Study of Dynamic Model and Simulation of a Motorcycle with CVT System

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ABSTRACT

In this thesis, the dynamic modeling and control of gasoline powered, four strokes, spark ignition, and port injected single-cylinder engines and motorcycles are studied. Simulations and controls of motorcycle engines are important because it yields benefits on several fronts such as fuel efficiency, exhaust emission reduction, and better power delivery. In this work, MATLAB and SIMULINK 7.0 are using for the development of the dynamic, controlling oriented model. The simulation results for the model are presenting. A feedback controller for the engine has also been developed and demonstrated. A PID controller is developing for the feedback control of the model. The optimal values of control parameters are obtaining by using a build-in optimization scheme from MATLAB, and these values are verifying by parameter variation. The model developed could be useful for controller development for other engines. Moreover, this model is capable to be using for the investigation of the steady state behavior as well as the transient behavior of engines and motorcycles.

Keywords : Simulation and control of gasoline engine, four strokes, spark ignition, AFR, design controller

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