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## Evaluating aircraft abnormal conditions using an artificial dendritic cell mechanism

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A ircraft abnormal conditions evaluation is a vital prerequisite to a successful post-failure accommodation. Moreover, correct flight envelope estimation and protection requires correct evaluation of both the type and severity of the abnormal condition once the failed subsystem is correctly identified. In a previous study, a biologically-inspired dendritic cell mechanism for aircraft sub-system failure detection and identification was proposed and tested with high performance rates. The mechanism uses a set of artificial dendritic cells to process the multiple outcomes of a hierarchical multi-self detection strategy and produces a single detection outcome. Mature biological dendritic cells that migrate from the tissue to the lymph node carry patterns that are specific to the antigen. Similarly, computational units structured as artificial dendritic cells were used to identify the aircraft failed sub-system.

## **Biography**

Dia Al Azzawi is a PhD candidate in the Department of Mechanical and Aerospace Engineering at West Virginia University, Morgantown, WV. He received his BSc and MSc degrees in Mechanical Engineering from Nahrain University in 1994 and 1997, respectively. He worked as a faculty in Baghdad University and an IT manager at KNC Telecom. His current research interests include controls, robotics, artificial intelligence, fault detection and isolation, and cyber security.