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ALGORITHMS & OPTIMISATION PROPOSAL

For ‘Sleepless’ Dissertation Project

DETAILS OF MY OPTIMISATION PROJECT

The Sleepless for my dissertation is a high lighting environment built to test the field of Photosensitive Epilepsy, using existing knowledge of PSE the projects main purpose is to be a test environment in which I can test methods of which I can mitigate the risks of Seizure in Photosensitive Epilepsy. Currently the test environment is running on my personal computer, while I am not happy with the frame rate on my personal computer I am really not happy with the performance it is showing on lower end systems. I want this project to be as accessible as possible for testing, which means it must be able to run on lower end systems. In this project I am using the Unreal Engine 4.18.3 and programming in the C++ Language.

Personal Computer – 40-50 Average Frames Per Second	**Target Computer – Below 30 Average Frames Per Second**
CPU: Intel Core i7 6700k @ clock speed of 4236 MHz – 4 Cores & 8 threads.	CPU: Intel Core i7 4790 @ clock speed of 3600 MHz – 4 Cores & 8 threads.
RAM: HyperX 16GB 1866 MHz DDR4.	RAM: 24GB 1600 MHz DDR4.
GPU: GTX 980, CUDA CORES 2048 @ Clock Speed of 1216 MHz, 4GB GDDR5 256-bit	GPU: GTX 750ti, CUDA CORES 640 @ Clock Speed of 1216 MHz 2GB DDR5
Display: ACER XB270HU, IPS, G-Sync Enabled, 144Hz – 2560 x 1440p	Display: Generic iiYama Business Monitors @ 60Hz – 1920 x 1080p
Storage: Dual 120GB Kingston HyperX SSD in Raid 0. + 5TB Hard Drive Storage.	Storage: 32GB SSD (OS) & 2TB 7200RPM
Operating System – Windows 10 Professional	Operating System – Windows 8.1 English (Updated to 10)

The Objective

- Reach Acceptable frame rates on lower end computers, Target 60 and above but must always be a stable 30 Frames per second no dips.
- Study through Benchmarks – Run benchmark analyze CPU/GPU through a multitude of programs.

Tools I will use

CPU-Z – This program tells me everything I need to know about the current usage of any CPU.	Level Design: See if the issue is bad level design then must change.
Stat Commands in unreal. A series of statistical commands that help with debugging.	Asset Analysis – I will analyze the assets used and see if they can be reduced in quality without being too noticeable to the player.
GPU Profiler – Unreal’s Built in GPU profiler, showing what is using how much data visually.	CrystalDiskMark (Used to check if the computers filing system is at fault, I most likely will not use this but it’s a tool I could use)