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（50元）（1000元）作战模拟的人工生命多智能体建模

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摘要 作战是典型的复杂自适应系统，传统的作战模拟依赖于兰彻斯特方程等数学模型，将作战视为确定性过程, 难以对作战过程中的许多无形因素建模。人工生命的模拟方法，通过多智能体之间的相互作用研究系统的突现行为, 很好地揭示了作战的本质和作战过程的演化规律。提出了多智能体作战模拟的二维网格环境下的智能体进化基因模型。通过计算和考察虚拟战场环境中的敌、我、友多方在交战过程中的演变规律和涌现特征，可模拟和解释战场局势的推演行为和发展规律。采用竞争、学习、协作进化、群居、物种灭绝等等生命进化现象来完成系统复杂性的模拟，取得了较好的仿真效果。模型系统具有演化速度快，模拟结果合理和可交互性等特点。

关键词 人工生命 多智能体；作战态势；作战建模

分类号

Modeling of Combat Simulation Based on Artificial Life Theory and Multi-Agent Structure

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Abstract

Combat is a typical complex adaptive systems, the traditional combat simulation is mainly depended on mathematical model, such as Lanchester and other equations, takes combat as a deterministic process, many intangible but important factors can hardly be modeled. The artificial life model method based on genetic algorithm, open out primly the combat essence and evolution law of combat process. Put forward a two-dimension net grid enviorenmental evaluation model for combat simulation based on artificial life and multi-agent structure theory. The models simulate and explain the advance actions and development disciplinarian by computation and review the outcome and emergence characteristics among hostile side and own side and friendly sides .Applying competition, learning and collaboration evolution, infesting, and species depopulation and other life evolution phenomena to accomplish simulating the system complexity, obtained a better result. The models have the characteristics of fast evaluating and feasible situation evaluation result and interaction ability.

Key words artificial life multiple agents system；combat situation simulation combat modeling

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