

# Simulator environment to test driver-assistance systems



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School of Engineering

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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**



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# Carla

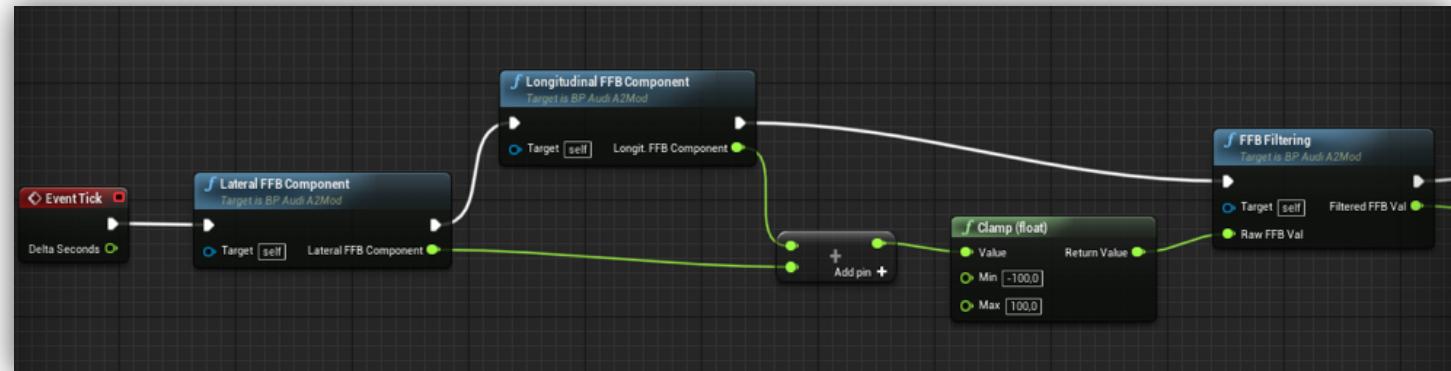
- Autonomous driving simulation software
  - [carla.org](http://carla.org)
- Environments and vehicles
  - Modifiable weather
- Sensors
- PythonAPI



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# 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

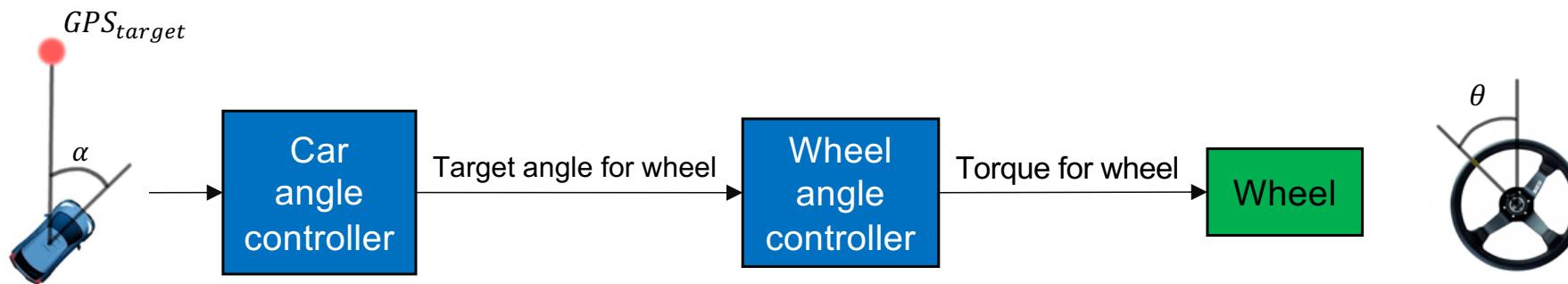


# Steering wheel control

- **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





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# Wheel torque model, demo

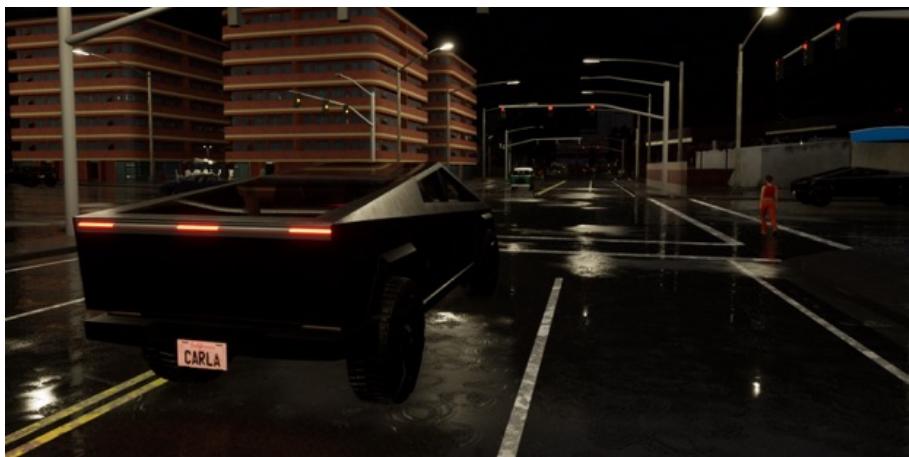


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# Summary

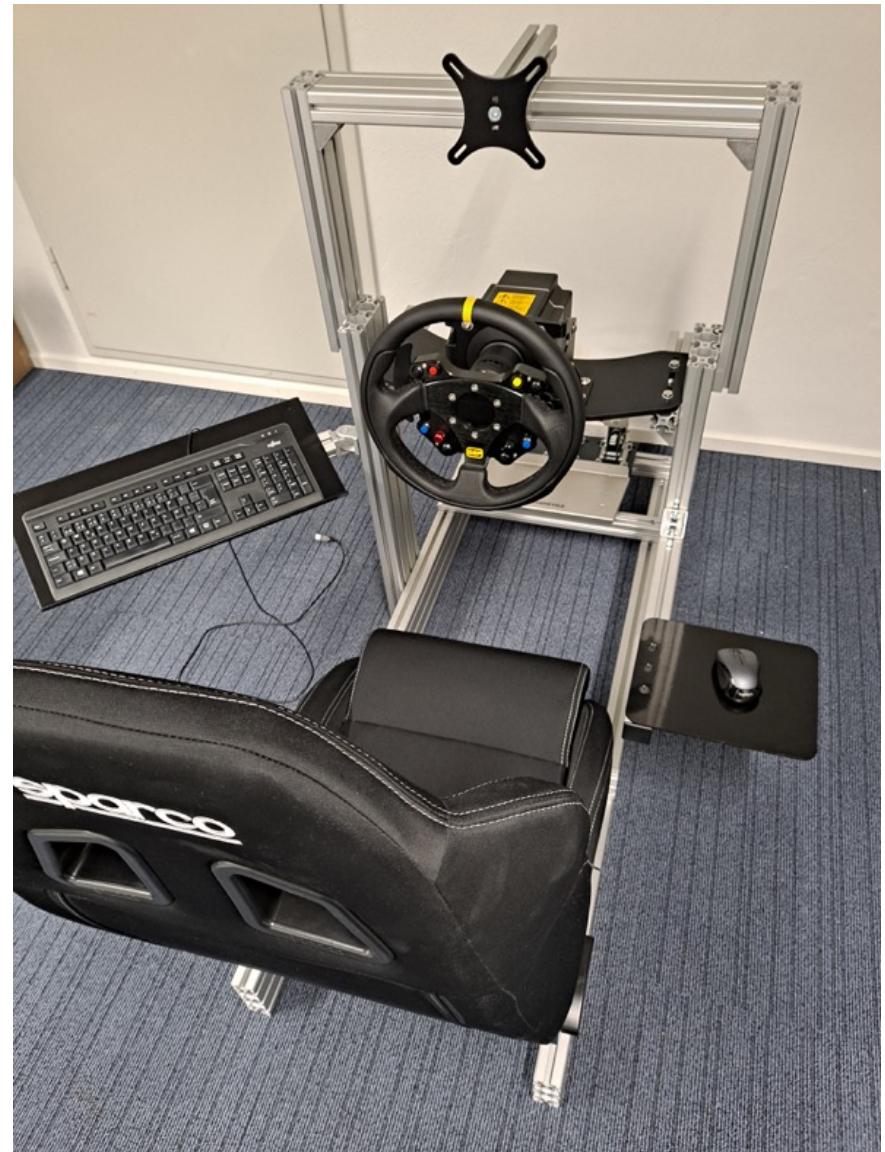
- **Wheel control from python script**
  - Autonomous demo
- **Torque modeling**
- **Simulator rig at our office**
  - Varjo VR headset also available



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# Questions?

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