# Virtual Car Project Instruction

The procedures for modeling, control, and demonstration experiments are described below. While the modeling and control experiments require a VR interface such as Oculus Quest2, the demonstration experiment can be performed with a Unity-downloaded pc.

- Modeling

1. Open Unity, check ¥SampleScene¥Controller¥Movecar or MoveLight and uncheck ¥SampleScene¥Controller¥MoveLightMPCRBF, MoveLightdemo.
2. Open Script “Accelerate_v2.cs and rewrite the path on line 41 to save the driving data.”
3. Execute VR experiment.
4. Open modeling.m (MATLAB), import Unity data, and execute the program.

- Control

1. Open controller.m(MATLAB), rewrite on lines 34-49 to parameters identified by Modeling and on lines 59-66 to Preferred MPC weight parameters.
2. Open Unity and rewrite on lines 36-39 in ¥SampleScene¥Controller¥Movecar and MoveLightMPCRBF to W value output by controller.m.
3. Check ¥SampleScene¥Controller¥Movecar and MoveLightMPCRBF and uncheck ¥SampleScene¥Controller¥MoveLight, MoveLightdemo.
4. Open Script “Accelerate_v2.cs and rewrite the path on line 41 to save the driving data.”
5. Execute VR experiment.
6. Open control_result.m, import Unity data, and execute the program.

- Demo

1. Open Unity, check ¥SampleScene¥Controller¥Movecar and MoveLightdemo and uncheck ¥SampleScene¥Controller¥MoveLight, MoveLightMPCRBF.
2. Change MoveLightdemo¥Avatarnumber in the Controller's inspector screen to any value from 1-10.
3. Execute simulation.