Genetic Algorithm and Multi-Parametric Programming Based Cascade Control System for Unmanned Aerial Vehicles

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Abstract : This paper considers the problem of cascade control system for unmanned aerial vehicles (UAVs). Due to the complicated modelling technique of UAV, it is necessary to separate them into two subsystems. The proposed cascade control structure is a hierarchical scheme including a robust control for inner subsystem based on H infinity theory and trajectory generator using genetic algorithm (GA), outer loop control law based on multi-parametric programming (MPP) technique to overcome the disadvantage of a big amount of calculations. Simulation results are presented to show that the equivalent path has been found and obtained by proposed cascade control scheme.

Keywords : genetic algorithm, GA, H infinity, multi-parametric programming, MPP, unmanned aerial vehicles, UAVs
Conference Title : ICACPSD 2018 : International Conference on Automatic Control, Principles and Systems Design
Conference Location : Paris, France
Conference Dates : February 19-20, 2018