

## عنوان مقاله:

Development of an Efficient Approach for Reliability Analysis Using the Comparative Study of Several Static and Dynamic Methods; Case Study of an Unmanned Aerial Vehicle

## محل انتشار:

نشریه بین المللی قابلیت اطمینان، ریسک و ایمنی: نظریه و کاربرد، دوره 3، شماره 1 (سال: 1399)

تعداد صفحات اصل مقاله: 9

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## خلاصه مقاله:

Unmanned Aerial Vehicles (UAV) are increasingly being popular in many applications. Their operation requires a high level of safety and reliability to accomplish successful missions. In this study, their reliability is comparatively analyzed by different available approaches to select the efficient method. Firstly, the failure model of the system is developed. Then, three different scenarios are considered to study the effect of redundancies on the reliability of the system. In the first scenario, there is no redundancy, whereas in the second scenario there is one redundant component and in the third scenario, there are three redundant components. Static reliability analysis implemented on the proposed scenarios using methods of Fault Tree Analysis (FTA), Reliability Block Diagram (RBD), Markov Chain (MC), and Bayesian Networks (BN) and the results are obtained. Also, regarding the time dependencies between redundant components, a dynamic-based methodology is developed by applying Dynamic Fault Tree (DFT) analysis. Then, the proposed static and dynamic approaches are applied to a UAV as a case study and the results are discussed. Finally, the characteristics of each methodology and the related conditions are clarified for selecting the efficient reliability analysis approach.

## کلمات کلیدی:

UAV, Reliability, Bayesian networks, Dynamic Fault Tree, redundancy

## لینک ثابت مقاله در پایگاه سیویلیکا:

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