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# UAV Flight Control System Reconfiguration Control with Intelligent Diagnosis

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Unmanned Aerial Vehicle (UAV), with unique fight characteristics of small volume, light weight and small fight loss, has wide application space in both Military field and civil areas such as investigation, patrol, relief and so on. The stability and security of flight control system is the bottlenecks of the application of UAV in all fields. Fortunately, flight fault-tolerant control technology can enhance flying security and stability of UAV after faults. Thus, flight fault-tolerant control technology becomes the current research hotspot. This paper focuses on practically and real-time of reconfiguration control system for UAV application. Focuses on UAV flight control system intelligent diagnosis and repair of autonomous.

Generally, Unmanned Aerial Vehicle (UAV) is designed without redundancy. We can reconfigure control law only based on analytical redundancy when there are faults. However, the traditional identification methods often failed to meet real-time requirements of UAV reconfiguration control and are too complex. It has some limitations.

Reconfiguration control system for UAV. In this paper, multiple linear models are designed to describe the nonlinear dynamic characteristics of UAV caused by diversity of control surface failures. The controller reconstruction is designed off-line and selected adaptively online in actual flight. Dynamic compensation plans are also proposed to ensure the safety of aircraft when there is great disturbance for the reconstruction process.

The main works of this paper are:

1. This paper gives UAV flight control system model using MATLAB, which provides a simulation platform for flight control system performance validation.
2. The UAV control system fault type is analysed. Each fault configurability is researched and reconfiguration strategies are given.
3. This method, focusing on the disadvantages of traditional methods, uses robust false alarm technique。 In the model of UAV flight control system, a robust false alarm fault detection technique is built to describe the complex nonlinear dynamic system caused by different faults. Reconstruction can meet stability and safety requirements.