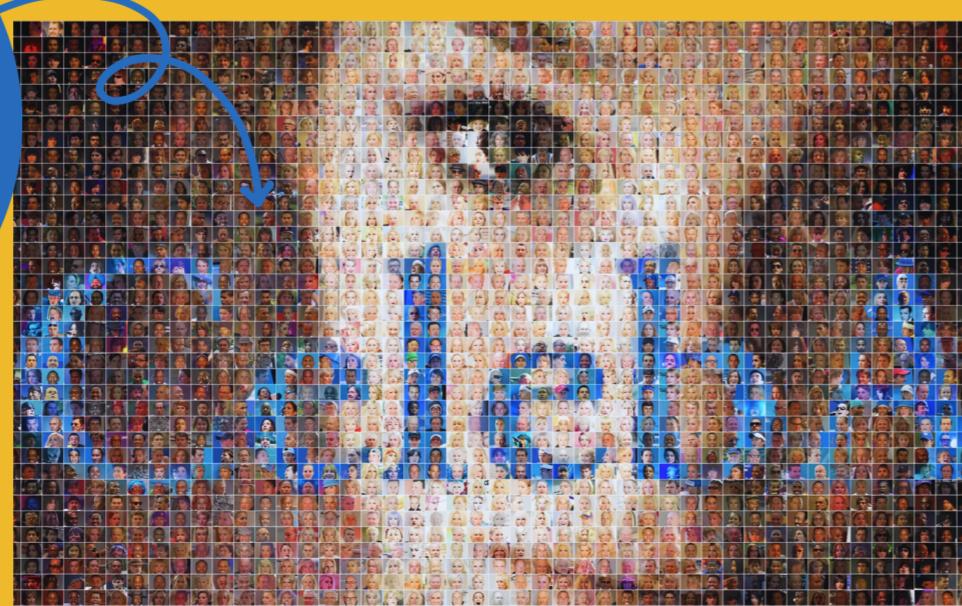
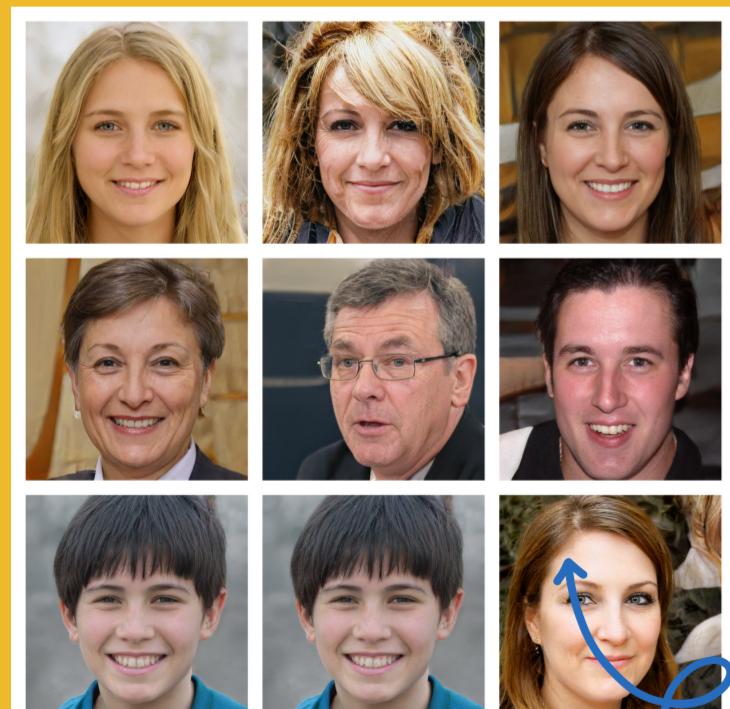
CONCLUSION

We successfully implemented three different approaches to detect GAN-generated images provided by the professor.
Note : The images provided by professor are STYLE GAN generated images

Generalize the models to detect images generated by other GAN architectures



DATASET USED



GAN image dataset provided by Professor Fil Menczer

Real image data extracted from CELEBA -HQ

REFERENCES

- [1] "Exposing GAN-Generated Faces Using Inconsistent Corneal Specular Highlights" by S. Hu, Y. Li and S. Lyu,
- [2] "CNN Detection of GAN-Generated Face Images based on Cross-Band Co-occurrences Analysis" by M. Barni, K. Kallas, E. Nowroozi and B. Tondi
- [3] "Leveraging Frequency Analysis for Deep Fake Image Recognition" by Joel Frank, Thorsten Eisenhofer, Lea Schönherr, Asja Fischer, Dorothea Kolossa, Thorsten Holz
- [4] "Exposing GAN-synthesized Faces Using Landmark Locations" by Yang, X., Li, Y., Qi, H., & Lyu, S.