Term Project

1 Introduction:

The purpose of the term project is to practice embedded application development. There are various I/O interfaces on the E9V3 board, you need to use some of these interfaces to develop an application. The basic requirement is to get input, process it, and generate an output that may be used for a certain predefined purpose. For example, taking a video signal, processing it, and do something based on the processed result. Due to the quick advance in both processor performance and signal processing algorithms, pattern recognition, or more specifically, face recognition technology becomes matured and popular, and we could easily find it being used in some security applications such as passport control in the airport. In this project, you need to implement a system that performs the face recognition task.

2 Requirements:

2.1 Take a video input from the video camera which is connected to the board, so the video can be displayed on the monitor(HDMI or LCD is both fine).

2.2 Detect a human face, which can be done by using public domain algorithms.

2.3 Extract features from the detected human face, it can also be done by using public domain algorithms.

2.4 Based on the detected features, try to design an algorithm that can identify an individual, such as yourself. The algorithm has to extract certain features which can be processed for identification purpose. The processed result should be stored as the individual record so that it can be used later to identify that person.

3 Grading Criteria:

3.1 Functional correctness

3.1.1 Display the image of the detected face.

3.1.2 Display the features of the detected face.

3.1.3 Your program should be able to identify yourself (label yourself).

3.1.4 You will get a higher score if you can detect more different people at the same time.

3.2 Performance

3.2.1 You should provide a button which can trigger the face detection, and set the current time as start time.

3.2.2 You should print the time (current time – start time) in millisecond and name (label) whenever a detection happens.

3.3 Report

You also need to hand in a project report (either in English or Chinese) that describes your system, including how you design the recognition algorithm, and how your system works. It does not need many pages but should be concise and easy to understand by readers. The report will be taken 20% of the project grading.