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1. Introduction

The SuperLap Racing Line Optimizer Technical Installation Manual is intended for IT staff, developers, or advanced users responsible for deploying and maintaining the system. It provides detailed instructions on installation, configuration, verification, and troubleshooting across different operating environments.

The scope of this manual includes hardware/software prerequisites, Docker and Unity configuration, dependency setup, and environment variable management. It also outlines common installation issues and their resolutions.

This document assumes the reader has some technical knowledge, including familiarity with command-line interfaces, operating system setup tools. For non-technical users who simply want to run the system, please refer to the User Manual.

2. Prerequisites

System Requirements

Minimum PC Requirements

Component	*Requirement*
Operating System	Windows 11
CPU	Intel Core i5
RAM	18GB (For Unity to open), 32GB (For Unity to run well)

Pre-Installation Setup

Step 1: Ensure you already have the following applications on your personal device:

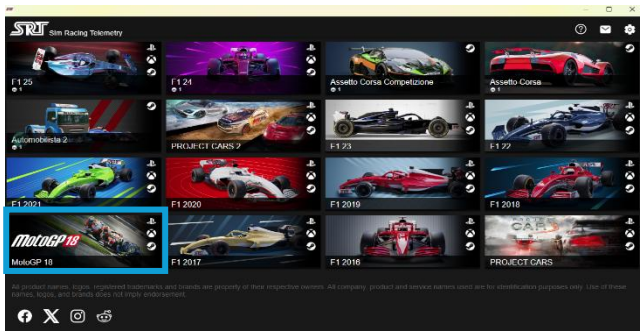
1. VS code (Or any IDE that you are comfortable using)
2. Unity Hub (Version 6.1) with Unity Editor installed
3. To make use of the “Wow factor” please ensure you also have:

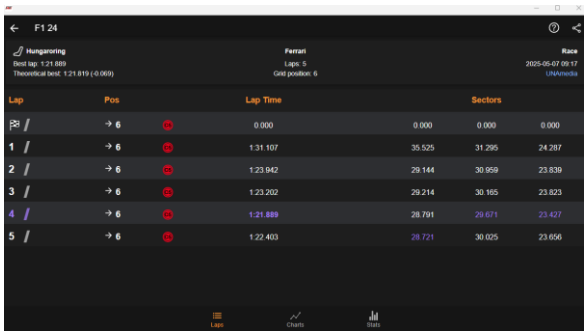
   MotoGp18: https://store.steampowered.com/app/775900/MotoGP18/

Sim Racing Telemetry:

https://store.steampowered.com/app/845210/Sim_Racing_Telemetry/

Both are available on Steam. Now you can launch Sim Racing Telemetry (SRT). In SRT select the MotoGP18 tile. It will prompt you to get the DLC. Please get the DLC.





Step 2: Clone the repository from GitHub

1. Open a terminal (Command Prompt, PowerShell, or WSL on Windows; Terminal on Mac/Linux).
2. Navigate to the directory where you want to store the project.
3. Run the following command:

```
git clone https://github.com/COS301-SE-2025/SuperLap.git
```

4. After cloning, move into the project folder:

```
cd SuperLap
```

3. Installation Procedure

Step 1: Open the project in your IDE.

- Navigate to the correct SuperLap directory and open it in your chosen IDE.
- If you're using VS Code, you can open the project by running:

```
code .
```

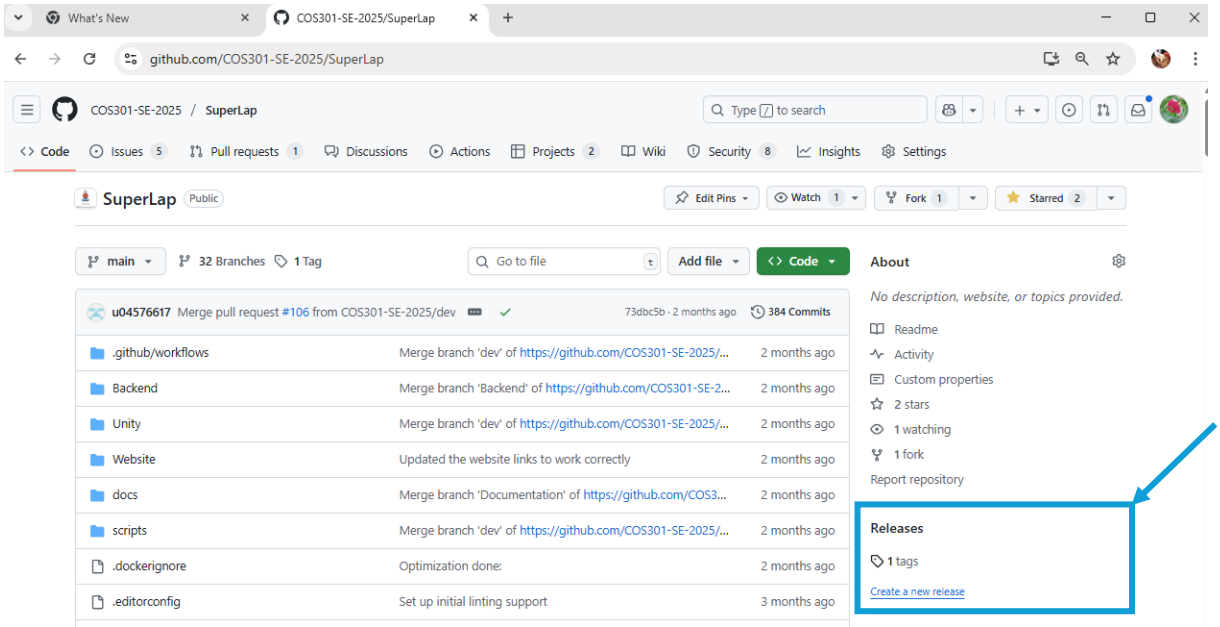
- Or, open VS Code manually and select File > Open Folder, then navigate to the cloned **SuperLap** directory.

Step 2: Start supporting services

1. Start Unity Hub and ensure the correct Unity version (6.0) is active.

4. Deployment Procedure

Option 1: Using GitHub Releases



Our project has been packaged into .exe files. These can be found in our GitHub repository.

This option is easier than installing and running Unity, which can be resource-intensive.

Step 1: Go to our Repository and look for the Releases tab on the right.

Step 2: Then click on the “tags” here you can download each .exe to run the system like a normal Windows application.

Option 2: Using Unity

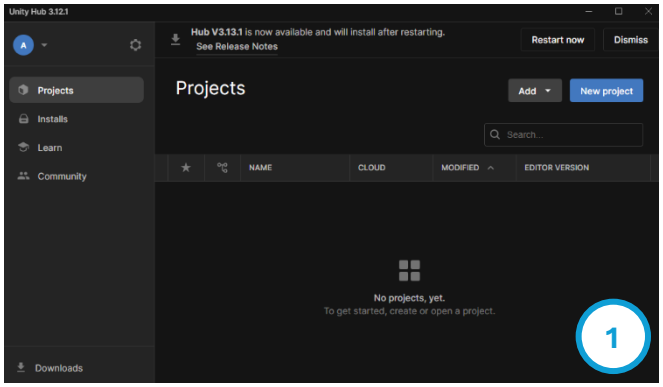
Step 1: Sign up or log in to Unity. Once logged in, you will see the Unity Hub window.

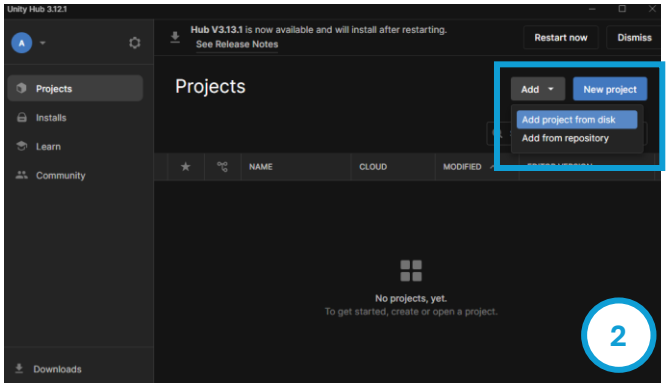
Step 2: Click on the **Add** drop-down menu and select **Add project from disk**.

Step 3: Navigate to the **Superlap** folder, open it, and choose the **Unity** folder.

Step 4: Wait for Unity to load the project. Once it appears, double-click on it to open. (This may take a while.)

Step 5: Once the environment window opens, start the project by clicking the **Play** button at the top. If that doesn't work, open the **Scenes** tab and run the scene from there.


Unity Hub 3.12.1
Hub V3.13.1 is now available and will install after restarting.
See Release Notes
Restart now
Dismiss
Projects
Add
New project
Search...
NAME
CLOUD
MODIFIED
EDITOR VERSION
No projects, yet.
To get started, create or open a project.
Projects
Installs
Learn
Community
Downloads
1


Unity Hub 3.12.1
Hub V3.13.1 is now available and will install after restarting.
See Release Notes
Restart now
Dismiss
Projects
Add
New project
Add project from disk
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NAME
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MODIFIED
No projects, yet.
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Projects
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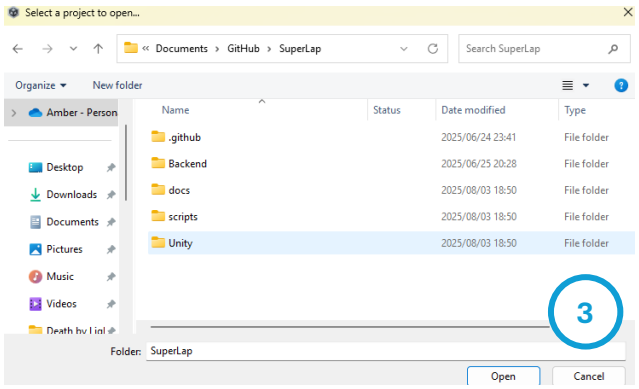
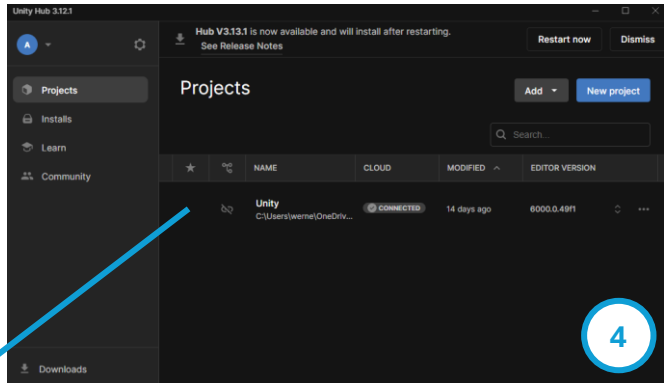
2


Select a project to open...
Documents › GitHub › SuperLap
Search SuperLap
Organize
New folder
Name
Status
Date modified
Type
.github
Backend
docs
scripts
Unity
2025/06/24 23:41
2025/06/25 20:28
2025/08/03 18:50
File folder
Desktop
Downloads
Documents
Pictures
Music
Videos
Folder: SuperLap
Open
Cancel
3


Unity Hub 3.12.1
Hub V3.13.1 is now available and will install after restarting.
See Release Notes
Restart now
Dismiss
Projects
Add
New project
NAME
CLOUD
MODIFIED
EDITOR VERSION
Unity
CONNECTED
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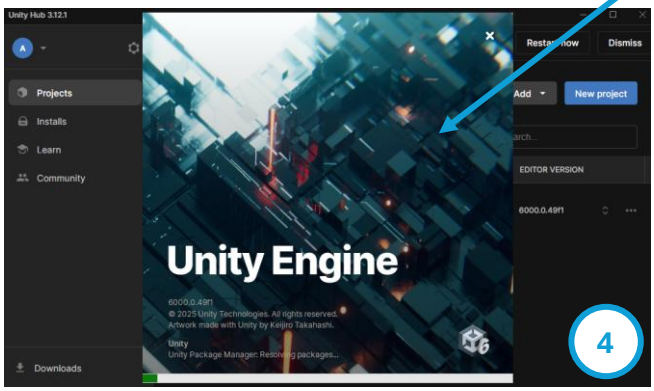
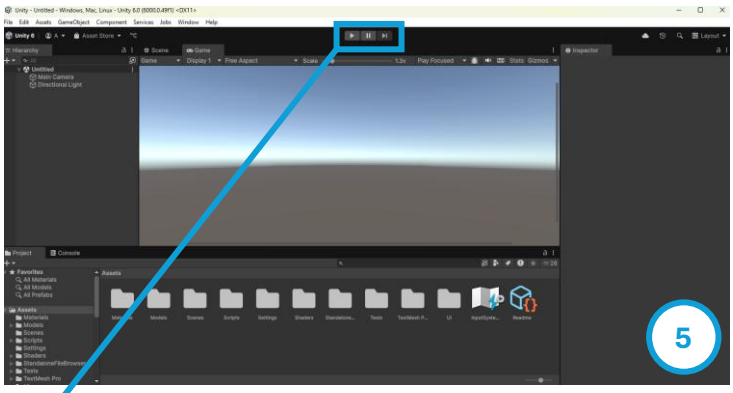
Projects
Installs
Learn
Community
Downloads
4


Unity Hub 3.12.1
Dismiss
Add
New project
EDITOR VERSION
6000.0.49f1
Unity Engine
Projects
Installs
Learn
Community
Downloads
4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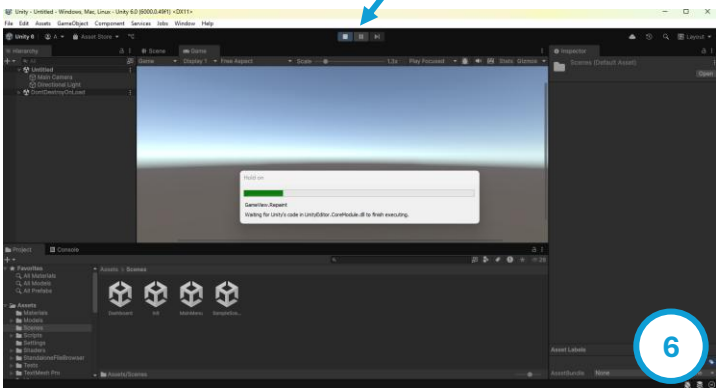
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5. Using The Application

Step 6: Once the application has been installed and started up you will see a log in and quit button. Click on the login button.

Step 7: Login if you already have an account with Superlap. If you do not have a login, then click on the register button to create one.

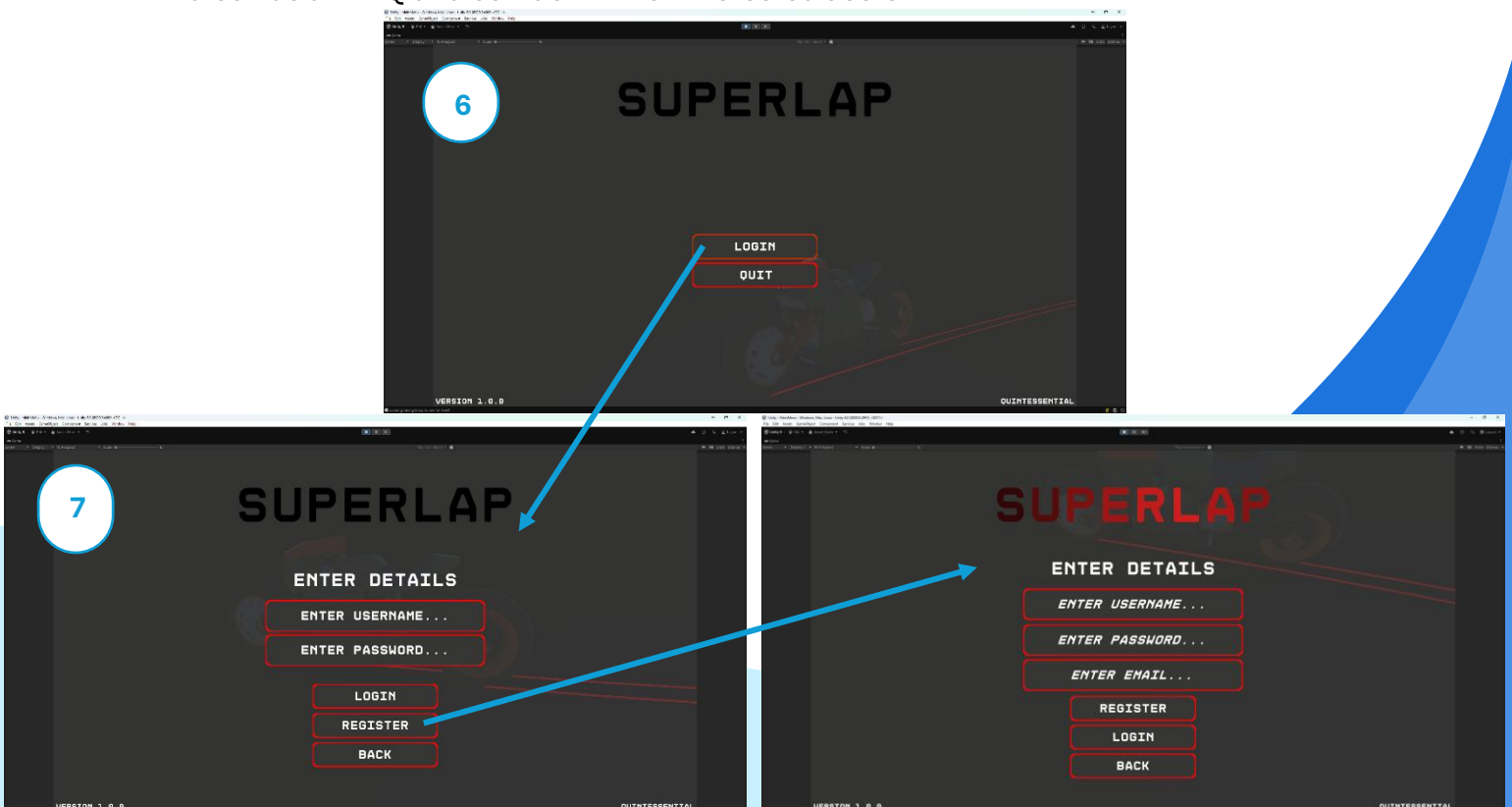
Step 8: While on the "Dashboard" page a user is able to up load a track image from their device. Once an image has been selected, the user must select on "Choose Image" button.

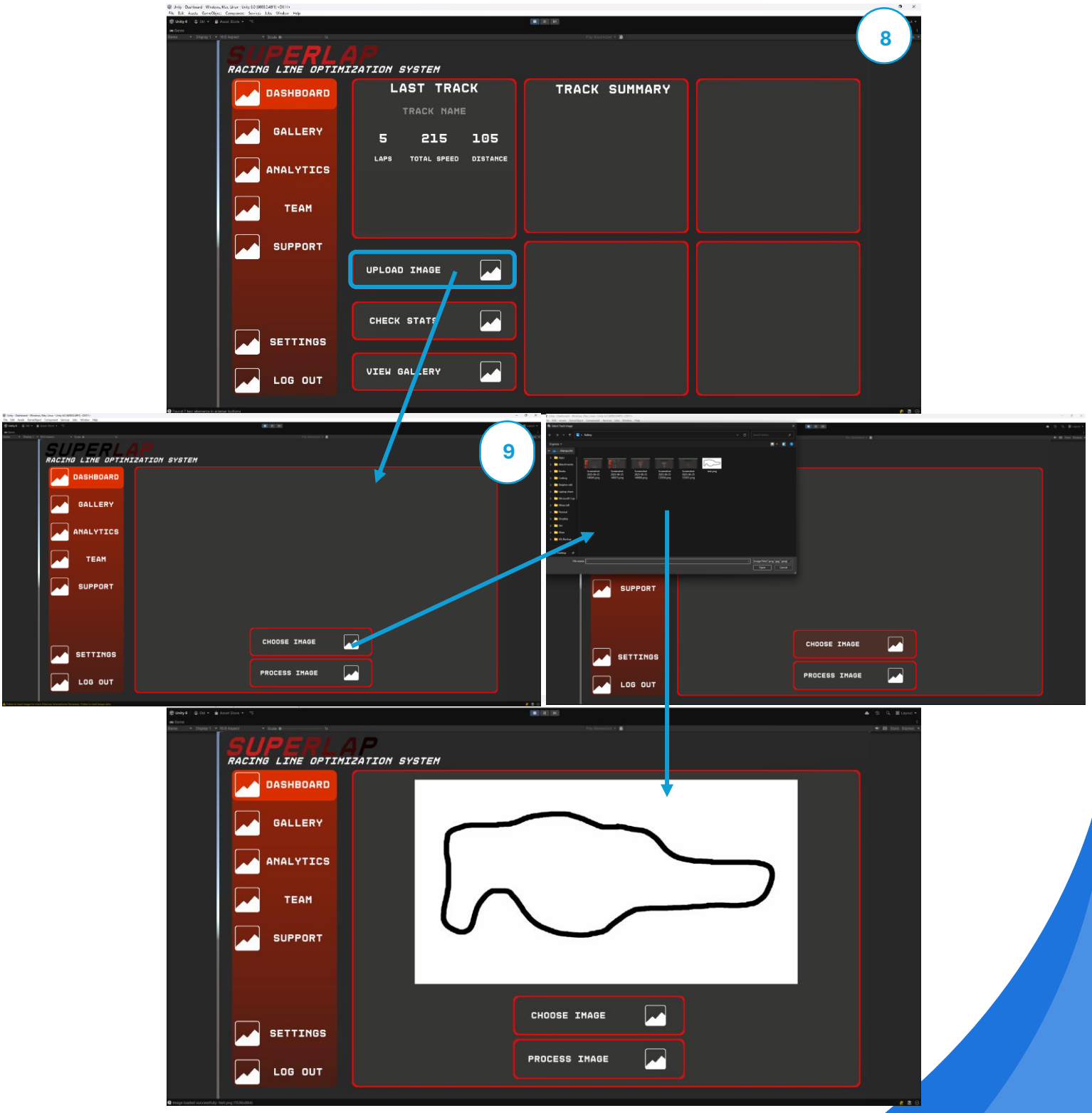
Step 9: After an image has been selected, it is uploaded to the backend of the system. First the Image processor takes the image and calculate the outer and inner bounds of the track. These parameters are then passed into the Raceline Optimizer which uses a partial swarm algorithm to calculate the best track for that specific line.

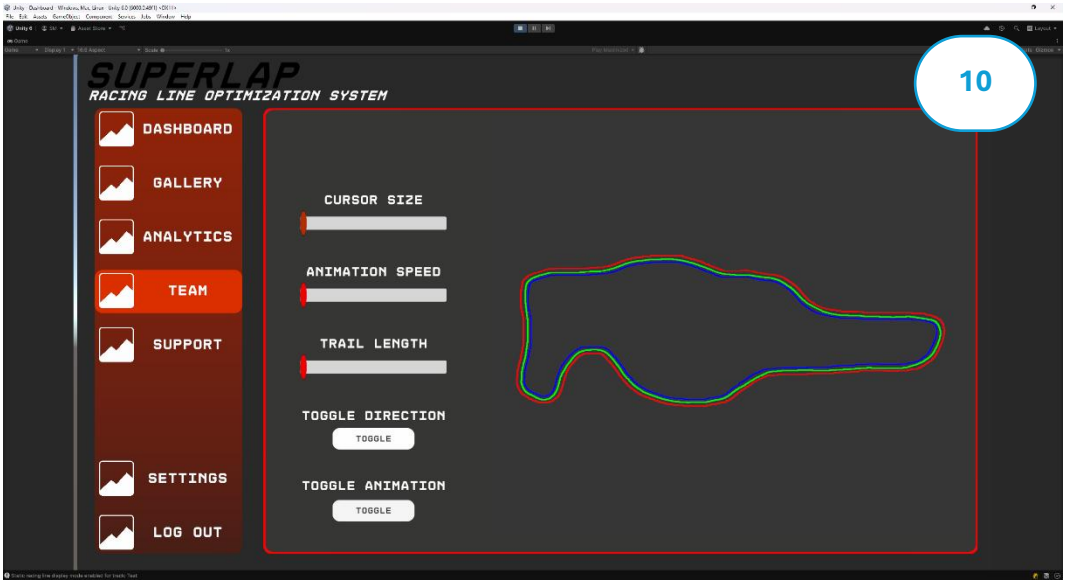
Step 10: Once the system has analysed the track, it will display a track with red and blue line, the red line is the outer bounds of the track, while the blue is the inner bounds of the track. The green line, is the best path for the rider to follow around this specific track.

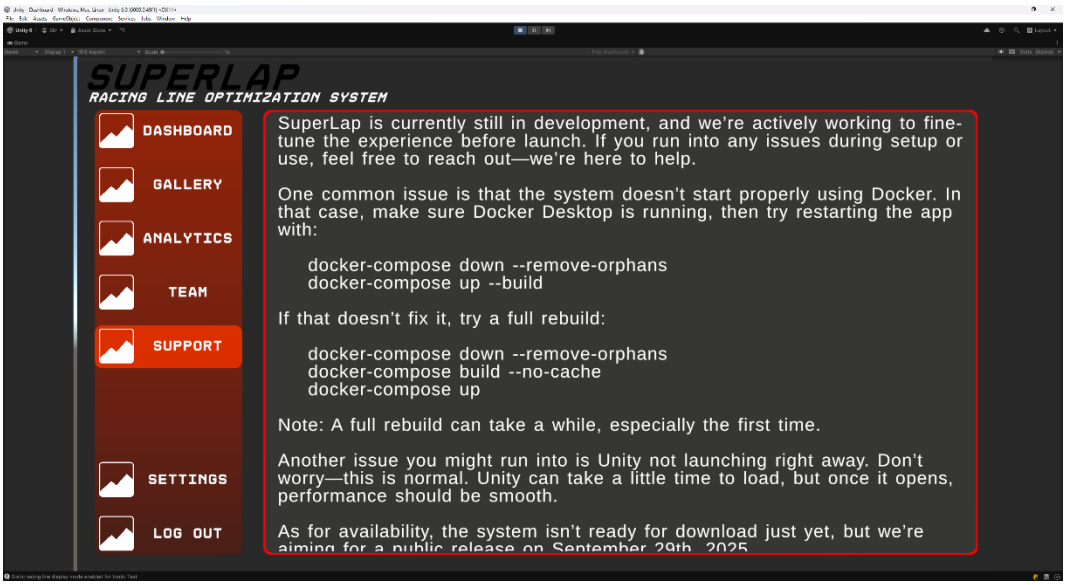
Support Page ("Help Page")

This page has some common issues that some might run into when running our system. It also has an FAQ and contact link for interested users.




8
SUPERLAP
RACING LINE OPTIMIZATION SYSTEM
DASHBOARD
GALLERY
ANALYTICS
TEAM
SUPPORT
SETTINGS
LOG OUT
LAST TRACK
TRACK NAME
5
LAPS
215
TOTAL SPEED
105
DISTANCE
TRACK SUMMARY
UPLOAD IMAGE
CHECK STATS
VIEW GALLERY
9
CHOOSE IMAGE
PROCESS IMAGE


SUPERLAP
RACING LINE OPTIMIZATION SYSTEM
10
DASHBOARD
GALLERY
ANALYTICS
TEAM
SUPPORT
SETTINGS
LOG OUT
CURSOR SIZE
ANIMATION SPEED
TRAIL LENGTH
TOGGLE DIRECTION
TOGGLE
TOGGLE ANIMATION
TOGGLE


SUPERLAP
RACING LINE OPTIMIZATION SYSTEM
DASHBOARD
GALLERY
ANALYTICS
TEAM
SUPPORT
SETTINGS
LOG OUT
SuperLap is currently still in development, and we're actively working to fine-tune the experience before launch. If you run into any issues during setup or use, feel free to reach out—we're here to help.
One common issue is that the system doesn't start properly using Docker. In that case, make sure Docker Desktop is running, then try restarting the app with:
docker-compose down --remove-orphans
docker-compose up --build
If that doesn't fix it, try a full rebuild:
docker-compose down --remove-orphans
docker-compose build --no-cache
docker-compose up
Note: A full rebuild can take a while, especially the first time.
Another issue you might run into is Unity not launching right away. Don't worry—this is normal. Unity can take a little time to load, but once it opens, performance should be smooth.
As for availability, the system isn't ready for download just yet, but we're aiming for a public release on September 29th, 2025.