Papers Overview

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Papers Covered

- Aggregate Dynamics for Dense Crowd Simulation (SIGGRAPH ASIA 09)

- Fitting Behaviors to Pedestrian Simulations (SCA 09)

- ClearPath: Highly Parallel Collision Avoidance for Multi-Agent Simulation (SCA 09)

- Experiment-based Modeling, Simulation and Validation of Interactions between VirtualWalkers (SCA 09)

Aggregate Dynamics for Dense Crowd Simulation

Focus is on the problem of simulating the inter-agent dynamics of large, dense crowds in real time.

Uses a dual representation both as discrete agents and as a single continuous system.

A novel hybrid representation for large crowds with discrete agents using both Lagrangian and Eulerian methods

A new continuum projection method that enforces density dependent incompressibility to model the varying behavior of human crowds

A scalable crowd simulation that can model hundreds of thousands of agents at interactive rates on current desktops

Fitting Behaviors to Pedestrian Simulations

Usually, crowd simulation techniques focus on generating realistic crowds at the trajectory level. They direct people along believable, collision free paths

Presents a data-driven approach for fitting behaviors to simulated pedestrian crowds

Use of action tags

Using the examples, non-linear, action specific influence functions are encoded into two-dimensional maps which evaluate, for each action, the relative importance of a stimulus within a configuration.
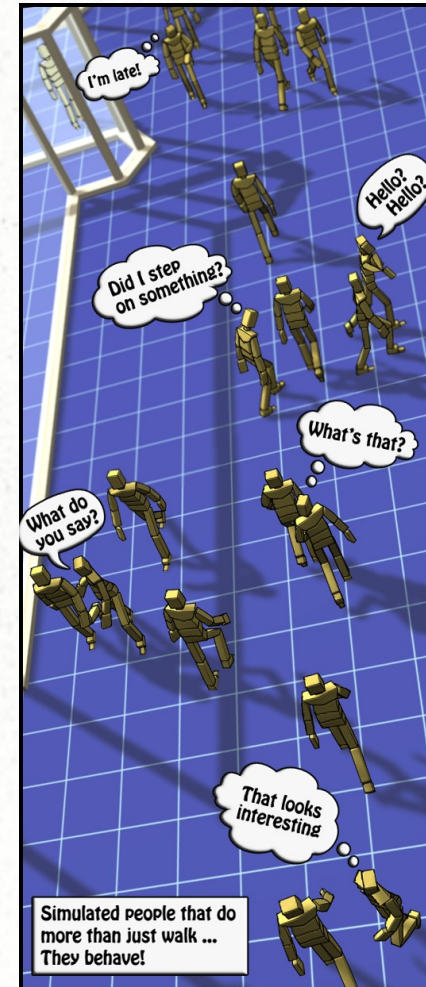
ClearPath: Highly Parallel Collision Avoidance for Multi-Agent Simulation

Collision avoidance can quickly become a major computational bottleneck in multiagent simulations, especially in tightly packed scenarios.

Highly parallel and robust collision avoidance approach

Based on the concept of velocity obstacles (VO) that was introduced in robotics for motion planning among dynamic obstacles.

ClearPath is amenable to data-parallelism and thread-level parallelism on commodity processors and they also present a parallel extension
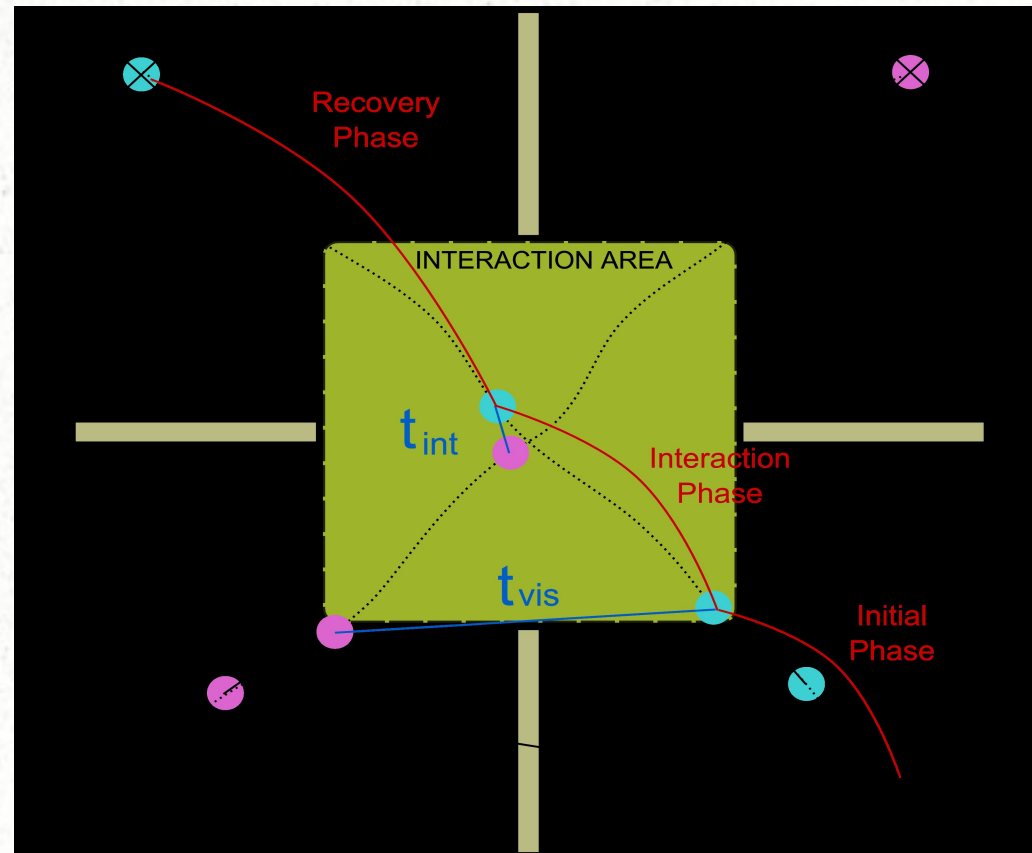
Experiment-based Modeling, Simulation and Validation of Interactions between VirtualWalkers

This paper presents a model for solving interactions between virtual humans

Start with two-walker case

Prediction of trajectory

Developed a model – egocentric approach

Thank You