CarMaker Tips & Tricks   No. 5-005
Remote CarMaker Standalone GUI Control from
within Matlab via TCP

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Author:	Li Wan, IPG Solutions Engineering
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Automate CarMaker from Matlab

The user has the possibility to control CarMaker Standalone GUI from within Matlab through a TCP network socket. Today we want to share an example about how to open a TCP socket in Matlab and send ScriptControl commands via it to the GUI of CarMaker Standalone.

Technical Background

In CarMaker for Simulink, the user can execute any Tcl statement including all ScriptControl commands in combination with a special command called cmguicmd. For CarMaker Standalone or CM/HIL there is no direct connection to Matlab. In order to achieve a remote controlled setup one has to open CarMaker Standalone and create a TCP/IP connection with the GUI from Matlab. For our example we will use the Matlab command "tcpclient" to create the TCP/IP connection.

Solution

Step 1:

In Matlab open CarMaker GUI and define a TCP port for the communication:

```
1:   %Set the path to CarMaker executable
2:   pathToCMExe='/C/IPG/carmaker/win64-8.0.2/bin/CM';
3:   %Set the TCP port
4:   port=16660;
5:   %Set the path to the CarMaker project
6:   cmProjDir='/C/CM Projects';
7:   %Open CarMaker GUI via a TCP port and start CarMaker executable
8:   system([pathToCMExe, ' -projdir ',  cmProjDir, ' -cmdport ', num2str(port),
     ' -start ', '&']);
```

Step 2:

Create a TCP/IP connection between the CarMaker GUI and Matlab:

```
9:   while ~exist('t')
10:    try
11:       t = tcpclient('10.0.1.42', port)
12:    catch
13:    end
14:    pause(0.1);
15: end
```

Step 3:

Send ScriptControl commands to CarMaker GUI. For instance:

```
16: %Load a TestRun
17: write(t, [uint8('LoadTestRun "Examples/VehicleDynamics/Braking/Braking"')
    10])
18:
19: %Start the simulation
20: write(t, [uint8('StartSim') 10])
21: %Check the simulation status
22: write(t, [uint8('SimStatus') 10])
23: a=char(read(t))
24:
25: %Wait For Status Running
26: while ~strcmp(a(find(~isspace(a))), 'O0')
27:     pause(0.1)
28:     write(t, [uint8('SimStatus') 10])
29:     a=char(read(t))
30: end
31: disp('Status running')
32:
33: %Wait For Status Idle
34: while ~strcmp(a(find(~isspace(a))), 'O-2')
35:     pause(0.1)
36:     write(t, [uint8('SimStatus') 10])
37:     a=char(read(t))
38: end
39: disp('Status idle')
```

Step 4:

Clear the Matlab Workspace at the end of the simulation:

```
40: clear
```