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Detecting Digital Audio Drugs Using Deep learning

(2024) 2024 IEEE International Conference on Computing, ICOCO 2024, pp. 452-456.

DOI: 10.1109/ICOCO62848.2024.10928181

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Abstract

Digital drugs, auditory illusions created by playing slightly different frequencies in each ear, can influence mental states. Experiments were conducted using MATLAB 2023b on hardware with specifications of processor intel core i7 and graphic card NVIDIA GeForce GTX 4070. A dataset has a total of 7,000 audio files, divided into 5,000 audio drug files embedded with binaural beats and 1,000 original audio files from various categories. This database used to train and evaluate deep learning model to detect and classify audio drugs. Inception MV4 model was trained using SGDM optimizer over 3 epochs with different values of learning rates, achieving high performance metrics and demonstrating its efficacy in classification tasks. Inception MV4 model achieved average accuracies 99.9733% with learning rates 1e-3 and 1e-4, and an average accuracy 98.8833% with a learning rate 1e-5. ©2024 IEEE.

Author Keywords

Deep Convolutional Neural Network; Digital Drugs; Inception MV4; Learning Rate

Index Keywords

Audition, Contrastive Learning, Deep neural networks; Audio files, Convolutional neural network, Different frequency, Digital audio, Digital drug, Graphic cards, Inception MV4, Intel core i7, Learning rates, Mental state; Convolutional neural networks

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December

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Publisher: Institute of Electrical and Electronics Engineers Inc.

Conference name: 2024 IEEE International Conference on Computing, ICOCO 2024

Conference date: 12 December 2024 through 14 December 2024

Conference code: 207836

ISBN: 9798331530303

Language of Original Document: English

Abbreviated Source Title: IEEE Int. Conf. Comput., ICOCO

2-s2.0-105002039773

Document Type: Conference Paper

Publication Stage: Final

Source: Scopus

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