Shift Quality Evaluation of the Gear Shifting Control for an Automated Manual Transmission

**Background:** With the continuous growth in the stricter emission requirements and higher riding comfort demands, the shift quality takes more and more an important role in automated transmission control algorithms. With the traditional software development process, these requirements rapidly increase the manpower and finance resources, especially the optimization period during real vehicle calibration. In order to effectively optimize the corresponding control parameters and functions in the transmission control units (TCU), the model-based calibration is a suitable method. Based on the automated manual transmission (AMT) shifting process: clutch opening, gear shifting and clutch engagement. The shift quality can be divided into two parts: shift quality evaluation of the clutch engagement control, shift quality evaluation of the gear shifting control.

**Task:** The idea of this task is through the vehicle’s performances, such as longitude acceleration and the gear shifting duration to find out the relationship between the gear shifting curve and its corresponding shift quality. And then get the requirements satisfied curve (such as comfort mode or sportive mode) in different throttle positions and gears.

**Steps:**
1. Literatures research and study about the shift quality
2. Development of the gear shifting curves
3. Shift quality definition
4. Shift quality evaluation in different gear shifting curves
5. Documentation and presentation

**Begin:** from now on

**Precondition:** Matlab/Simulink, Modelica, the basic knowledge of automobile

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