

## عنوان مقاله:

maximum maintainability of complex systems via modulation based on dsm and module layout case study laser range finder

## محل انتشار:

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## خلاصه مقاله:

Layout design of complex systems in detailed engineering phase is a costly and difficult job which usually entails dealing with multiple conflicting objectives. The present paper aims to investigate the effect of four objective functions have been considered simultaneously in this research. The present paper aims to investigate the effects of modularity and the layout of subsystems and parts of a complex system on its maintainability. For this purpose, four objective functions have been considered simultaneously: I) maximizing the level of accordance between system design and optimum modularity design, II) maximizing the level of accessibility and the maintenance space required, III) maximizing the providing of distance requirement and IV) minimizing the layout space. The first objective function has been put forward for the first time in the present paper and in it, the optimum system modularity design was determined using the Design Structure Matrix (DSM) technique. The second objective function is combined with the concept of Level of Repair Analysis (LoRA), thus, a new objective function is developed. Simultaneous optimization of the above-mentioned objective functions has not been considered in previous studies. The multi objective problem which has been put forward was applied on a laser range finder containing 17 subsystems. As the resulting model is NP-Hard and entails quantifications of some qualitative data, a near optimal solution method is suitable to tackle it. Hence, in order to obtain the nondominated solutions, a multi-objective particle swarm optimization (MOPSO) algorithm is used

## کلمات کلیدی:

Maintainability, Modulation, Layout, DSM: Design Structure Matrix, Multi Objective Problem, MOPSO: Multi Objective (Particle Swarm Optimization, Laser Range Finder(LRF

## لینک ثابت مقاله در پایگاه سیویلیکا:

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