Massively Multiplayer Online Games

- Large-scale distributed application
  Real-time virtual world simulations entertaining millions of players spread across the world [1,2].

- Tight Quality-of-Service constraints
  Responsiveness: 10–35 updates/second. Content: users demand customized content on-the-spot, or quit.

- Fashion-driven: one quitter triggers an avalanche
  An MMOG may lose 20% of its players in just a few days [2].

  Bottom line: Produce content or die!

What is MMOG Content?

- Content immerses the players into the Virtual World
  Trees, Houses (objects on which players can act), Maps (topological connection between trees), Puzzles (logical challenges that players solve), Quests (suites of puzzles).

Puzzle Content Generation for MMOGs

- Balance puzzle difficulty (challenge #1)
  Match puzzle instances given to players to player solving ability

- Puzzle freshness (challenge #2)
  Give players puzzle instances that lead to fresh experience.

- Scalability (challenge #3, addressed previous work [3])
  Hundreds of thousands of concurrently active players

Our Results: Automatic Puzzle Instance Generation

- Puzzle difficulty vs Solving ability
  - Solution size = the number of moves in the optimal solution (agnostic)
  - Joker uses = Number of times the Joker (X) pin is moved (specific)

- Puzzle freshness
  - Each pin is different (agnostic), different animations for each direction (specific)

Current Content Generation Approach

- Teams of human designers
  - Pro: balanced content
  - Cons: difficult to manage, costly, not enough new content for each player (mismatch challenge #2), does not scale (mismatch challenge #3).

References