

系统工程

基于拍卖算法的多机协同火力分配

费爱国, 张陆游, 丁前军

空军装备研究院通信所, 北京 100085

摘要:

为解决超视距协同空战中的多机协同火力分配问题,首先建立了空战威胁估计和空战优势估计模型,构建了多机协同火力分配的数学模型。其次基于多智能体拍卖算法,提出了一种分布式的多机协同火力分配方法,该方法同时考虑了火力分配的效益和代价,能在较短的时间内给出较为合理的协同火力分配方案,具有计算量小、通信量低、动态性以及实时性好等特点,可应用于解决多机协同火力分配中的资源分配、冲突消解等协作问题。最后,通过仿真实验证明了该方法的合理性和有效性。

关键词: 协同空战 火力分配 多智能体 拍卖算法

Multi-aircraft cooperative fire assignment based on auction algorithm

FEI Ai guo, ZHANG Lu you, DING Qian jun

Institute of Communication, Air Force Equipment Academy, Beijing 100085, China

Abstract:

In order to solve the question of multi-aircraft cooperative fire assignment during beyond visual range cooperative air combat, firstly, the air combat threaten estimation model and superiority estimation model are built, and the mathematical model for multi aircraft cooperative fire assignment is established. Secondly, based on the auction algorithm of the multi-agent system theory, a new distributed multi-aircraft cooperative fire assignment method is brought forward, and the fire assignment gain and cost are simultaneously considered. This method can get a reasonable cooperative fire assignment scheme within a short time, and has a low computation and communication burden, good dynamics and real time characteristics. It can be used to solve the question of resource assignment and conflict elimination for the multi-aircraft cooperative fire assignment. Finally, the simulation results show that the method is reasonable and valid.

Keywords: cooperative air combat fire assignment multi-agent auction algorithm

收稿日期 修回日期 网络版发布日期

DOI: 10.3969/j.issn.1001-506X.2012.09.14

基金项目:

通讯作者:

作者简介:

作者Email:

参考文献:

本刊中的类似文章

1. 肖冰松, 方洋旺, 许蕴山, 张平, 王鹏. 编队内协同超视距空战目标分配模型研究[J]. 系统工程与电子技术, 2010,32(7): 1476-1479
2. 徐加强, 毕义明, 汪民, 梁伟. 基于时空约束的常规导弹火力分配建模与实现[J]. 系统工程与电子技术, 2011,33(9): 2025-2029
3. 付昭旺, 于雷, 寇英信, 徐安. 混合编队协同空战电子支援干扰功率分配方法[J]. 系统工程与电子技术, 2012,34(6): 1171-1175
4. 肖冰松, 方洋旺, 胡诗国, 曾宪伟. 多机空战协同制导决策方法[J]. 系统工程与电子技术, 2009,31(3): 610-612

扩展功能

本文信息

▶ Supporting info

▶ PDF(957KB)

▶ [HTML全文]

▶ 参考文献[PDF]

▶ 参考文献

服务与反馈

▶ 把本文推荐给朋友

▶ 加入我的书架

▶ 加入引用管理器

▶ 引用本文

▶ Email Alert

▶ 文章反馈

▶ 浏览反馈信息

本文关键词相关文章

▶ 协同空战

▶ 火力分配

▶ 多智能体

▶ 拍卖算法

本文作者相关文章

PubMed

