

“MODELING AND SIMULATION OF AGENT BEHAVIOR IN A GOAL FINDING APPLICATION FOR EVACUATION”

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Kolawole Ogunlana is a D. Sc. candidate in the Department of Computer Science at the Bowie State University. He has received M.S. in Computer Science from Catholic University of America (CUA) in 2006 and B.S. from University of Maryland, College Park in 2003. He has published many papers under Dr. Sharma at College of Arts and Science in the Bowie State University. Dr. Sharma is the Director of the Virtual Reality Laboratory at the Bowie State University. The laboratory applies virtual reality and augmented reality as a tool for learning, training, and education. Kola’s research focus is on modeling and simulation of multi-agent systems for emergency scenarios especially in a building. His work is motivated by the need of research in real-time agent navigation for reaching a goal in emergency situations like evacuation for saving time and money

Abstract: Today it is expensive and time consuming for emergency personnel to perform multiple evacuation drills in real time for a building. We cannot gain knowledge to improve the design and layout of future buildings without running multiple drills. The purpose of this study is to investigate agent’s behavior during emergency evacuation scenarios in a goal finding application. We propose to implement a goal finding simulation evacuation application (in C#) to help us run multiple drills and what if scenarios. The first objective of this study is to investigate agent’s behavior during emergency evacuation scenarios in a goal finding application. Second objective is to model learning and adaptive behavior which includes individual and collective behaviors. The adaptive behavior focuses on the individual agents changing their behavior in the environment. The collective behavior of the agent focuses on the crowd-modeling and emergency behavior in the goal finding application. The last objective of this study is to develop new intelligent agent based characteristics such as autonomy, social ability, cooperativeness, learning ability and level of panic which define their final behavior when trying to reach a goal. The contributions of this study are combining of Genetic Algorithm (GA) and Neural Network (NN), using fuzzy logic to model panic behavior for agents to simulate evacuation in a goal finding application. Result of this study is a C# application that is compared and validated to real-time data from an evacuation drill and commercial evacuation simulators like Pathfinder.

Contact Dr. Soo-Yeon Ji (sji@bowiestate.edu) if you have any question.