Msc projects to be supervised by Prof. Kin Hong Wong 2021-22, 2021 June 21

Project title 1: Road surface marking recognition using computer vision and artificial intelligence methods.

Signs printed on the road surface are essential for driver to drive safely. We will develop a system that can recognize these signs for many good reasons. First, we can apply it to assist automatic driving. Also we can report those with bad condition (partly worn away) for the road service to repaint the signs. In this project , you will learn computer vision and artificial neural network techniques. There is a potential that this project is supported by a company that provide real world data. A video of a similar project can be found at <https://developer.nvidia.com/blog/drive-labs-detecting-road-markings-and-landmarks-with-high-precision/>

Project title 2 : Music emotion classification using neural networks

The online music industry is actively seeking tools that can effectively classify music recordings according to their emotional effects. It can help to recommend suitable music to users to suit their taste and mood. Since many on-line music recordings have no labels and even names, classification have to be depended on the music signal, lyrics or comments. And there is a huge commercial interest in this research. The proposed method is to use a database and a neural network to train up a system to achieve the goal. We have developed a preliminary prototype last year and would like to further improve the performance in this project. Our related previous work can be found at <http://www.cse.cuhk.edu.hk/~khwong/c2018_IWPR2018_LSTM_music_classification.pdf> .

Project title 3 : Application of pose estimation techniques based on Tensorflow

Recently, Tensorflow provides many useful and interesting tools. For example a pose estimation software (<https://www.tensorflow.org/lite/examples/pose_estimation/overview> ) that can track the positions of your body parts accurately via a camera in real time. In this project we want to develop a good application of such tools for our daily activities. For example, build a tutorial system for learning dancing, Yoga or KungFu. Through this project you will learn the essential methods of computer vision , machine learning and artificial intelligence, and be able to apply them to make a product.