EN.520.680 class project

Abstract:

As we all know, one of the major life-threatening diseases in modern medicine is heart disease. The prevention of heart disease has gradually become a matter of concern. At the same time, there are many signs of heart disease, one of which is abnormal heart sounds. Specifically, it is the shock wave caused by the turbulent flow generated when the valve opens and closes, or the vibration caused by the contraction of the heart muscle. Generally speaking, the energy of this kind of shock wave is low, and it is not easy to transmit to the air to form sound waves, but the wave can still be converted into sound at a certain part of the chest wall with a stethoscope. Physicians can use a stethoscope to listen to these unique and distinct sounds to provide important information about the condition of the heart. Here I will design an early warning procedure software for abnormal heart sounds. I had part of this project in another class, when I made a dichotomous early warning device to detect whether the heart sound is normal or not. Here we will further improve the project, add more abnormal heart sound classification, and try to identify possible heart disease categories while giving early warning. Four categories were tentatively decided, namely AS, MR, MS, and MVP, which are common in cardiac disease. I will add data to the original training program to create new categories. Process the newly added raw data and perform feature extraction using what you have learned in this class. Then the data will be learned and recognized and classified through the Keras improved convolutional neural network.