Abstract

The goal of the work is to create a device for recognizing printed materials to help the blind. In his paper, the author described the process of developing the device, starting with presenting the design of the tool. Then the operation of image processing was described, where the various possible filtering and segmentation methods were analyzed and the one that gave the best results was selected. Later, the construction of neural networks was discussed, and it was explained how the model using the author's neural network and the model using ResNet 50 learned with Transfer Learning works. It is also described how both models were implemented on the Raspberry Pi platform along with sound synthesis. Functional tests of the device's performance under various conditions depending on the angle at which the image was taken and the lighting were performed. The author has fulfilled all the objectives outlined in the scope of work, including preparing the design of the case for the device and printing it.