

information about the features of the audio data, which allows CNN to produce a better classification in discriminating between honest and lying voices.

VI. CONCLUSION

In voice data processing, the built CNN model can be used to detect lies in digital voice data and voice data in the form of a spectrogram. The use of audio with a feature extraction process using MFCC as input gives better results in detecting lies. Using the MFCC technique can improve the accuracy of lie detection. The MFCC-CNN model developed can produce good accuracy by using a central coefficient of 20 and adding a dropout layer to avoid overfitting. CNN produces good performance for processing input other than images. The results of the model evaluation show that the model trained on audio sound data has a better performance in detecting lies with an accuracy value of 97.13% and AUC of 0.97, while the model processed using STFT has an accuracy value of 95.39% and AUC of 0.95, the accuracy using Prosodic was 65% with an AUC of 0.69. The average execution time for MFCC-CNN is 20 minutes/epoch while the time execution for STFT-CNN is 22 minutes/epoch and the average execution time for Prosodic-CNN is 21 minutes/epoch. This research has important implications for the development of voice-based security and lie identification systems, maximizing voice processing using MFCC.

For further research, can be optimized by combining CNN architectural models such as ResNet, AlexNet, and other architectures to obtain new models and improve lie detection accuracy. To get a better understanding and generalization of the development of this research, can use a variety of sound datasets in several situations. Besides that, it can explore the combination of features between MFCC and STFT to get new features. Furthermore, research can be developed by testing the performance of the model in real situations, such as investigations, law enforcement, or job interviews. This will help in determining the difficulties and opportunities in implementing lie detection technology in real life.

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