



**SIMULATION OF QUICK GEAR SHIFTER (QGS)  
SYSTEM ON A SINGLE-SEATED OPEN WHEEL  
VEHICLE USING MATLAB (SIMULINK)**

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“I hereby declare that this thesis is based on my original work except for the quotations and citations, which have been acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UiTM or other institutions.”

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## **ABSTRACT**

Operating a single seated open wheel vehicles designed for racing event require high engineering skills, driving skills and good teamwork. However, time is wasted when the driver has to use the clutch to upshift gear. Improving the external transmission system of single seated race car leads to higher chance of winning the race. Currently, Quickshifter™ available in the market for this purpose is designed for use on superbikes only. In this project, Quickshifter™ is referred to when modifying the transmission system to be fitted in a single seated race car. The new system is called Quick Gear Shifter (QGS), which allows the gear to upshift without using a clutch. Ignition cut-off and synchronize time are the crucial parameters to make the QGS works. The QGS system was designed and simulated using Matlab™ software. The system was tested and analysed based on the output of the simulation. The result shows that the system is working with 100 milliseconds ignition cut-off time. The ignition cut-off time for the modified transmission system was improved in terms of speed and acceleration.