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智能弹药时敏目标协同打击技术与建模(PDF)

Title: Cooperation Techniques and Modeling for Time Critical Target Cooperative Striking using Smart Munitions

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关键词： 时敏目标; 智能弹药; 协同搜索; 协同攻击; 航迹规划

Keywords: time critical target; smart munitions; cooperative search; cooperative attack; path planning

摘要： 时敏目标已经成为当今和未来战争中的主要打击目标之一。针对智能弹药时敏目标协同打击任务，在阐述了时敏目标概念及其时敏特性的基础上，介绍了打击时敏目标的主要作战模式，分析了智能弹药协同打击时敏目标的协同搜索、协同攻击和航迹规划等协同技术，并指出了其发展趋势。从任务模式上将智能弹药时敏目标协同打击任务分为协同搜索任务和协同攻击任务，并针对性的进行协同搜索策略、协同任务分配以及航迹规划的任务建模。

Abstract: Time critical targets (TCT) have become one of the most important targets in current and future wars. For cooperative striking on time critical targets using smart munitions, the primary killing models were introduced on the basis of explanation of TCT concept and its time critical characteristic. Some key cooperation technologies of cooperative search, cooperative attack and path planning were presented, and their developing trends were then deduced. The task of cooperative striking on time critical targets using smart munitions was decomposed into cooperative search task and cooperative attack task. Modeling of cooperative searching strategy, cooperative task assignment, path planning and system of systems was carried out accordingly.

参考文献/REFERENCES

[1]Wilson G. A time critical targeting roadmap[D]. Alabama: Air University, 2002.

[2]Combat air forces concept of operations for time critical targeting[R].2000.

[3]Department of defense dictionary of military and associated terms[M/OL]. 2001. http://www.docin.com/p 299305758.html.

[4]廖炎平，刘莉. 区域控制弹药的发展趋势[J]. 飞航导弹, 2009(4):35-37.

[5]Marzolf G S. Time   critical targeting predictive versus reactionary methods: An analysis for the future[D]. Alabama: Air University, 2004.

[6]Fleeman E L. Tactical missile design[M]. 2006.

[7]Baum M L, Passino K M. A search theoretic approach to cooperative control for uninhabited air vehicle[C]//AIAA Guidance, Navigation, and Control Conference and Exhibit,2002.

[8]Nigam N, Kroo I. Control and design of multiple unmanned air vehicles for a persistent surveillance task[C]//12th AIAA Conference on Multidisciplinary Analysis and Optimization,2008.

[9]Nigam N, Kroo I. Persistent surveillance using multiple unmanned air vehicles[C]//Proceedings of the IEEE Aerospace Conference. 〖ZK)〗

[10]Nigam N, Bieniawski S, Kroo I, et al. Control of multiple uavs for persistent surveillance: Algorithm description and hardware demonstration[C]// AIAA Infotech Aerospace Conference and AIAA Unmanned Unlimited Conference,2009.

[11]Nigam N. Control and design of multiple unmanned air vehicles for persistent surveillance[D]. STANFORD UNIVERSITY, 2009.

[12]唐苏妍，朱一凡，李群,等. 多agent系统任务分配方法综述[J]. 系统工程与电子技术, 2010, 32(10):2155-2161.

[13]袁利平，夏洁，陈宗基· 多无人机协同路径规划研究综述[J]. 飞行力学, 2009, 27(5):1-6.