

UW CENTER FOR PATTERN ANALYSIS AND MACHINE INTELLIGENCE

GRADUATE SEMINAR SERIES

Strong Robust Longitudinal Control of Hypersonic Aircraft

Speaker: Jenny Jiao

Date: December 16, 2013

Time: 4:30pm – 5:00 pm

Place: E5 (5128) Refreshments will be served

Abstract :

Nowadays, the flight control technology of the hypersonic aircraft is one of key topics in the aerospace field research. Based on the research of flight control system, the traditional control method cannot achieve the hypersonic aircraft control requirements for the features of intense time varying, serious nonlinear, strong coupling and uncertain. Therefore, the research of new control technology and method is required. In this paper, the Interval Type-2 Fuzzy control method is combined with the sliding mode control to control the longitudinal of the hypersonic aircraft. In this method, the sliding mode control is used to control the nonlinear model and the Interval Type-2 Fuzzy is used to overcome the strong uncertainty disturbances which exist in the aerospace. The simulation results indicate that the method of Interval Type-2 Fuzzy sliding mode control can keep the flight control system of the hypersonic aircraft strong robust that is useful to ensure the hypersonic aircraft to complete the task more safe and precise, which has practical meaning.