

Emergent Behavioral Modeling Language in Obstacle Avoidance

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ABSTRACT

Artificial distributed systems employ sophisticated algorithms that are well matured and efficient but require a high degree of computational power. Opposite to artificial distributed systems, natural systems display emergent behavior by employing extremely simple algorithms that are very efficient when dealing with large number of entities but are unpredictable and nondeterministic. The formal modeling of such emergent behavior is presented in this paper by the introduction of a formal language called eBML. A simple yet effective obstacle avoidance algorithm is proposed and discussed here, based on studies of ant colonies which are modeled using eBML.

INDEX TERMS

- **INSPEC**

- **Controlled Indexing**

- collision avoidance , formal languages , robots , simulation languages

- **Non Controlled Indexing**

- artificial distributed systems , behavioral modeling language , collaborative robotic environments , eBML , emergent behavior , formal language , formal modeling , natural systems display , obstacle avoidance

- **Author Keywords**

- Emergent behavior , behavioral modeling , collaborative environments , obstacle avoidance , robotic environments