

# ML-Racing

## A Unity Racing Game With Machine Learning

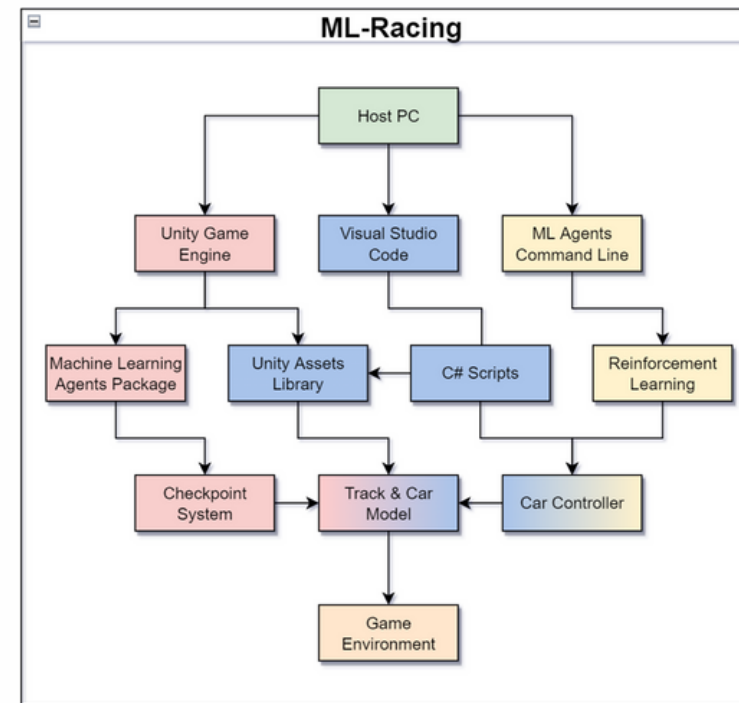
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**Module:** Project Engineering  
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### Introduction

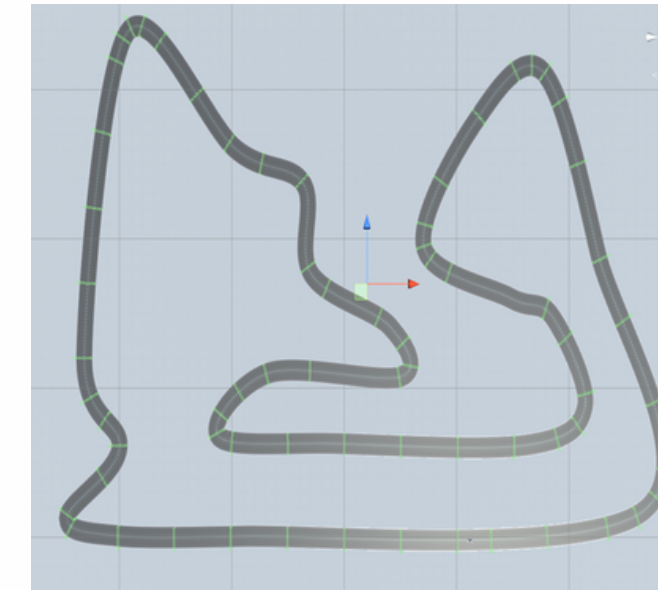
ML Racing is a racing game designed in the Unity Game engine that incorporates machine learning to create an AI that will race competitively against the player. The game applies a neural network created using MLAgents, a software designed by Unity, by using reinforcement learning to teach the kart over time how to navigate a set track.



### Architecture Diagram

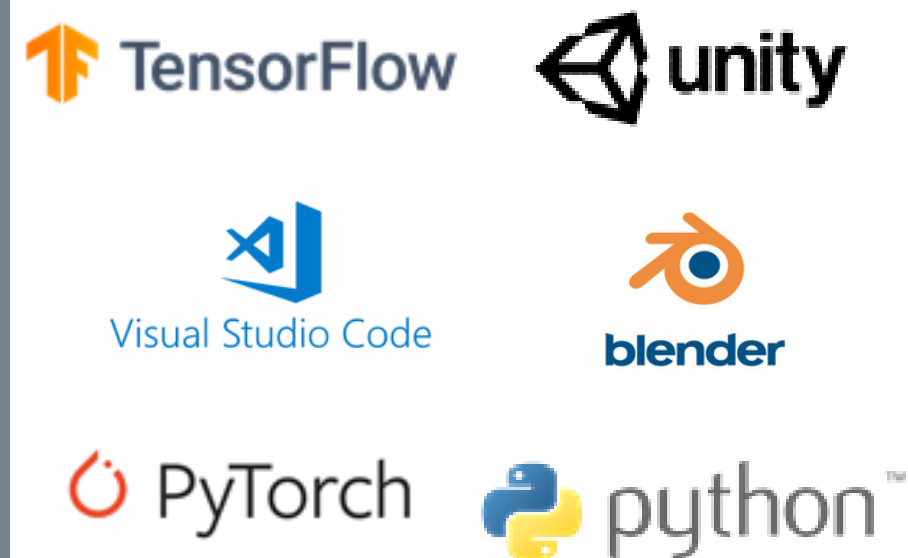


### Summary



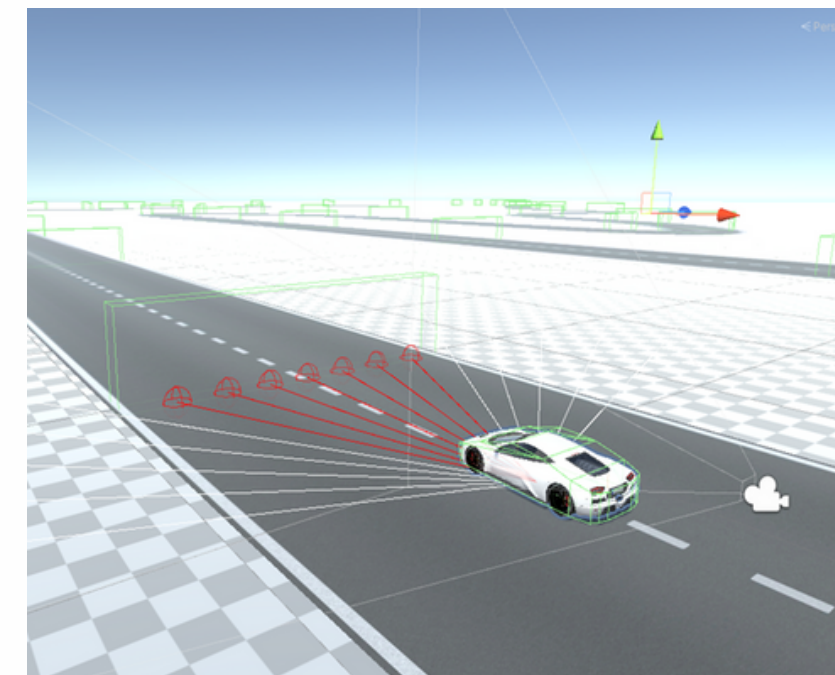
Using C# scripts the game implements colliders which are the targets for the kart to reach. Each time the kart reaches a collider it is rewarded points for doing so and when it fails it is deducted points giving a reward/penalty system. If left for long enough the kart will go through hundreds of scenarios to try to gain the highest reward possible.

### Technologies Used



### Results and Conclusion

The Program works as expected and over time the standard of reward increases from being between 1.0 - 2.0 all the way to 100 - 110. The results can also be seen when the neural network is applied to a kart for game purposes. Without the neural network applied the kart will aimlessly drive in circles, but once applied the kart will drive around the track almost as quickly as the player would.



### QR Code to GitHub

