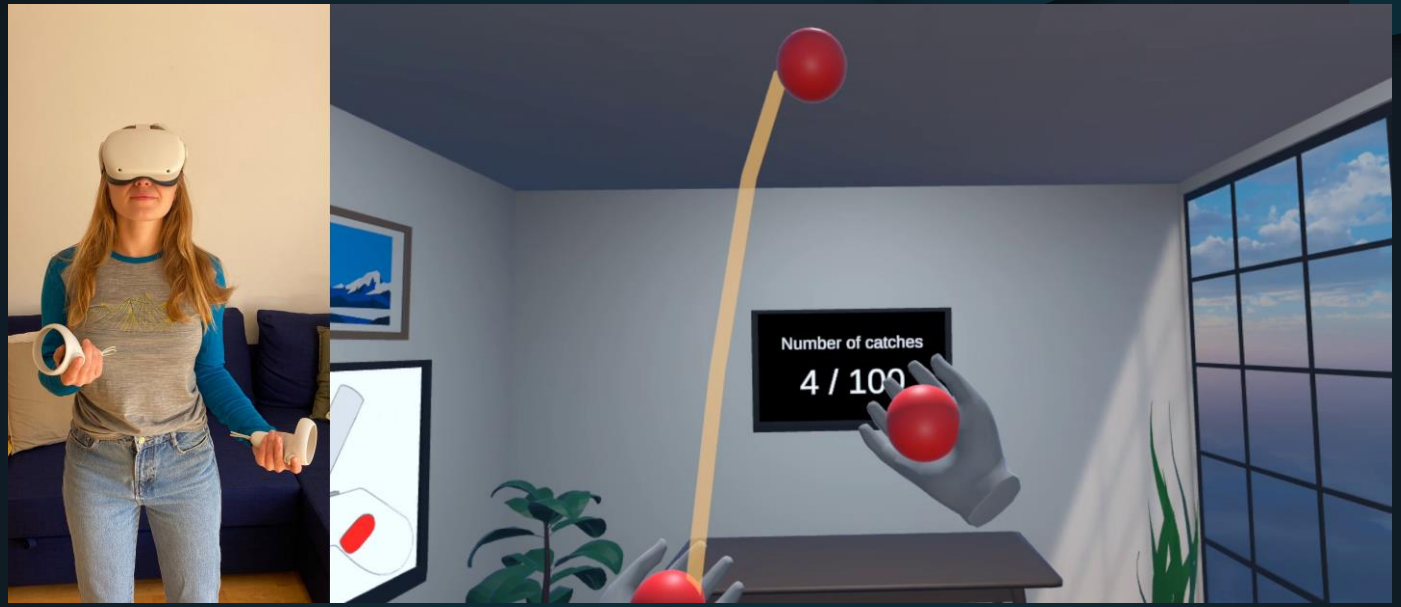
PORTFOLIO

KACPER GĄSIOR

My main projects



VR Juggling Simulator – Master's Thesis

VR Juggling Simulator Master's Thesis

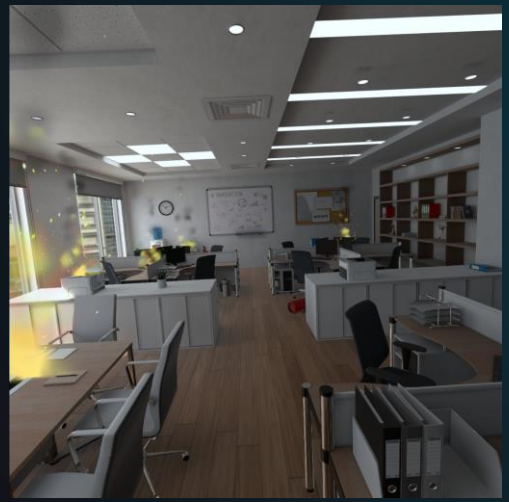
For my Master's thesis project, I developed a VR juggling simulator in Unity, and later did a study comparing the learning outcomes from VR group, and a one learning in real life. The project incorporates a robust physics engine to accurately model ball trajectories, collisions, and user interactions. Key features include, dynamic object manipulation, level system, intelligent audio guide and adjustable difficulty settings. I also implemented visual guides to assist users with timing and positioning.

Once Upon a Conquest

Once Upon a Conquest

"Once Upon a Conquest" is a hack-and-slash platformer game with narrative elements. The game's core mechanics include a destructible environment system, where objects and buildings can be shattered into pieces across multiple levels of destruction. Combat is driven by heavy and light attack mechanics, with enemies exhibiting more advanced AI behaviors, such as patrolling, becoming scared, or attack. The game also utilizes Unity's New Input System, supporting both gamepad and keyboard controls, and features responsive animations and visual cues to enhance the combat and user experience.
Check it out here.

Fire Extinguisher Training



Fire Extinguisher Training

In this VR fire extinguisher training developed in Unity, users engage in a realistic fire safety simulation. The experience begins by grabbing a virtual fire extinguisher, followed by removing the safety pin. The user must then extinguish several fires within a simulated room environment. The system tracks key performance metrics, including the time taken to complete the task and the number of extinguishers used. At the end of the training, users receive a detailed report summarizing their performance, helping them assess their efficiency and improve their fire safety skills.

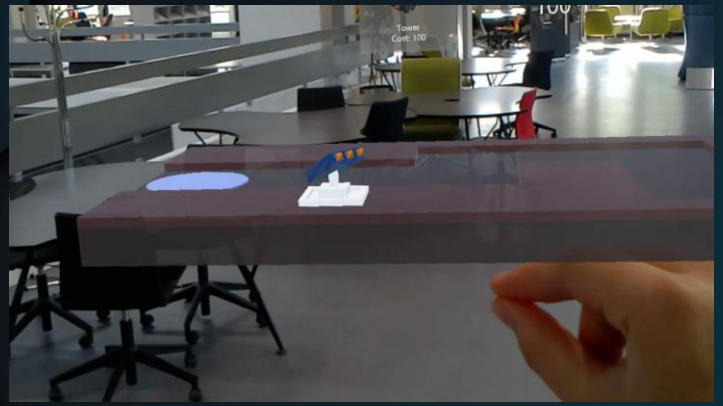
Bedtime Bash

Bedtime Bash

Bedtime Bash, my second game created during DADIU Academy, allowed me to develop strong management skills, leading 3 other programmers in a team of 18 people. I learned to break down tasks into atomic components, delegate based on teammates' skills and deadlines.

One key challenge we tackled was aligning physical weapon functionality with visual animations. We also applied a state machine pattern to our enemies, utilizing Unity's NavMesh utility for improved AI behavior.

TowAR Defense

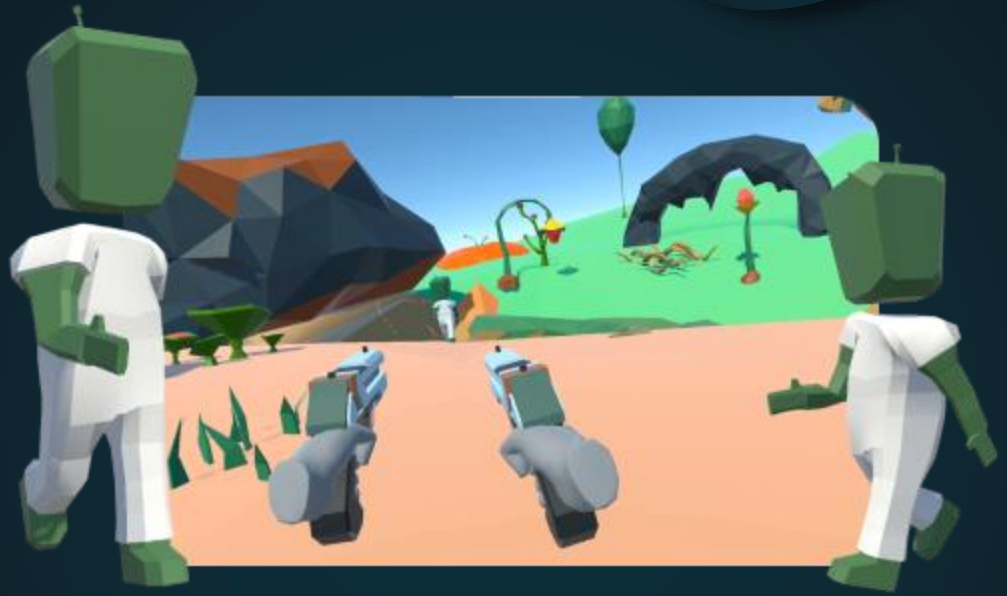


TowAR Defense

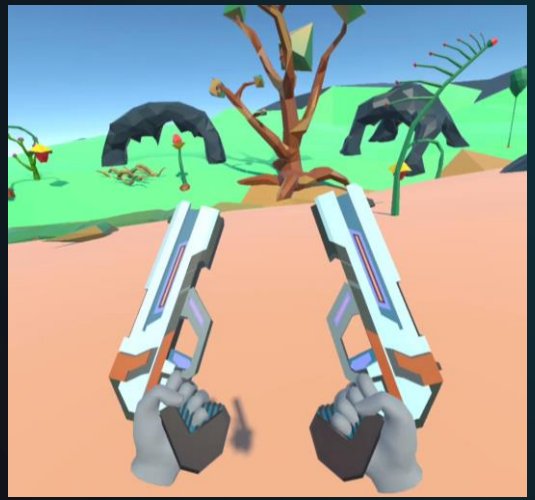
TowAR Defense is a tower defense-inspired game, reimagined in augmented reality (AR) specifically designed for HoloLens. The objective is to protect the base from oncoming waves of spiders by strategically placing defensive towers.

Players have the flexibility to position the game board on any suitable surface, thanks to the implementation of spatial mapping. Additionally, players manually place the defensive towers with their own hands.

In this project, I was responsible for designing and creating 3D models and animations, which were crafted using Blender software.



Alien Defense



Alien Defense

Alien Defense is a simple VR shooter game. The goal of it is to grab the guns from the ground and protect yourself from the incoming aliens.

For better performance, it's been created with URP. Enemies' path is calculated with use of NavMesh components.

The app is in the stage of beta tests on AppLab and has been tested on Oculus 2.

Check it here

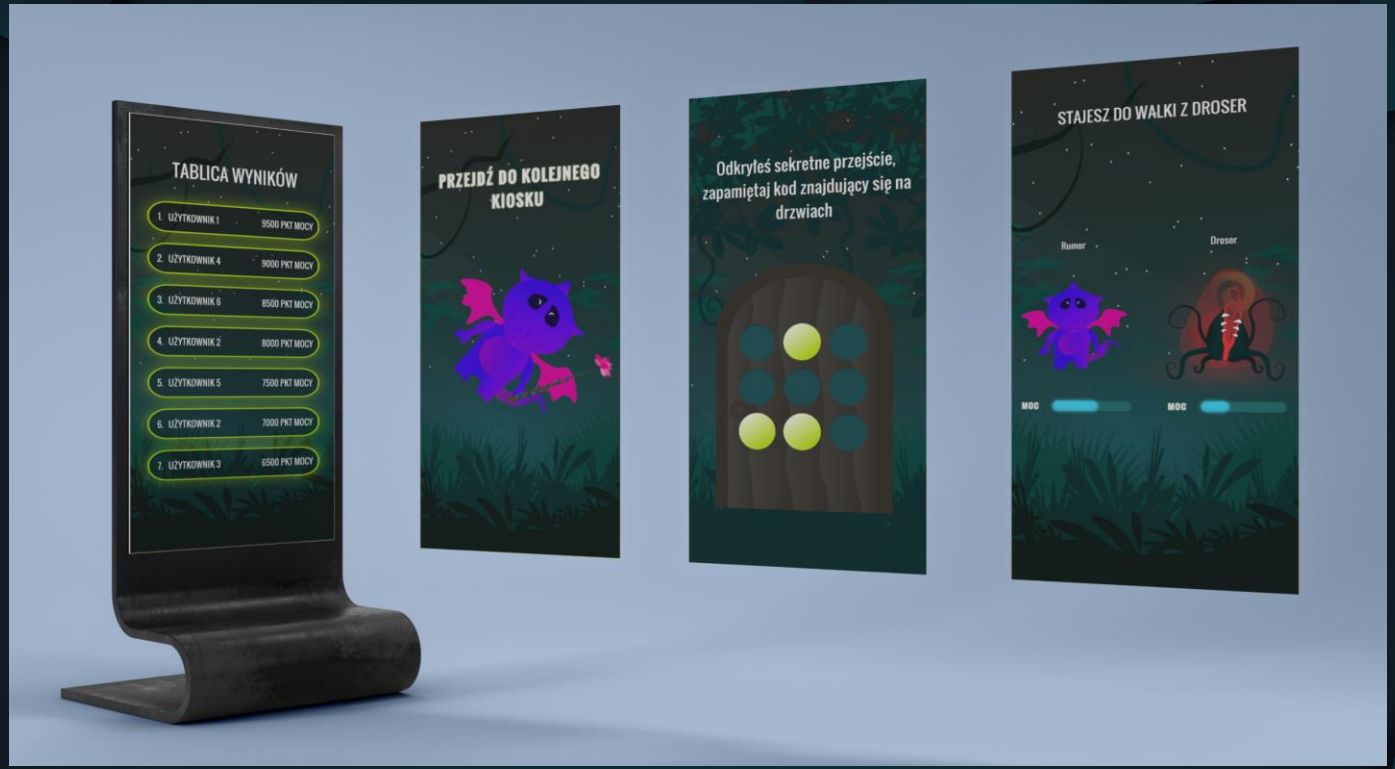
Fox Runner

Fox Runner

Fox runner is a platform game with 3D graphics, where the player's goal is to travel as much distance as possible. During gameplay, the player has to avoid obstacles and collect extra time by jumping over gates.

A game created in Unity3D, designed for playing with help of ZED motion capture camera. Obstacle generation is implemented with object pooling for best performance. Web version of the game simulates players motion with arrow keys.

Check the game here.



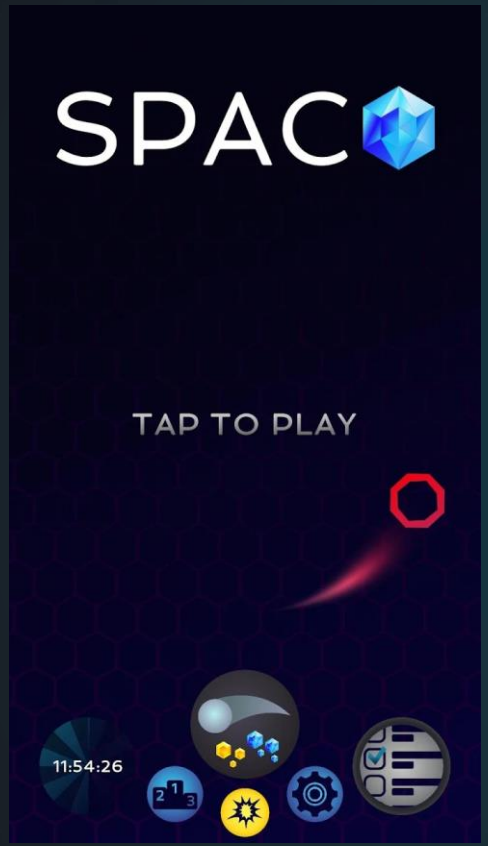
Smoke Fusion

Smoke Fusion

Smoke Fusion is a game that takes place on interactive screens distributed throughout the park. It will make your amusement park more enjoyable for children while encouraging them to be more active.

A game created in Unity3D, designed for Kiosks with Android. It uses rfid cards to identify user and track his progress. With use of URP and custom shaders, the glow effect has been achived. In the Internet, there is availble a version designed for testing and simulating experience from the amusement park. Check it here.


SPACO



Arcade game for Android

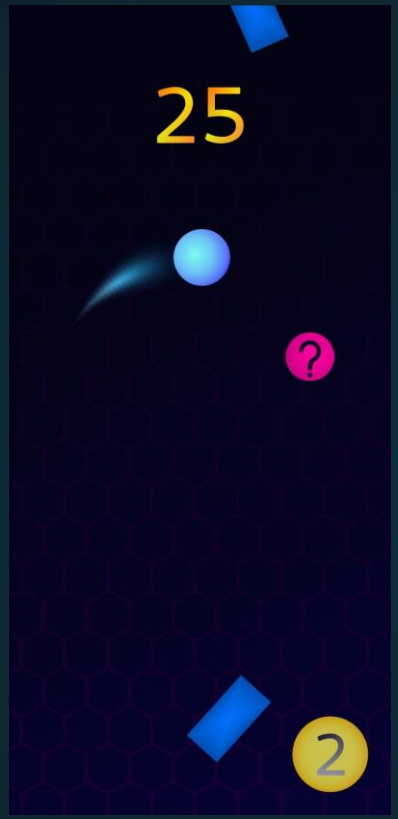
Spaco is one of my first bigger projects. I made it in collaboration with my colleague.

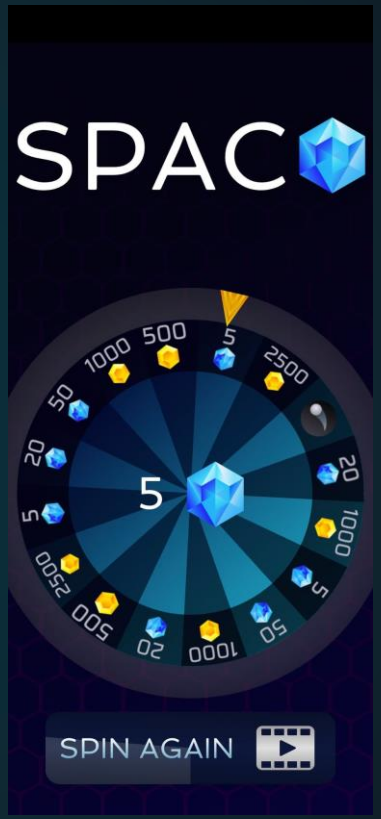
It's an arcade game, with an idea that hasn't been seen in any other games. It was the first time I worked with UI elements and also I used my experience in graphic design to create all of the assets.

This project taught me more than any other. I went from creating UI, through implementing ads and finished on publishing the game on Google Play here -> SPACO

Some of the features in the game are:

- Daily challenges,
- Implemented ads,
- Google play games leaderboard,
- Firebase notifications,
- Daily roulette,
- In-game currency,
- Shop with different player skins,
- Power-ups

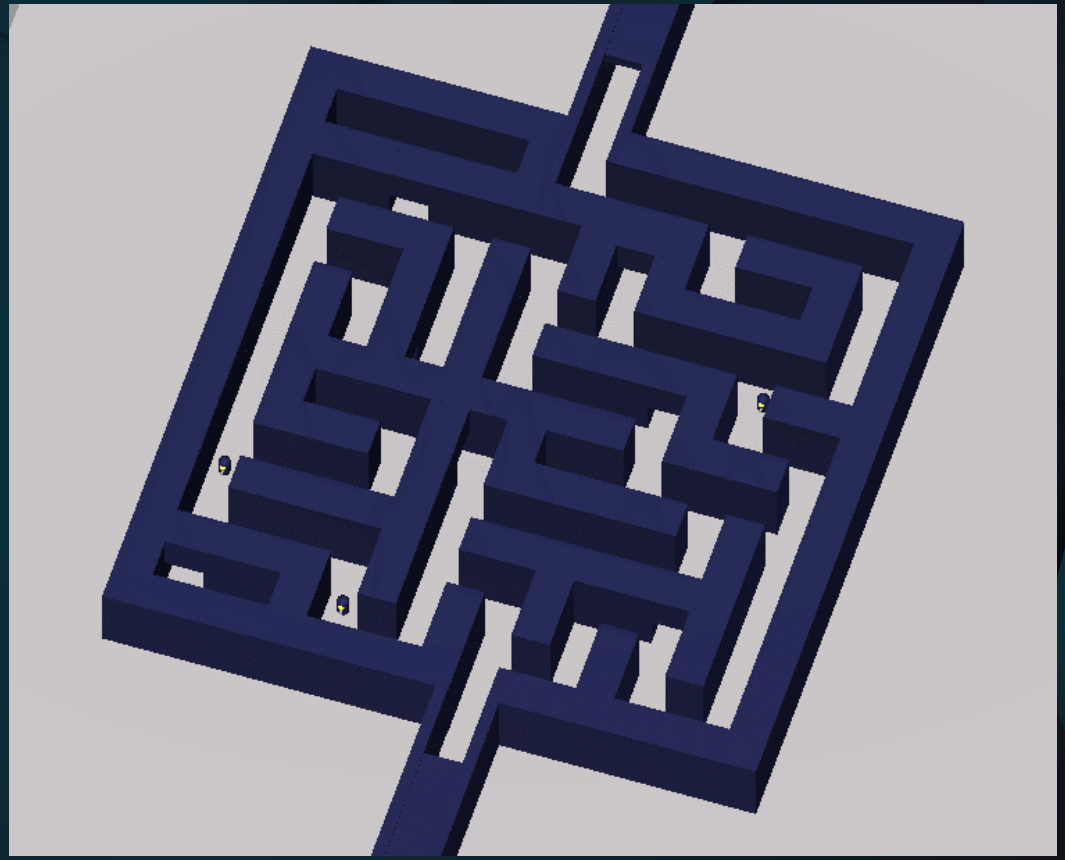


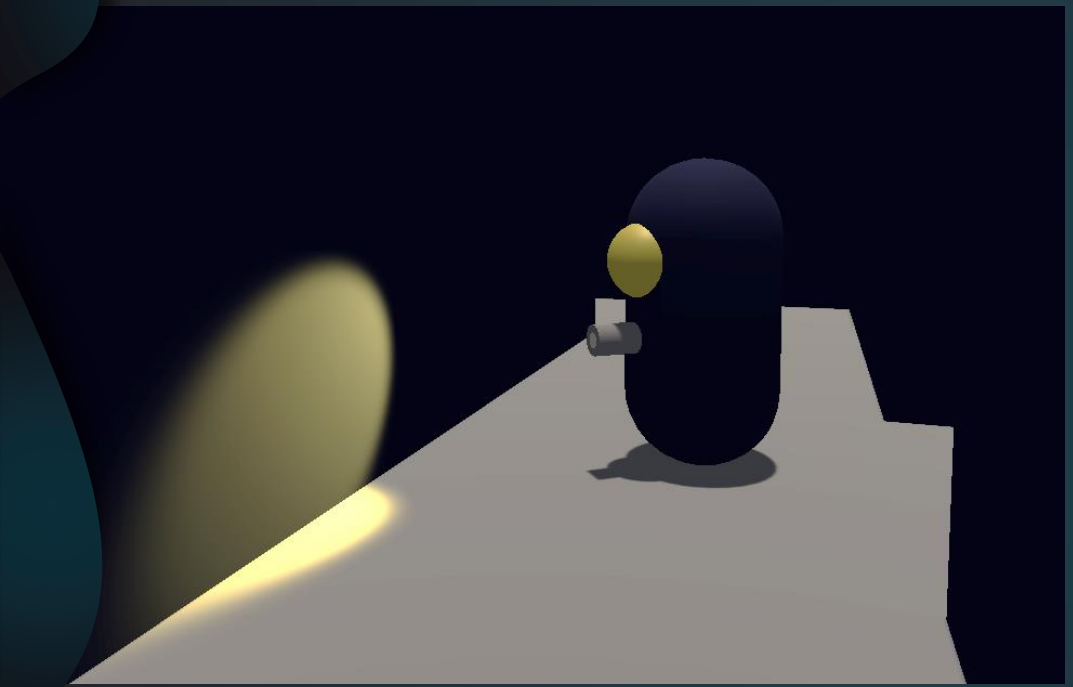


Maze runner

This is one of my first bigger projects in 3D, that I made in a week, during Erasmus in Spain. It includes:

- AI,
- Path finding,
- State machines,
- NavMeshAgents,
- NavMeshObstacles,
- RayCasting.





Policemans

Policeman is a NavMeshAgent which is able to:

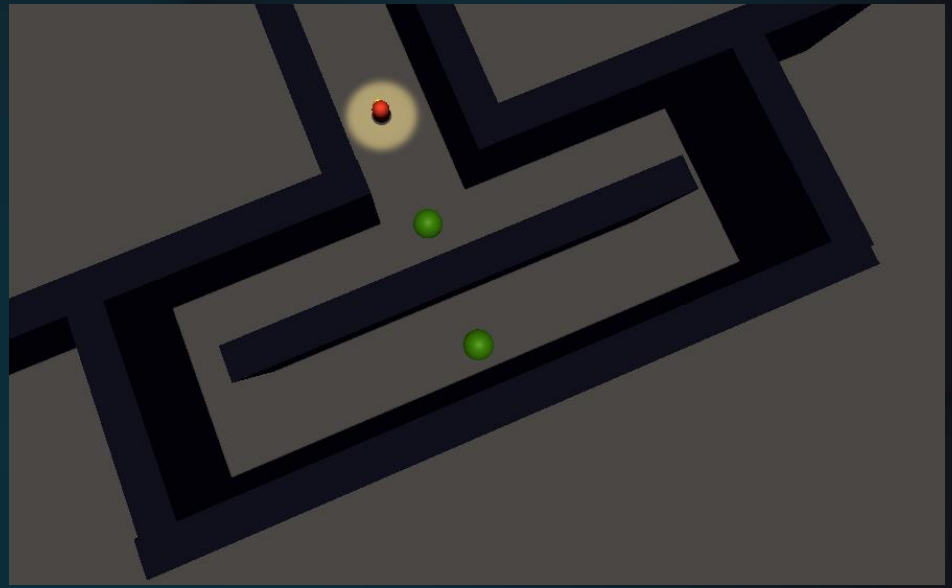
- Patrol,
- Chase and shoot,
- Refill ammo.

The NPC is using RayCast to look for the player. When a Policeman sees the player, it starts the chase and shoots when the player is directly in front of him.

When the player is far away, NPC comes back to patrolling or if he doesn't have full ammo he goes to ammo refill point.

Capturing the baby

At the end of the maze, the player has to capture the baby. When the player enters this section of the maze, he instantly becomes a NavMeshObstacle.
When he approaches the kid with too high velocity, the kid runs away to one of the 2 spots that are marked in the picture with the green dots just for presentation purposes.
The NavMeshObstacle component in the Player makes the baby avoid him during the escape.



Police’s light

Police’s light is a NavMeshAgent travelling from one destination to another. Mesh renderer is enabled only for the presentation purposes.
When light sees the player, it fixes it’s position on him and after 3 seconds of seeing him, triggers the alarm. Then all cops start the chase. When the player is hidden for at least 1 second, the alarm is disabled.