AGENT-BASED MODELLING: INTEGRATING AGENT PERCEPTION AND PEER PRESSURE TO REDUCE HERDING EFFECT

By

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ABSTRACT

Many crowd evacuation models have been proposed with different aspects of interests. This research is an attempt to integrate multiple aspects to study their collective effect on crowd dynamics. The agent-based model uses perception map for routing decision using personal observation in comparison to the information perceived from distant communication with interactive agents. Information sharing has been incorporated to provide updated information to agents regarding the perception map. This model is combined with the game-theoretic model resolving the consequences of influence on agents exhibiting two types of behaviours; emotional and rational. Overall this work aims at minimizing the effect of herding as well as reducing the evacuation time. A hypothetical space has been designed to evaluate the execution of the model on different environment settings. Multiple exit strategies have been simulated based on combination of aspects. The work has been evaluated using parameters such as time, panic and agents' distribution across two exits. The results indicate that proposed model can help to achieve both evacuation efficiency as well as minimal panic population. Moreover, it can be concluded that having a symmetric placement of exit can help to achieve desired results.

CERTIFICATE OF ORIGINALITY

No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institution of learning.

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DEDICATION

To my Parents & Friends...

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