**Open Ears**

Peter Lin, Stephen Shanko, Chris Slezak

Advisor: Dr. Athina Petropulu



As technology becomes a greater part of our everyday lives, people are also becoming more distracted. Whether texting or listening to music, pedestrians are paying less attention to their surroundings. In 2013, 286 pedestrians were killed in automobile accidents in New York City. And that is a huge problem.

Our solution is the "Open Ears" Android App. The goal of the app is to alert the user whenever there is an approaching car. We assume the user to be wearing earphones with a built in microphone and to be listening to music on their phone. The microphone will be constantly recording, and the application will be processing the audio in real time. If a car is detected, the application will alert the user.

We used a Kernel Dictionary Learning based classifier to determine whether or not a car is present. As its input the classifier takes a vector containing six features that are extracted from the incoming audio. The algorithm outputs residuals for each classification, which would determine which class the input best matches.

Currently, we have a running Android application, which can distinguish between the silence and an approaching car. In the future, we would like for the user to be able to incorporate his or her own data into the app. They would be able to train on data they supply and teach the app to recognize any sounds they would like to be alerted to.