Identifying Tablets Using Neural Networks

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According to the FDA, approximately 1.3 million people are injured due to medicine errors annually in the United States. A large percentage of these people are the elderly and people with multiple medical conditions. So, the purpose of my project was to utilize data analytics and machine learning methods to provide a simple way to identify tablets, thus reducing medicine errors. First, I took pictures of different tablets and applied various filters to them in WEKA. Then, I ran the Decision Trees algorithm on features generated by each filter and selected the Auto Color Correlogram filter because its features resulted in the highest classification accuracy of 88.75%. The accuracy of this filter with Neural Networks (NN) was 97.5%. With this evidence of NN being a good classifier, I ran the algorithm available at Teachable Machine on my dataset to generate an NN model using TensorFlow Lite. I imported this model and embedded it into an Android app, which I named ‘Tablet Identifier’. I downloaded this app onto a virtual phone, and connected a webcam to my desktop in order to test the app. It correctly identified tablets with 99% accuracy. When published, more medications can be added for numerous medical conditions. Thus, anyone with a mobile phone can download the app, and identify any tablet when their phone’s camera is pointed towards it. As a result, people will be able to use this user friendly app at home before taking their medication, which will lower the number of medicine errors.

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