Establish Speech Recognition Model for Mobile Control System

Kai-chao Yao
Department of Industrial Education and Technology, National Changhua University of Education, Taiwan

Teng-Yu Chen
Department of Industrial Education and Technology, National Changhua University of Education, Taiwan

Wei-tzer Huang
Department of Industrial Education and Technology, National Changhua University of Education, Taiwan

Abstract:

This study implemented an innovative system that trains a speech recognition model based on the DeepSpeech2 architecture using Python and achieves voice control of a robot on the LabVIEW platform. First, a speech recognition model based on the DeepSpeech2 architecture is trained using a large speech dataset, enabling it to accurately transcribe voice commands. Then, this model is integrated with the LabVIEW graphical user interface and the myRIO controller. Use its graphical programming capabilities to control the movement of the robot after receiving voice commands. Experimental results demonstrate that the system not only accurately recognizes various voice commands but also controls the robot's behavior in real-time, shows high practicality and reliability. This study overcomes the limitations of traditional voice control, shows the powerful potential of combining deep learning technology with industrial control platforms, and provides a novel approach for realizing robot voice control.

Keywords:

Speech recognition, DeepSpeech2, Python, LabVIEW, Robot control, Deep learning.