Second Life

• What is Second Life?
  » 3D virtual world entirely built and owned by its residents
  » Active economy analogous to the real world

• What can you do?
  » Explore cities without leaving your seat
  » Interact with other avatars
    • Chat, collaborate, dance, play games, etc
  » Create, buy, sell, and program objects

At UNC’s Second Life Campus
an avatar enjoys a sunrise at the Old Well
Second Life: Brief Technical Details

- SL is a built as a collection of Regions, aka The Grid
  - Each Region is hosted by a single “server” instance
  - Each is 256x256m, over 700 million square miles of land exist
- Each server instance handles physics simulation within its region (based on Havok I)
- Residents connect to The Grid via an open-source client application
  - Communication protocol has been (mostly) reverse-engineered
- All items (avatars, primitives, scripts, animations, sounds, etc) are referred to as assets, identified by a global unique identifier
Virtual Agents and Crowds

- Motion Planning using Second Life – Ideas, Issues, and Uses
  - Virtual Humans
    - Behavior planning
    - Improving character animations/transitions
    - A visual “Turning Test” – Is there a human behind the avatar?
  - Crowd Simulation
    - Improving realism in virtual environments
      - Scale to large environments, large crowds
      - Dynamic obstacles
    - Similarities to other multi-agent systems (i.e. swarm behavior)
      - Issues in avoidance or coordination, planning
      - Agent dynamics
      - Sensing uncertainty
    - Emergency planning
      - Panic, evacuation, etc
Second Life Assignments

• Goal: Explore and build autonomous virtual agent(s) in Second Life
  » Over the course of the semester
    • Develop a simple motion controller
    • Use the controller for autonomous navigation through a maze
    • Possible extensions of the controller
      » Multiple avatars
      » Reactions from other avatars and moving obstacles
      » Pedestrian behavior
Short Demo