
TreeSim

Project Description

Submitted to:

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Unique Reference:

The documents are stored in the <https://github.com/jilendaya/CS191pinkPlastiCS>

File Name: "Project Description Document.pdf"

File reference in GitHub: <https://github.com/jilendaya/CS191pinkPlastiCS/blob/master/Requirements/Project%20Description%20Document.pdf>

Document Purpose:

This document aims to establish the goals of this project through its description as well as to specify the project boundaries and scope.

Target Audience:

This document is intended for the clients (#080419 Android) of Pink PlastiCS for the TreeSim project.

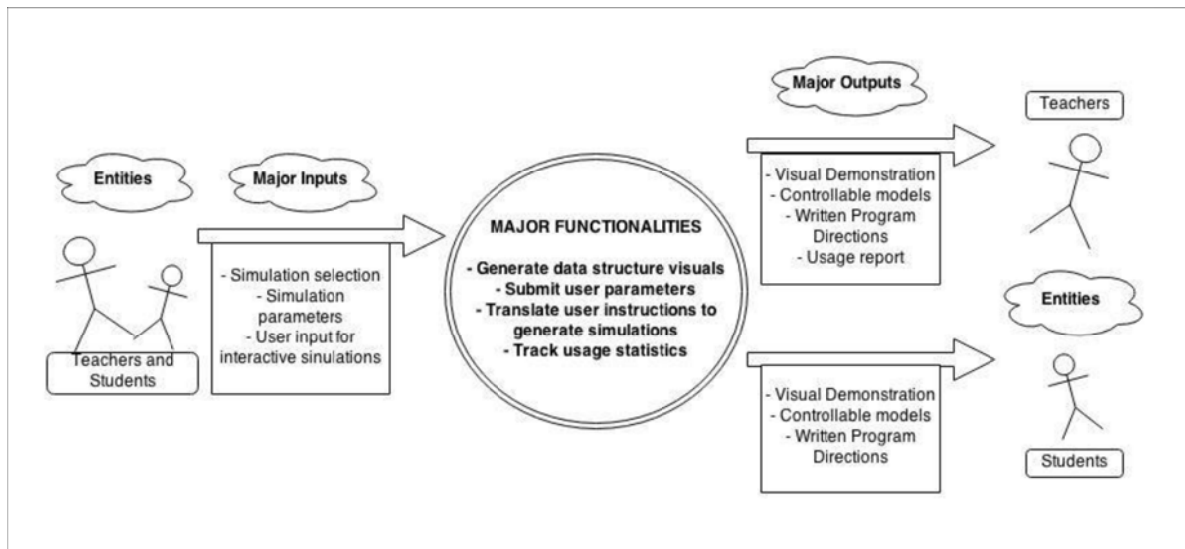
Revision Control:

Revision Date	Person Responsible	Version Number	Modification
08/23/2014	Albano, Romeo Senen Endaya, Jeynald Quiñones, Yzabel	1.0	Initial Document;
09/09/2014	Endaya, Jeynald	1.1	1) Clarified that the current scope of the project is limited to algorithms and simulations regarding trees only. 2) Revised some grammatical errors.

Project Title: TreeSim

Description: TreeSim (Tree Simulator) is an application intended for the Android OS mobile platform that's especially built for Computer Science students taking undergraduate courses. This application will contain study modules regarding tree data structures (and its different varieties), which aim to further understanding by giving supplementary interactive simulations. Through this application, students can easily study tree data structures through demonstrations of common tree algorithms, simulators, and other interactive models of many theoretical concepts focusing on them. A recommended use of this application would be in a classroom setting where both students and teachers can use it as demonstration for study.

Context Diagram:



Entities:

Student	Students are the main target users of the application. The intention of the application is to allow students to use and view the interactive tree simulations in order to further their learning.
Teachers	Teachers can also make use of the application in a classroom setting by using it to give visual demonstrations to students or using the usage statistics functionality to more easily understand where students have trouble with the subject.

Major Inputs:

Input by Students and Teachers

Students and teachers as entities give the same kinds of input to the program.

Simulation Selection	As the users navigate through the system, they will encounter lists of tree simulations available to them. This input basically refers to their choice of simulations to view. Simulations come in two types, which can either be Modifiable Computer Generated Imagery (MCGI) or Modifiable Computer Generated Videos (MCGV).
Simulation Parameters	For MCGV simulations, users will be allowed to give certain parameters that will change basic elements of the simulation. Simulations like these are more like videos. These simply ask for parameter settings at the beginning and then run until their end.
Interactive Simulation User Input	For the MCGI simulations, users will constantly be able to send instructions that will manipulate and control the simulation. Simulations like these act more like “builders” for trees (such as red-black trees).

Major Outputs:

Visual Demonstrations	For both types of simulations, the users will be able to view the step-by-step visual demonstration of their chosen simulation after giving the necessary parameters.
Controllable Visual Models	The main feature of MCGI simulations is that it is customizable by the user. Users will be able to create, utilize, and manipulate the tree using builders to properly visualize the process behind each simulation.
Written Program Directions	While the visual demonstration of the chosen simulation is running, the user can also see an accompanying written directions of what is currently happening or the rules on that particular theory.
Usage Report	This is a report on how the user makes use of the application, detailing information such as which simulations are used most frequently. This can be used to aid teachers in tracking which topics students find most difficult.

Major Functionalities:

Generate Data Structure Visuals	The system is responsible for generating the actual visuals that will be displayed to the user. Because the user can give their initial parameters that modify the simulations, the system must generate the visuals from scratch.
Submit User Parameters	The system is able to accept parameter from the user depending on the simulation that they have chosen.
Translate Parameters to Simulations	The system will take into account the parameters that the user has set in generating the visuals. In the case of MCGI, the system will constantly be taking input from the user and processing this to find out what imagery to generate.
Track Usage Statistics	As an additional functionality, the system will also track how the students make use of the program.