Title: Implementation of Flight Data Driven Regression Method in Ground Effect

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This work outlines the application of the data-driven methodology for practical non-linear aerospace applications. The aircraft flight in the presence of ground effect is one of the non-linear application of practical importance. The paper presents a novel effort towards estimation of ground effect factor through a data-driven method namely Gauss Process Regression (GPR) method. The GPR based model is employed to estimate the ground effect factor during the constant angle of attack ground effect manoeuvre at the time of take-off and landing. The comparison of ground effect factor estimates obtained from GPR based model with the estimates from McCormick's empirical relation and conventional method assesses the accuracy and consistency of the GPR method for the present application. The application of the GPR method based model to flight data of two types of aircraft helps in assessing the versatility of the methodology. The results obtained are reasonably accurate to establish GPR based method as an alternate method for the estimation of ground effect factor with an advantage of no requirement of the prior mathematical model.

Biography

AMBUJ SRIVASTAVA is serving as senior engineer in the design department of Transport Aircraft Division and is pursuing his PhD from Department of Aerospace Engineering of Indian Institute of Technology, Kanpur, India. A K Ghosh is a Professor in Department of Aerospace Engineering of Indian Institute of Technology, Kanpur, India He is currently holding the position of the Head of Department.