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Abstract
The thesis aims at the design of permanent magnet synchronous motor drive by space vector pulse-width modulation (SVPWM) and the emulation of active front steering system that includes a two-axis servo motor control system. The specifically designed DSP chip TMS320LF2407 for motor control from TI is used in the system such that the built-in event manager modules, EVA and EVB, can easily provide the function of SVPWM and the peripherals can simplify the circuit design. The mechanical angles of two motor shafts correspond to the angle of steering wheel and the front-wheel steering angle, respectively.
In order to provide more precise angles of steering wheel and front-wheel steering, the fuzzy control, instead of conventional PI control, is employed in the position control loop. Finally, the steer-by-wire is also considered in the two-axis motor control to validate the emulation system.
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