UFR Sciences fondamentales et appliquées

Algorithmic tools and software for facial recognition

March 17, 2015

Master 1 RTMA 2014/2015

Contents

1 Project environment

1.1 Context and environment

Previously carried out at the SIC Department of XLIM laboratory, the project we are in charge of implements "algorithmic tools and capturing software for facial recognition". This project interest was also interactions with and between users of a video game with an educational aim ("Serious game") by automatically animated avatars and experienced analysis difficulties, as well as the development of a software library for developers of video games on smartphones. Facial recognition is often used as a tool to secure devices or control the use of applications. This technique both helps adults secure their systems and devices and parents limit and control access to systems for their kids. The main idea was to improve parental control of tablets for childrens use. This could be helpful for parents wishing to use facial recognition to limit their childrens use past a certain time of a day.

1.2 Project Objective

The work required for this project is the development of a share recording software for the recognition of facial expressions for the identification of a face from an ID list in a home or for parental control. Today innovation and the latest technologies are growing increasingly and allow the interactivity between human-machine to be maximal. Research on facial expression is fundamental in many applications. Facial recognition takes place in three stages, namely:

- Face detection ;
- Extraction and normalization of facial features ;
- Identification and / or verification.

The main difficulty in face recognition is that there are no two identical faces. Thus, each individual is unique and will be marked by gender, ethnicity, age or his haircut, but also by the shape, size and arrangement of the elements of the face. This project has an educational goal because it contributes greatly to our engineering multimedia training, allowing us to put into practice the theories studied in the various teaching modules of our mastesr degree (Image processing, tool and scientific computation, Algorithms for multimedia, random signal processing) but also by completing them. This project can be seen as a complement to our training.

1.3 Needs analysis

This project aims to develop a facial capture software program (face recognition) in XLIM-SIC laboratory research work in collaboration with a company based in Lyon operating in the field of manufacturing tablets for children . The required results at the end of this project are: facial recognition software program with

- Eigen Faces;

- Fisher Faces.

Those will be programmed with multiple programming languages (Python, C ++). This project is performed with the research professors of the Fundamental Faculty of Sciences at the University of Poitiers: Pascal Bourdon and David HELBERT who supervises the project.

1.4 Actors

Those will be programmed with multiple programming languages (Python, C ++). This project is performed with the research professors of the Fundamental Faculty of Sciences at the University of Poitiers: Pascal Bourdon and David HELBERT who supervises the project.

Supervisor:

Pascal BOURDON : supervises;

David HELBERT : teacher researcher Labo XLIM - SIC.

Students in charge:

Viviane Arame BASSE : as Communication Manager ;

Toilha ALI : as Project Manager ;

Guy Florent A. SADELER : as Technical Manager.

The End users of this project are:

XLIM-SIC Laboratory ;

RTMA Training of the University of Poitiers for tutorials ;

otential client company in need of facial recognition technology.

1.5 Description of the existing

We have for Completion of this project :

- A database images for face recognition ;
- Documents on the documentation of Open CV.

2 Constraints

2.1 Time

- Delivery date of product / service is scheduled: June 10, 2015 at 4 pm. - Intermediate dates:

- April 2: Users requirements presentation + handouts;
- May 13: State of the art Theoretical;
- June 10: Official delivery (technical documents, codes, ...);
- June 17: Project presentation.

3 Product Description or final service

In the late of the project we are asked to deliver a deliverable consists of :

- A specification ;
- A technical report;
- The codes programmed with their documentation

4 Sequence and Organization of the project

4.1 Planning

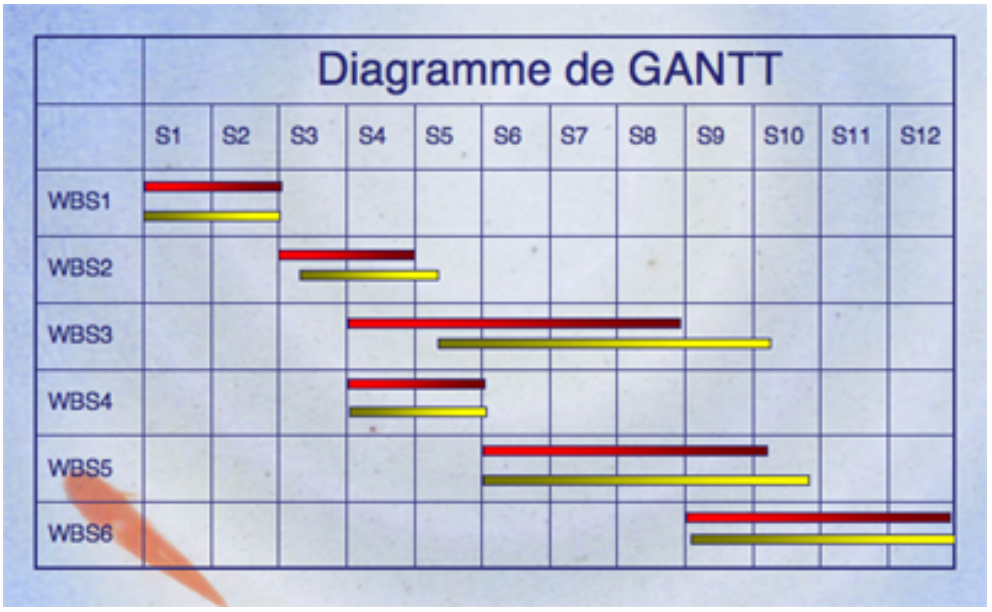

Figure 1: Planning.

4.2 Location

The project will take place in the project room EEA of building SP2MI.