**Material Designer Online Platform and API**

A PROPOSAL PRESENTED BY

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**CHAPTER 1**

# **INTRODUCTION**

Introduction …

## **Problem Statement**

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 developing 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 enable 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.

# **CHAPTER 2**

# **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 usedto create tile-able, 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.

Online platform of the Material designer stores material graphs in an organized way using mongo DB, facilitating game developers with the chance to search and download or to upload their material designs to this platform.

# **CHAPTER 3**

# **METHODOLOGY**

* **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

**Project Objectives**

* Creating a web-based platform for game developers where they can share their procedural texture designs
* A platform to download and use already created texture designs in game development projects instead of creating textures from the scratch to speed up the game development pipeline.
* Creating an API to ship textures to clients as a mathematical functions and then at the client side, using a software (that will be developed as a part of the project), generate textures as images using those mathematical functions so clients can save their internet bandwidth.
* 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.
* Approaching low storage cost, unlimited texture resolution and easy texture mapping using procedural tile able texturing methods .
* Allowing less popular artists to introduce their material designs worldwide.
* Creating a system that allows game developers to submit their material designs.

**Evolution of the System (Timeline)**

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

**Github repository** - [**https://github.com/lazzy07/matrial\_designer**](https://github.com/lazzy07/matrial_designer)

# **REFERENCES**

Github repository - [**https://github.com/lazzy07/matrial\_designer**](https://github.com/lazzy07/matrial_designer)

Scratch-pixel - [**https://www.scratchapixel.com/lessons/3d-basic-rendering/introduction-to-shading/procedural-texturing**](https://www.scratchapixel.com/lessons/3d-basic-rendering/introduction-to-shading/procedural-texturing)