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Digital companion for kids using Artificial Intelligence

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Today children experience anxiety and loneliness due to long-time school closures, pandemic and economic crises and disruption in family income. Therefore, to overcome the anxiety and loneliness, the children heavily engage in online games and movies and are vulnerable to online abuse. This prospective work focused on designing a digital assistant to support kids between 2 and 10 years old in situations related to online abuse, including recommendations on how to involve parents and other guardians. Further, a high-level voice bot conversation flow addresses kids' expectations and concerns. Today Artificial Intelligence creates great opportunities for personalized, flexible, and very adaptable learning environments. A Voice assistant or a digital assistant is such a good example. The digital assistant uses voice recognition, language processing algorithms, and voice synthesis to listen and responds to specific functions. This study focuses on creating a digital assistant and facial emotion detection model. The assistant can help to attend online classes by scheduling alarms and improving politeness in communication. This work also improves English language skills and able to reduce stress in children. Dialogflow framework is used to create the digital assistant because of its vast integrations. Intents are created to rebuke impolite voice commands and encourage studies. Specific intents are created to control angered situations by responding to their voice commands. Emotions can be expressed in different ways: facial expressions, behaviour, actions, and speech. This work chooses facial expressions for the emotion detection of children. This paper proposed a Convolution Neural network (CNN) based deep learning architecture for emotion detection from images. It has achieved 80% accuracy for emotion detection on seven emotions for the FER2013 dataset without using extra training data. Emotions are categorized into happy, sad, angry, fearful, surprised, neutral, and disgusted. The model is trained with 45, 55, 65, 75 and 85 epochs. Deep CNN, which was trained with 85 epochs, gave the highest accuracy of 80%. A comparison of existing voice-bot frameworks and the pros and cons of Artificial Intelligence services is also summarized in this study. Future work is involved in developing safe online search, storytelling, and activity scheduling and combining all as a mobile application. A questionnaire for user satisfaction with facial emotion detection and digital assistant is conducted. 87% of participants have convinced of their satisfaction with this work. Finally, suggestions on improving accuracy in the facial emotion detection model and future works to be done are also discussed.

Keywords: Artificial Intelligence, Commands, Emotion, Detection, Digital Assistant