

AN INTEGRATED MUTATION ANALYSIS TOOL (IMAT) FOR SIMULINK MODELS AND THEIR IDEAL IMPLEMENTATION

Manju Nanda, J. Jayanthi, V. Madhan, Sameer Nayak
Aerospace Electronics Division
CSIR-National Aerospace Laboratories (NAL)
Kodihalli Post, HAL Airport Road
Bangalore-560 017, India
Email : manjun@nal.res.in

Abstract

Mutation analysis is proving to be an effective approach in detecting the design flaws for safety system designs such as flight control systems or the stall warning systems. The drawback of these analyses is that they are time-consuming and difficult-to-use. This paper discusses about the mutation tool, IMAT, developed in-house for detecting the design flaws of safety critical systems designed in SIMULINK. The IMAT tool is developed as a plug-in to the SIMULINK tool suite and enhances the performance of the model-based development of safety critical systems. Some of the unique features of the tool are ease-of-use, portable, scalable, userfriendly and easy to analyse the reports.

Keywords: Mutation Testing, Mutation Score, MATLAB/ Simulink/ Stateflow Models, Mutation Operators