**Final project proposal**

*Eulerian Video Magnification for Vehicle Engine Defects Detection*

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Introduction

Vehicle production is a complex process that consists of many parts. One of such parts is engine production. However, there may exist defects in produced engine which are difficult to see with naked eye. Thus, we would like to work on revealing whether the engine is defected or not, and then find the part of engine with defect if there is any. This technology could be used in automobile production factory to validate the work of engine and make this process automated.

Scenario

In automobile production it would be used as follows: camera will be fixed at some point on (above) a production line, and from a video sequence of working car engine it will detect whether the engine is defected or not by comparing the video sequence to a video of perfectly working engine (using threshold of some RMSE). Further, if defect presence is affirmative, Eulerian Video Magnification (EVM) algorithm will magnify parts of engine with temporal variations that will help to find defects of the engine.

Implementation

We will use code base of (1) to implement EVM in Python with OpenCV. Code will be customized to meet goals of the project. For the video part, we will fix camera and video record working engine and then defected engine, and will use it to check our algorithm.