

# Understanding and Supporting Character Artificial Intelligence in Games and Simulation Domains

(An Overview of the research of the University of North Carolina at Charlotte Game Intelligence Group)

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Game Intelligence Group, Games + Learning Lab*

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Location: Room C4, Bât Nautibus, Campus  
de la Doua

Time: 1p.m.



## *Abstract:*

The research of the Game Intelligence Group (GIG) at the University of North Carolina at Charlotte focuses on the improving the interactive experience between humans and artificially intelligent portions of games and simulations with an emphasis on characters. This talk will start by discussing our work in game analytics and behavior analysis for both players and non-players followed by our investigations into ways to simplify the AI agent creation process for 3D games to bring new and creative opportunities to the masses. Specific contributions to dynamic behavior-based control will be presented that allow for pseudo-planning behaviors in a reactive control scheme. Underlying these advances is work in smart simulation objects including probabilistic and contextual affordances, as well as influence points. A key aspect of our work is that it takes advantage of advanced spatial decomposition and navigation meshes (navmeshes).

As virtual environments become more complex and dynamic the support structures to enable artificially intelligent characters to move through these environments and reason about them needs to become evolve along with them. We present our research into new ways to generate complete graphs of the traversable space present in the environment to produce high quality navigation meshes to assist with AI planning. Our methods in producing superior quality navmeshes than existing methods and have been adapted to work in highly dynamic and procedurally generated environments. Additionally, we show that the navigation mesh data structure has potential beyond that of character path planning and can be used to accelerate other common game and simulation tasks such as collision detection.

## *Biographies:*

**G. Michael Youngblood, Ph.D.** is an Assistant Professor of Computer Science at the University of North Carolina at Charlotte in the Department of Computer Science within the College of Computing and Informatics. He is Co-Director of the Games + Learning Lab and Head of the Game Intelligence Group, which conducts research on interactive artificial intelligence in the games and simulation domains focusing on character behaviors, creation, and analysis. For more information see: [gmichaelyoungblood.com](http://gmichaelyoungblood.com)

**D. Hunter Hale** is a last semester PhD student and adjunct faculty at the University of North Carolina at Charlotte. He has been a member of the Game Intelligence Group of the Games + Learning Lab for the last 3 years while working on his doctorate, prior to that he was a research assistant in the Visualization Lab at UNC Charlotte while completing his masters degree. He received his bachelor's degree with honors from Western Carolina University in 2005. For more information see: [playground.uncc.edu/~dhhale](http://playground.uncc.edu/~dhhale)