



BA/MA/SA/Group/Lab:

One Intelligent Agent to Rule Them All

Many movies feature scenes with large crowds. For instance *Lord of the Rings* displays huge armies clashing. Since paying a single actor for each person is expensive, crowds are simulated and rendered digitally. Making such a simulation look realistic is a challenge. One of the problems that has to be solved is pathfinding.

Pathfinding for single agents on a graph is a well-studied problem. *Multi-agent* pathfinding is a far newer discipline, whose applications have grown a lot in recent decades. Real-time strategy games incorporate larger and larger amounts of units and players expect predictable and efficient unit movement. Finally, building safety researchers predict the movement and behaviour of human crowds during an emergency evacuation through simulation.



At our group, we developed a crowd simulation framework and used evolutionary algorithms to train agents to find paths in different scenarios. While the results are appealing, each kind of agent is only trained for one scenario.

We would like you to explore the possibility of training agents which are able to show intelligent behaviour in many different scenarios. In the end, the goal is to have a demonstration of a convincingly “intelligent” crowd, either in a rendered video or as a state-of-the-art pathing algorithm for a customizable game engine such as *Starcraft II*. You are welcome to bring in your own approaches on this topic!

Requirements: Creative thinking and advanced programming skills are advantageous to successfully work on this topic. The student(s) should be able to work independently!

Interested? Please contact us for more details!

Contact

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