

INITIAL PLAN FOR GAMES WITH EYE MOVEMENT

1 Executive Summary

The project, “Games with eye movement” aims to improve eye muscles. Our project is a desktop or mobile application to lead people to follow the path and move a specific object in a specified path by detecting eye movements.

2 Project Purpose

One of the purposes of this project is about eye health. Amblyopia (also called lazy eye), is one of the best known visual impairments which is very common. The only cure for this impairment is practicing the eye muscles. Even this method can be effective for up to 10-11 year old children. Unfortunately, there is no other kind of known treatment.

With our embedded system amblyopia-suffered patients could practice their eyes and improve their eye muscles. Also eye tracker-embedded systems can be used in entertainment, advertisement and gaming areas.

3 Project Scope

Games with eye movement project's aim is to make people's eye muscles stronger. Especially, Amblyopia patients would be our main target user. Doctors can suggest our project their patients and patients can use our game. Moreover, People could encounter an extraordinary game experience with our end product. Because, games related to eye movement are not common enough. Also, children are curious and eager to learn new things. Moreover, they love simple visual games. Our product includes a visual game with eye movement and it would attract children.

4 Product Requirements

Users of this product are people who need to improve their eye muscles such as kids who have lazy eyes and people who want to entertain themselves by playing games with eye movements.

- This project involves an eye tracker device or camera which operates in desktop or mobile platforms.
- This project contains a basic eye movement game which is controlled by eye gaze. Game involves to detect and track of eyes movements such as;
 - Following a path of an object with eye

- ☐
- ☐ Acting the object by eye movement or looking object within certain amount of the time
- ☐ Move a specific object in a specific path.
- ☐ Connecting the dots and creating a picture

5 Software Development Process Model

We will use two software development processes in our games with eye movements project. Incremental model is an approach to divide into the project various basic modules. It is easy to manage the modules in the project and also each module involves requirement, design, implementation and testing phases. Our project consists of different core structures such as, device tuning (eye tracker), embedded coding and game. We should benefit from the partial utilization of the project. Each module is delivered and demonstrated to the customer when it is finished. Each module, add its function to the previous release. This process proceeds until our project is complete. In this model we can minimize the risks during building each piece. Another reason for preferring this approach is testing. Each part of the module necessarily needs a regression testing because when the modules are combined, some modifications and some changes can be needed for integration and this process causes some failures in combination. We should quickly detect and identify the faulty elements and interfere with this faulty easily.

Another approach is Agile software model for game UI/UX that provides developers, testers and customers constantly interact with each other during the project. In our project, customer's needs can be easily changed in the graphical interface in game. Customers only specify the simple game objectives like eye movements actions. In this model customer requirements can change rapidly and adaptation for these changes can be easy in the developing process. Additionally, focusing on the code is more vital than design and documentation. Due to these reasons, the agile model is more functional with the user interface of the game.

6 Project Stakeholders and Organization

Project is managed by project manager and project members. Each team member is stakeholder and also customer, advisor and evaluator play a role as a project stakeholder. Table shows the project stakeholders and their responsibilities in the project.

7 Project Communication

Project members use various communication tools and for instant and continuous communication.

Project meetings every week helps to follow progress of the project. Team members easily evaluate and review the steps of the project.

Mobile communication network/platform (Whatsapp) provides instant communication opportunities for team members. Instant communication is an effective method within team members.

E-mail has a vital role in establishing contact with our project advisor. Also team members use e-mail for sharing project documents with each other.

Video Conference (Hangouts) and Telephone are our communication channels.

8 Project Change Control

In the project, changes are possible depending on customer needs. Our project, customer needs are increasingly important factors to determine changes according to customers' satisfaction. We plan weekly meetings with customers to recognize their changes correctly and show the process of the project. There is no substitute for showing to customers what we are doing in your project and getting customer's feedback regularly throughout the project. This is basically what the agile method does. Also regular adaptation in curriculum situations is easy with the help of customer feedback.

Agile projects include customers in all of the cycle of steps and customers are part of this continuous improvement cycle. However, the customer is not the only reason for changes in the project. The changes in any technological environment might impact the project flow. When we maintain our studies on our project, any Software Development Kit (SDK) can be released about eye tracker in our project platform. This change should be integrated with our project in next iterative agile cycle.

After releasing the product, customer reviews are a determinant factor for products that satisfy the customer's requirements. If it is not, a new iteration of the process will start with prioritizing the requirements and planning.

9 Milestones & Deliverables

Deadline dates of the project steps are not published by the CTIS department yet. Because of these we will decide the milestones & deliverables dates as soon as possible once the department publishes the dates.

10 Assumptions

- All project members will attend the meetings.
- Software development environment “Android SDK” will be suitable to improve all development steps of the system.
- The hardware and software equipment of the project will work in harmony with each other.
- There will not be any problem in connecting the Eye tracker device with an Android device.

11 Constraints

- The project will support Microsoft 7/8 and Android platform (it depends on the hardware).
- The project includes at least one game.
- The project must finish in a limited time.
- Eye tracker devices should be found in the project.

12 Risks

- There is no device (Eye tracker) yet for our use also there is not enough information in the manufacturer website, the project may face some integration problems and this may make the project harder to finish in time.
- Eye tracker manufacturer firm has released the beta version of the eye tracker sdk and making new releases in the software. Although, it seems as a small risk for general project flows of other kinds of projects, it may cause vital time elapses for our project.
- Eye tracker device has some strict constraints such as USB connection version, power supplement, CPU and these kinds of hardware based specifications. These may cause integration problems with eye tracker device and android devices. If we face this kind

of a problem we may make some process, device, requirement changes in our project or we may strict the project with a limited kind of android version and devices.

- Illnesses, diseases, injuries and suck kinds of excuses are the common risks of all projects which we also have for our team members. However, we don't see this probability as a high risk for our project. Because, every single member of this team may come with all stages of the project.