METU, Department Of Computer Engineering

Graduation Project
Proposal Form

(Please read carefully, and follow the instructions to prepare the project proposal form.)

(Instructions to fill in this form are given in italic fonts and in parentheses.)

(To provide an input for a section of the form, delete the instruction and provide your input in place of the deleted instruction. In the final form that you will submit, there shouldn't be any instructions left over, including this section of the form.)

(If you feel that a particular instruction is not relevant to your project proposal, please use a proper explanation for this, rather than ignoring the instruction.)

(The final form should not exceed 4 pages, excluding this page and including the References section. Please use Arial, Normal, 10pt fonts and single line spacing.)

Important Notes

A project could be proposed by (i) a student group, (ii) a company, or (iii) a faculty member of the department by filling in this form and submitting it to 49x-proposal@ceng.metu.edu.tr by e-mail. For a project proposal, there might be a sponsoring company supporting the project and providing some form(s) of resources for the project.

If your proposal might contain a patentable idea or any type of intellectual property, please first make sure to follow appropriate steps (apply for a patent, etc.) before sending your idea to us. Once this form is received from you, the instructor(s) and the department has no responsibility regarding to intellectual properties of your project/idea.

All sources and documentation developed for this course are assumed to be public domain (GPL, CC or similar license) by default. If you need any exception for license and disclosure of project work, please specify this in detail in IP section of the form.

Please note that source codes, documents and issue tracking should be kept in department servers. No restrictions can be requested for limiting faculty and assistants access to student work.

Project Information

Title

Drawing Based Android Game for Children

Target

Public [ ] Restricted [X]

Only Group 14

Proposer Information

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IP (Intellectual Property) Information

All intellectual properties belongs to project group.

Project Description and Background Information

Description

Today, there are many computer and mobile games in the world. However, many of these games are not good for children. They steer children to violence and restrict their imaginary world. The primary goal of this project is to develop a mobile game, which gives the children the opportunity of reflecting their imaginary world into the game. This game will not steer children to violence, but steer them to improve their creativity. The game will provide children a place to use their creativity without restrictions. Children will draw their own heroes, monsters, companions or animals. We will create the drawing space for children. Whatever child draws, the game will recognize. After that, the game will identify a rigid body and create a skeleton schema for it. Then, specify its joints. With using image processing techniques, game will identify the parts of body as head, hands, legs, wings, etc. Then, drawings will move according to their joint points that we identified and the parts that we specified. For example, if the game identifies wings on a character which is drawn by child, character will move like flying, or if child draws six legs to a character, it will move according to it. The game will present children different modes to play. Some of them will be a puzzle game that can be solved by creative solutions or platform games that gives chance to child to move his/her character as he/she draw. In another mode, children will be able to create their own game space according to their imaginary world. Children can share their game with the others online. This will give children the chance to invite others to their imaginary worlds.

Similar Products/Projects

1. Draw A Stick Man

If you play Draw A Stick Man, you can see that the game gives the children to draw their own stick man hero and move this character in a primitive way. The game also restricts players to draw which the game allows. The game says children to draw determined objects and restricts their creativity. The movement of character is ridiculous and in a unrealistic way. The project that we are planning to develop is going to solve all of these problems. Our characters will move in a more realistic and creative way. This will help children to animate their drawings with quality and reflect their imagination to the game as real as they want. Our game project also allows children to create their own companions, animals and monsters as they want, not only the hero. In addition to these features, our game will give children more freedom. They can solve their problems in their own way and also if they want to create their own game space, we will make their wish come true.

2. Pixel Press: Adventure Time Game Wizard

Adventure Time Game Wizard is an application for children to create their own game platform only. Our game will be much beyond it as we indicate in the description part.

Justification of the proposal

This project aims to entertain children and improve their creativity and logic. It creates an environment for them and expands their imaginary world. In today's game world, games do not give the freedom to children and they only aim to entertain children by providing a strict game environment. In other words,

there is a restricted game story and children just play it and do not create anything. Today's game world is not for children since there are a lot of blood and violence in most of the games. There is a lack of suitable game for children. The project aims to solve these problems and offers children to reflect their imaginary world to the game environment. Project claims that, children's creativity will be their limit to create their own games.

Contributions, Innovation and Originality Aspects of the Project

We believe children have amazing imagination capability. In the old times, they were more free to use it by playing with their friends. Today most of the children are surrounded by video games and these games restricts them a lot. There is not enough game for children to give them space to use their imagination. We offer them to use their imagination and play with characters that they created by drawing. There exist games that allow children to create their characters but none of these offer the advanced way to do it as our project. The more realistic and creative way to do this is helping the children to use their imagination. The project's ultimate contribution to game world will be the more imagination based game experience.

Our country is also not good enough in the game world in the international level. This project will also contribute our country to take part in mobile game world.

This project have a lot of potential. In the future, character creation could be improved. For example, 2D drawings could be transform to 3D characters.

Technical Aspects of the Project

Firstly, project will be developed by using Unity5, and Android plug-in for Unity will be used. Unity has multi-platform support, this will help us to publish our game in different platforms in the future. In the stories of the game, user must create a character with drawing on screen. After user draw a character, the game should process it. After that operation, drawing's skeleton schema should be identified with these steps;
1-Outlining
2-Scale-Space Dominant Points
3-Quaternary tree bucketing
4-Skeletal approximations

Using techniques of shape analysis and image processing we will extract a shape skeleton from which we identify plausible movements. From the skeleton we will infer whether the drawn creature is blob-like or has arms and legs, etc. Once we identify movement patterns character creation will finish and the character will be integrated into the game as asset.

The project developers will create the remain assets of game with using Spriter and Photoshop.

Main episodes will also be created by the project developers. One story line will be provided but the story will have randomness in the flow.

Targeted Output, Targeted User/Domain Profile

Our end project will be an android mobile game for children. It will have easy user-interface to use, because our targeted user profile is elementary school level children. Children will find different modes in the game. These modes have different game playing types and scenarios like platform game, puzzle game or free to create type game. Our motivation is helping children to create their own game by reflecting their imagination on it and creating wonderful things.

Project Development Environment

Unity5 as Game Engine
Android Studio with Java
Spriter and Photoshop for Asset Design
OpenCV library for Image Processing

External Support

Mentor: Prof. Dr. Sibel Tarı

References

Draw A Stick Man , http://www.drawastickman.com/

Pixel Press: Adventure Time Game Wizard, http://www.projectpixelpress.com/adventure-time-game-wizard/