CAVAST: The Crowd Animation, Visualitation and Simulation Testbed

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Simulation, animation and rendering of crowds has become an important part of real-time applications such as videogames. Virtual environments achieve higher realism when being populated by virtual crowds as opposed to appearing uninhabited. There has been a large amount of research on simulation, animation and rendering of crowds, but in most cases they seem to be treated separately as if the limitations in one area did not affect the others. At the end of the day the goal is to populate environments with as many characters as possible in real time, and it is of little use if one can for instance render thousands of characters in real time, but you cannot move more than a hundred due to a simulation bottleneck. The goal of our work is to provide a framework that lets the researcher focus on each of these topics at a time (simulation, animation, or rendering) and be able to explore and push the boundaries on one topic without being strongly limited by the other related issues. This paper presents therefore a new prototyping testbed for crowds that lets the researcher focus on one of these areas of research at a time without loosing sight of the others. We offer default representations, animation and simulation controllers for real time crowd simulation, that can easily be replaced or extended. Fully configurable level-of-detail for both...