CS304 – PROJECT PROPOSAL

PROJECT TITLE :

Material designer online platform and API

By

L.M Senanayake

S/15/418

Email: **222lasantha@gmail.com**

Mobile No: **+94 77 360 130 5**

Github repository :

https://github.com/lazzy07/matrial_designer

SUPERVISED BY

Dr. Hakim A. Usoof

Department of Statistics and Computer Science

University of Peradeniya

Executive Summary

Creating convincing and immersive 3d worlds requires enormous resources in order to create all the little details and 3d models that the 3d world is composed. All these 3d models then need to be textured with impressive quality to meet the high expectations that users might have. The focus of this project is in creating a software to create procedural texture creation and an online platform for procedurally generated textures that can be used in games and architectural visualizations. This project not only will help with the manufacturing process of modern game textures but will also enables to understand the essence of textures. Practical part of the project consists of designing procedural textures and uploading those mathematically generated graphs to this online platform.

Project Objectives

➢ Creating a web-based platform for game developers where they can share their procedural texture designs and also by using community created texture designs in their game development projects, speed up the game development pipeline.

➢ Creating an API to ship textures to clients as mathematical graphs and then at the client side, using "MD ship" software (will be developed as a part of the project), can generate textures as images so clients can save their internet fees.

➢ Creating a program to create, save and upload their material designs (procedural graphs) to the platform, so other game developers can use those in their projects.

Literature Review

A procedural texture is a texture created using a mathematical description (i.e. an algorithm) rather than directly stored data. The advantage of this approach is low storage cost, unlimited texture resolution and easy texture mapping. These kinds of textures are often used to model surface or volumetric representations of natural elements such as wood, marble, granite, metal, stone, and others.

Material designer can help game developers to create materials with full control and infinite variations. Edit complete texture sets instantly and produce mathematical texture graphs that will be directly handled in renderers, game engines or will be used to create textures at client side after shipping created graphs to the clients.

Material designer can be used to create tileable, dynamic and modular textures and also to create a base material library where materials can be used in other applications such as Unreal engine / Unity game engine.

Approach

> **Requirement Analysis**

Understanding the customer requirements and understanding the deficiencies of the current systems.

> **Designing the system**

Designing the system using UML diagrams and following the waterfall model as the Software process model.

> **System implementation**

Implementing the designed system using the proposed technologies.

> **Testing**

Testing the built system with test data stored in the database.

> **Maintenance**

Maintaining the system according to the changing user requirements.

Proposed Technologies

- React JS
- Redux
- Node JS
- Mongo DB
- Electron JS
- Socket.io
- Web-pack
- Typescript
- Babel
- Sass / Less (CSS pre-compilers)
- HTML / CSS
- JavaScript

Evolution of the System (Timeline)

Duration	January	February	March	April	May	June	July	August	September	October
Requirement Analysis	■	■								
Design			■	■						
Implementation					■	■	■	■	■	
Documentation								■	■	■
Testing & Debugging			■	■	■	■	■	■	■	■