

# Exploring Stealth Game Mechanics in a 2D Environment

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## Introduction

This project will be exploring the effects of dynamic light and shadows on a stealth game's gameplay. Specifically, how lighting affects how player's interact with the levels and environment presented to them. This will involve creating a virtual environment where the player can go up against AI agents that use vision cones to detect the player. It will be the player's job to avoid these detection cones and reach the end of the level. On top of this the lighting system will give the player areas to move through freely where the AI cannot detect them.

## Technology

The two main technologies used in the project are Unity and Paint3d.

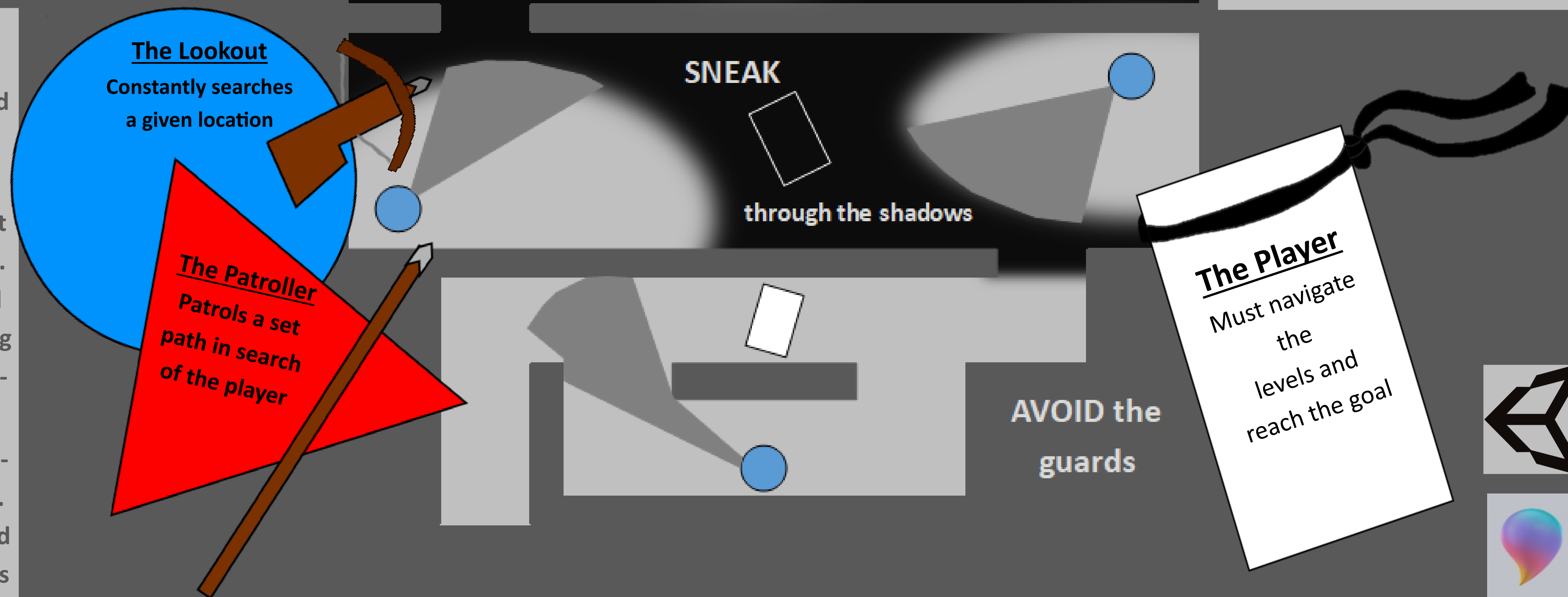
Unity is a free game engine that anyone can use to make games. It provides all the tools needed and has a large following making solving problems and finding inspiration simple.

Paint3D is an image editing software similar to Microsoft Paint. It is free to download online and includes many more useful tools than the one provided with

Windows. The main use for this software was its ability to create images with transparent backgrounds, perfect for making the characters and their animations.

## Future Work

As the project becomes more developed, more systems would be added to it. For example, adding footstep sounds that the guards can hear should the player get too close, these could also become louder or quieter depending on the surfaces the player is walking on. Surveys will also need to be done to get feedback on how these systems affect the user's approach to the scenarios they are given. Finally, updates to graphics and the addition of sounds could be considered, these were not a priority due to the project's focus on gameplay.



## Implementation

Above is a diagram that depicts a typical level a player may go through, by timing their movement and using the shadows they can avoid the enemy's view cones (depicted in a darker grey) and avoid detection. The user will also be able to interact with the environment in certain scenarios, for example the light source shown in the third panel could be removed allowing the player to get past the patroller.

