Three-axis fuzzy variable structure control with an application to micro satellite

This paper presents a hybrid form of three-axis control system with has both Variable Structure Control (VSC) and Fuzzy Logic Control (FLC). This proposed Fuzzy Variable Structure Control (FVSC) approach combines the power of approximate reasoning of FLC with the switching synthesis used in VSC. A model of satellite is used in this work to ensure the application of FVSC to control and stabilize a micro satellite in space. First the proposed scheme is applied to single axis and then extended to three axis control. The simulation results indicate that the FVSC can reduce the response time and the performances with noise also verify that FVSC can stabilize the micro satellite system even subjected to various types of input signal. MATLAB Simulink is employed in this work.