

论文与报告

构形冗余概念及传感器系统冗余综合评估与配置

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收稿日期 2001-4-9 修回日期 网络版发布日期 接受日期

摘要

复杂控制系统中存在大量不同机理和作用方式的功能和硬件冗余,主动开发和配置这种冗余是控制系统设计的重要课题.本文提出新的“构形冗余”概念,对不同的系统冗余提供了统一的理解角度和通用冗余指标,可以综合评价系统中蕴涵的各种冗余,因而指导对这些冗余的统一配置,提供新的系统主动生存性设计依据.构形冗余概念被具体用于传感器系统,给出了其构形冗余指标的具体计算方法,并通过若干实例验证了上述方法在冗余综合评估与配置中的应用效果.

关键词 [冗余](#) [生存性](#) [配置](#) [评估](#) [构形](#)

分类号 [TP202](#) [TP11](#)

The Concept of Configuration Redundancy and Integrated Evaluation and Disposition of Redundancy in Sensor Systems

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Abstract

An important subject in control system design is to actively explore and dispose both functional and physical redundancy, which is abundant in modern control systems and of various fashion and mechanism. We first present a new concept of 'configuration redundancy', which may provide a common understanding of different kinds of redundancy. An index is then proposed based on the concept to evaluate the amount of functional and physical redundancy in a system, and consequently provides a new basis for redundancy disposition and active survivability design. The concept and index are applied to control sensor systems in detail, and some examples are provided to show the effectiveness.

Key words [Redundancy](#) [survivability](#) [disposal](#) [evaluation](#) [configuration](#)

DOI:

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