

# Simulator environment to test driver-assistance systems



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# Content

- Simulator rig
- Carla
- Unreal Engine
- Steering wheel control



# Goal of the project

- Simulator
  - Force feedback (FFB)
- Advanced driver-assistance systems (ADAS)
- Autonomous driving



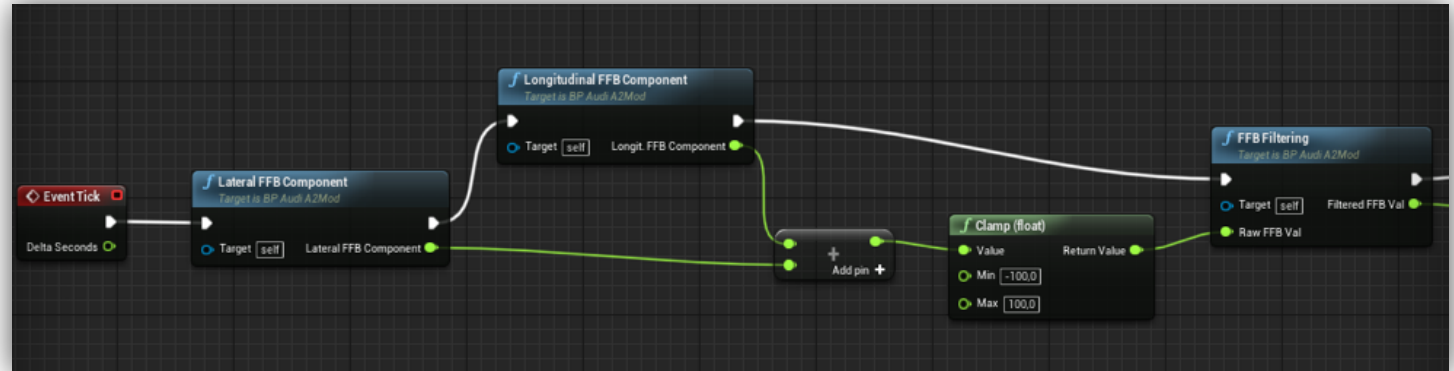
# Carla

- **Autonomous driving simulation software**
  - [carla.org](http://carla.org)
- **Environments and vehicles**
  - Modifiable weather
- **Sensors**
- **PythonAPI**



# Unreal Engine

- **Popular game engine**
  - Free to use, royalty-based business model
  - Downloaded from [Epic Games Launcher](#)
- **Nvidia PhysX vehicle model**
- **Coding: C++ or Blueprint mode**
- **Tons of plugins**

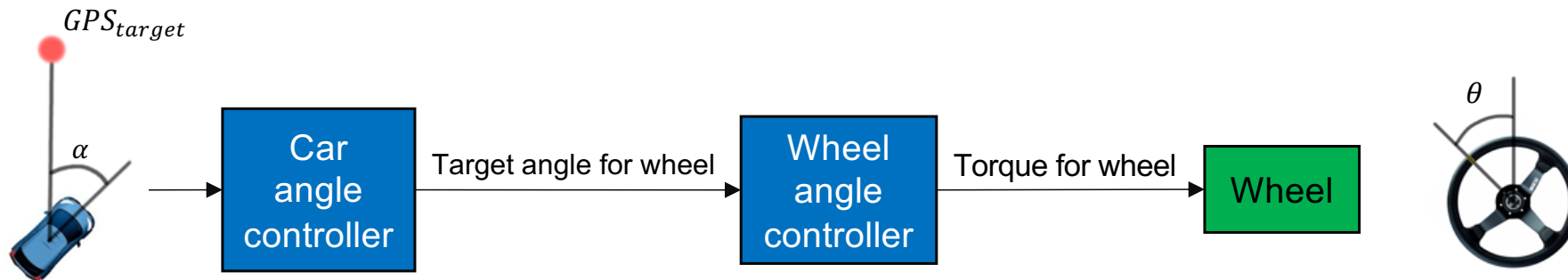


# Steering wheel control

- **Logitech Wheel Plugin**
  - [UE 4.24 compatible version](#)
- **Python script controls the wheel**
  - Virtual controller with [Pyxinput](#) library
  - Controller joystick position read by UE
    - Torque command to wheel

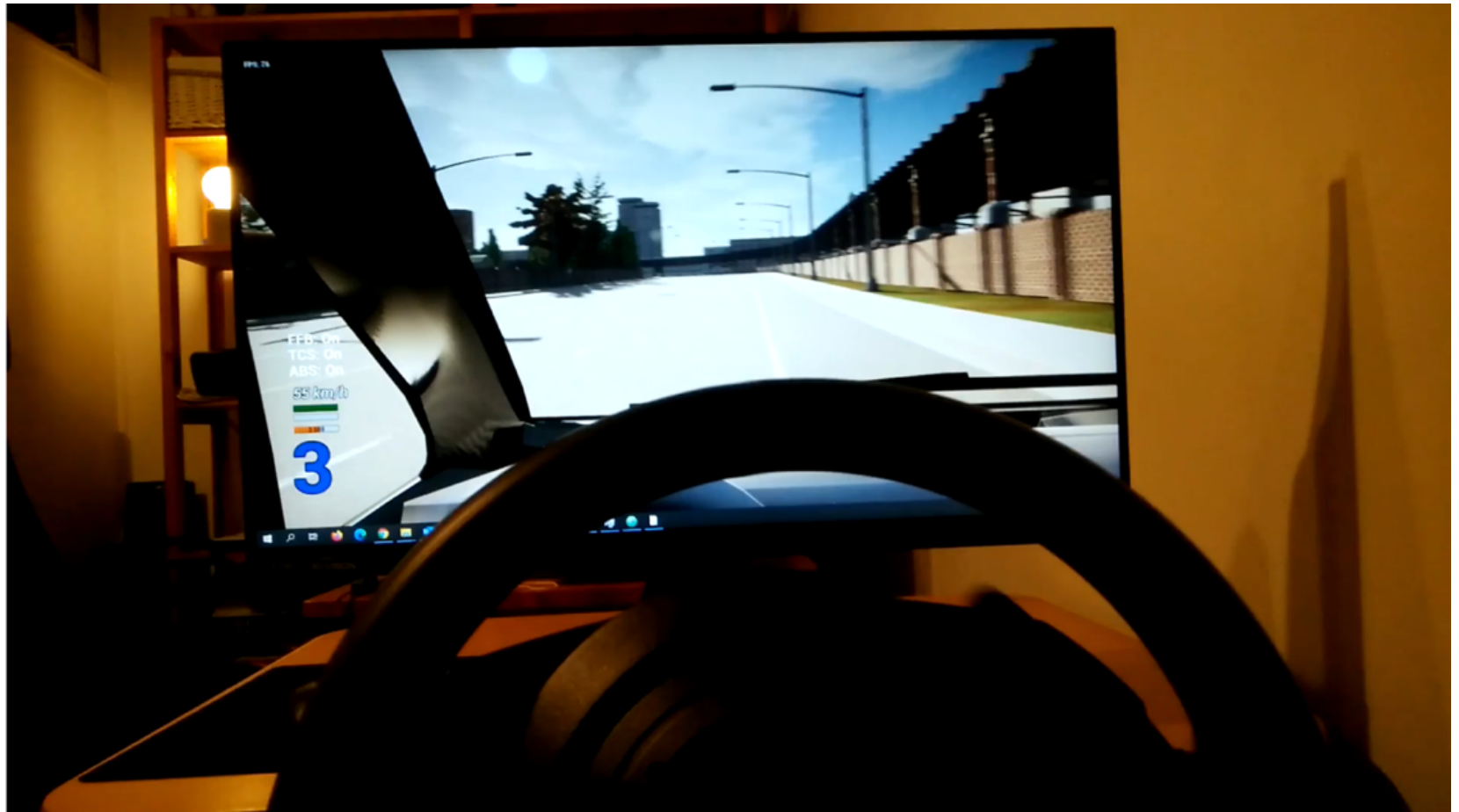
# Wheel control, demo

- Follow a GPS route
- simple\_PID library





# Wheel torque model, demo



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# Summary

- **Wheel control from python script**
  - Autonomous demo
- **Torque modeling**
- **Simulator rig at our office**
  - Varjo VR headset also available



# Questions?



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