Infinite PC

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Abstract

This project presents a novel idea to build software package that able any user to control his computer system with eyes or gaze tracking. Our program is designed to monitor the gaze of a user working naturally on a computer and perform Gaze tracking to detect and follow the direction in which a person looks. This can be used for instance in human-computer interaction, but in our project we specially focus on people with special needs, since they might have no other alternatives to control and interact with their computers. In our project Microsoft kinect camera is used to get the video stream needed to achieve our goals.

General View

People with physical disabilities face a lot of problems in communication with other people. Also they are deterred from using computers due to their inability to use a hand-controlled mouse or other pointing devices that deprive them from the biggest source of information now a day which is the internet. In this project we aim at developing a new software package that can be used with eye gaze. The direction of pointing will be determined by iris position, to perform that first, we use a Haar classifier to detect the eye in the video stream. Next, PCA (Principle Component Analysis) algorithm is used to get iris position which is known as a very accurate algorithm. This program is based on computer vision and image processing so no extra hardware sensors is needed, just a Microsoft kinect camera and infinite PC package.

Business plan

In our business plan we assume that we have already a start up or a company to develop and invest in infinite pc project, so development devices and tools are not included in the project budget.

Development team costs

We have two developers working on this project, each developer costs 20$/hour. Also these two developers are expected to work for 660 hours in 165 days so:

Team cost =20*660*2=26400$

Support and maintenance costs.

We assume that every license sold will cost about 20$ for support and maintenance per year.

Business model

We will sell an annual licenses for our program for 200$, so gross margin will be around 180$ for each license per year. Also we plan to increase our revenues by selling kinect cameras with the software package in retail that could cover the support and maintenance costs to achieve max revenues.

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The following diagram explains the sequence of actions in the proposed system.

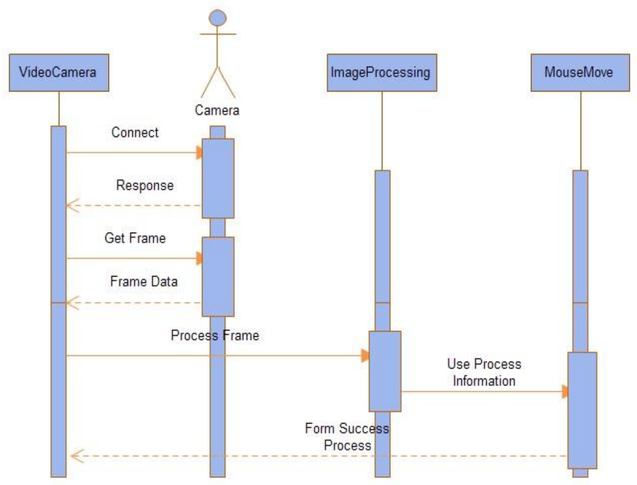

Figure 1: Sequence Diagram

Deployment diagram

Figure 2 shows the execution architecture of infinite PC system. This includes nodes, either hardware or software execution environments, as well as the middleware connecting them.

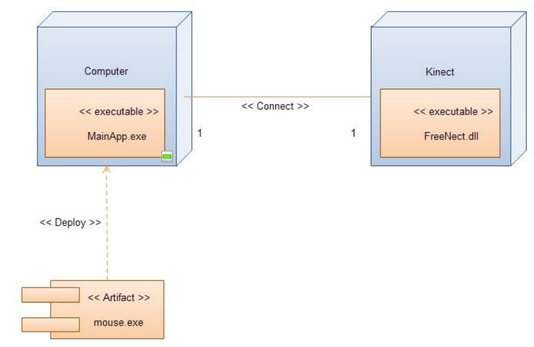

Figure 2: Deployment Diagram

Object Collaboration Diagram

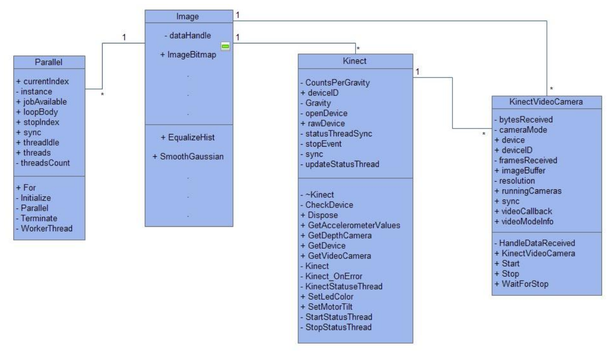

Figure 3: Object Collaboration Diagram

Use case: Move the pointer

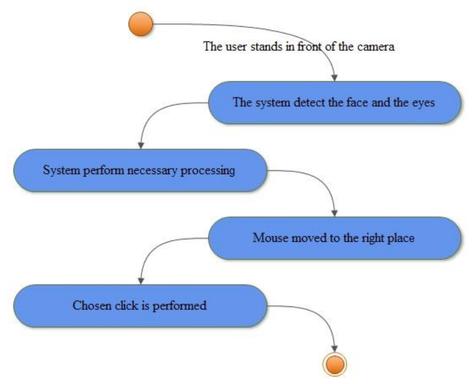

Figure 4:Activity diagram