# Abstract

# Acknowledgements

# Introduction

## Overview

Lohit Petikam, Ken Anjyo and Taehyun Rhee (Petikam et al., 2021) proposed a novel method for allowing artists to have fine grain control over the lighting details in real time applications. The paper proposed a solution allowed for lighting based on physical approximations to have an artistic style with details which would only be found in art. To this end, they required a means for defining shapes for these details to take. The method used a procedural shape defined by a function. This shape was limited, not allowing for rectangular shapes. Vector based shapes would be less limited regarding shape variety. The paper however stated “… current research cannot support animated vector texture mapping in real-time applications”. New methods have been published since then in this area, namely Kumar H and Sud A’s method. (Kumar & Sud, 2019)

## Objectives of Project

# Graphical Processing Units

## Introduction

## Pipeline

# Vector Graphics

## Introduction

## Spline, B-Spline and Bezier curve

## GPU rendering

### Cubic method

### Quadratic method

### Grid method

# Technology

## Introduction

## GPU integration & profiling

### Unreal

### Unity

### Godot & 3rd party

## Tool creation

### Unreal

### Unity

### Godot

# Methodology & Design

# Implementation

## Sprints

# Results & Conclusions

# References

Kumar, H., & Sud, A. (2019). Fast, memory efficient and resolution independent rendering of cubic Bézier curves using tessellation shaders. *SIGGRAPH Asia 2019 Posters, SA 2019*. https://doi.org/10.1145/3355056.3364548

Petikam, L., Anjyo, K., & Rhee, T. (2021). Shading Rig: Dynamic Art-directable Stylised Shading for 3D Characters. *ACM Transactions on Graphics (TOG)*, *40*(5). https://doi.org/10.1145/3461696