

# SuperLap Racing Line Optimization System

EPI-USE



## Quintessential

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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

<i>Component</i>	<i>Requirement</i>
<b>Operating System</b>	Windows 11
<b>CPU</b>	Intel Core i5
<b>RAM</b>	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/>



**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:

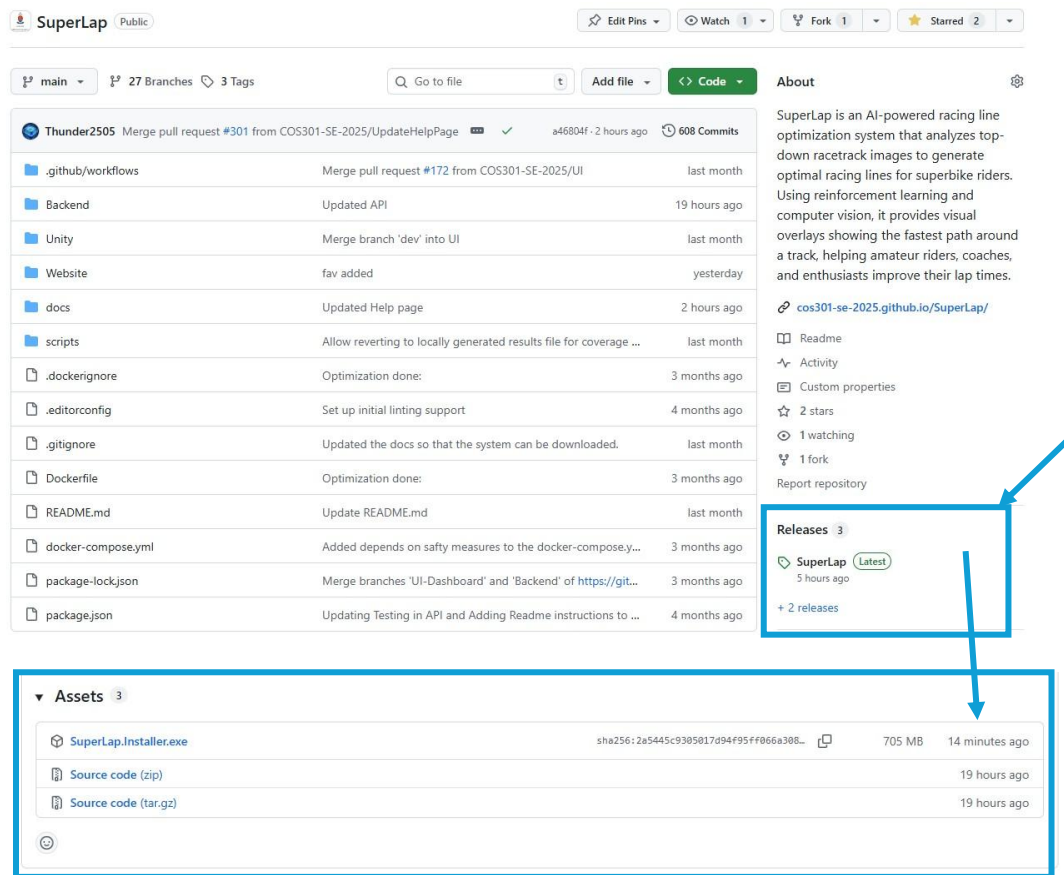
```
code .
```

- 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



## 5. 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.

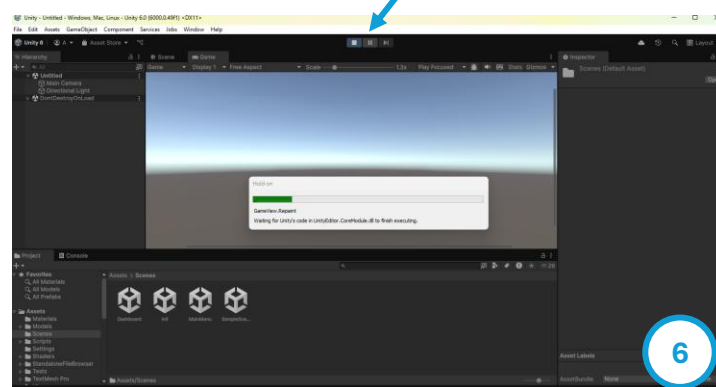
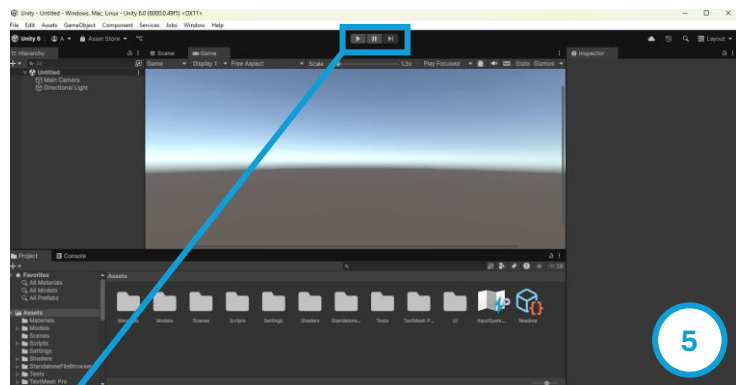
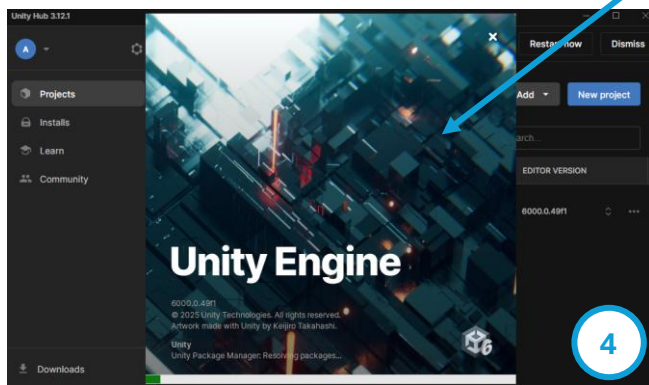
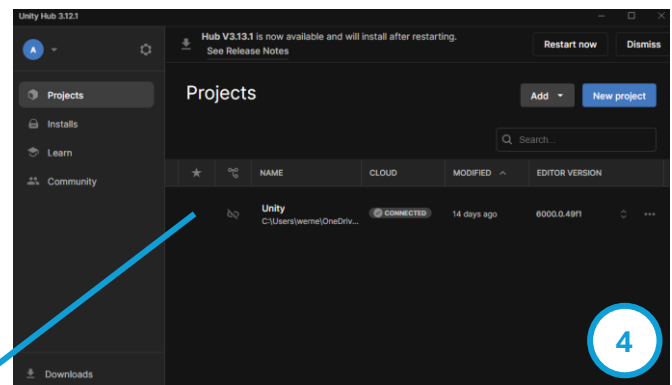
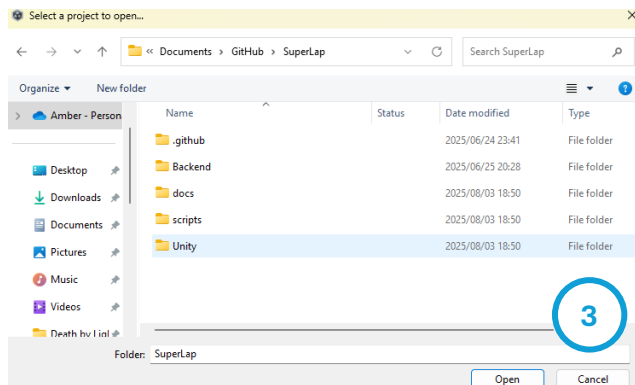
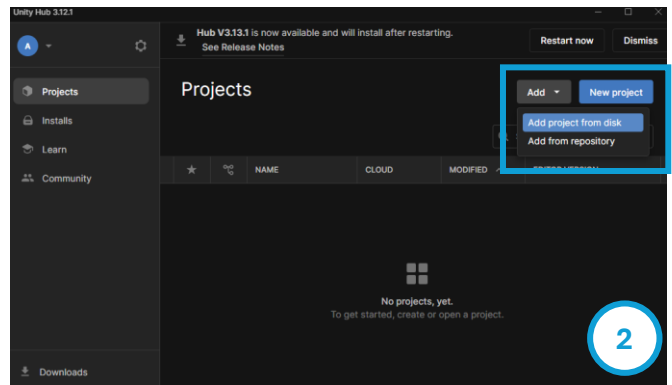
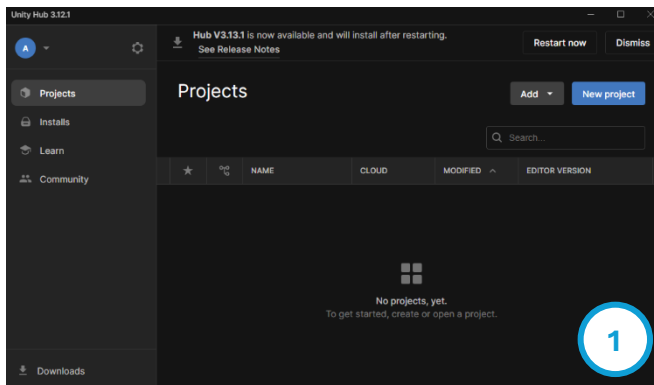
Quintessential  
ctprojectteam3@gmail.com

**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.



## 6. 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.

