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# Intelligent Identification of Rotorcraft Flight Regimes using Ruleset based Algorithms and Artificial Neural Network

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This paper explores the possibilities of introducing neural network techniques in regime recognition algorithms. The characteristic vectors of various flight regimes of rotorcraft are obtained from the de-noised signals of flight test data where controlled regimes are flown. These characteristic vectors of known flight regimes are fed into an artificial neural network (ANN) programs for training to obtain appropriate weight coefficients. Intelligent identification of an unknown flight regime is achieved when the characteristic vector of the unknown flight is fed into the neural network with the determined weight coefficients. Correlating the ANN derived flight regime with the regime identified by the current regime recognition algorithms will provide better insight into the accuracy and reliability of the current core set of rules for regime recognition. Improvements to the core set of regime recognition rules aided by ANN will result in a highly accurate, fast convergence and automatic identification of regimes. The paper presents results obtained on USN aircraft to provide insights into optimum neural network and input flight parameters for better predictive capability and research on techniques to determine neuron coefficients, and concludes with lessons learned from this effort.

**Ключевые слова:**

**Содержание.**

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