Dynamic Personalities Through Inter-Agent Communication

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Introduction

• Thousands of agents performing some “autonomous” tasks
• Most crowd simulations are about locomotion
  – Pathfinding, collision-free, overtaking, etc.
• Some, like Terzopoulous, are about higher-level agent actions
  – Buying tickets, watching entertainers
The Problem

- Agent personality
  - Most still really about locomotion – speed of movement, whether or not they overtake, paths taken, groups formed, etc.

- Even still, many personalities are random and/or static
  - Either random at startup and static throughout sim
  - Or static at startup and random throughout sim

- Worse yet, agents are independent of one another
  - Not only autonomous agents, but their goals (mostly) have little bearing on other agents, especially on their personalities/decision making

Our Solution

- Each agent has its own personality, based on its personal values/devalues

- One agent can convince another agent to change its personality/behavior, through inter-agent communication

- Total determinism
  - Actions chosen based on agent personality/mood
  - But, given mood variations and a number of different types of personalities/actions, should be enough to cause interesting behavior

- Before definitions, let’s see our example scenario
Quick Example

Goal: Open Door
Shopping Behavior
Compassionate Behavior
Aggressive Behavior
Holds Door
Doesn't Hold Door

Scenario Objective

- Agents have many different personalities/available actions related to a mall scenario
  - i.e. Your Soccer/Raven project
  - Using Buckland’s goal-directed behavior as reference
- Some agents have a desire to influence other agents in some way
  - To change their personality/actions
- Watch/analyze how the simulation changes over time
  - An agent that started as completely non-violent might end up being the most violent agent in the sim. And, it might start a cult of the same behavior.
Scenario: Stereotyped Mall

Squares: Shops
Circles: Kiosk
Yellow: Children
Orange: Teenager
Pink: Female
Red: Male
Gray: Food
Green: General
(means has something for a variety of people)

Key

Example Personalities/Actions

- No offense meant. These are meant to be stereotypes

<table>
<thead>
<tr>
<th>Name</th>
<th>Positive Values</th>
<th>Negative Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selfish</td>
<td>Money, pleasure, fame</td>
<td>Moral values/tendencies</td>
</tr>
<tr>
<td>Moral</td>
<td>Helping others, kindness</td>
<td>Immoral values/tendencies</td>
</tr>
<tr>
<td>Techie</td>
<td>Gadgets, technology, video games</td>
<td>Sports, physical activity</td>
</tr>
<tr>
<td>Girly girl</td>
<td>Pink, social, beauty</td>
<td>Ugliness, dirtiness</td>
</tr>
<tr>
<td>Macho Man</td>
<td>Violence, competition, authority, strength</td>
<td>Feminine things, art, weakness</td>
</tr>
<tr>
<td>Intellectual</td>
<td>Things that make one think, fame, problem solving</td>
<td>Social situations</td>
</tr>
<tr>
<td>Punk</td>
<td>Black, piercings, rock music</td>
<td>Popular culture</td>
</tr>
<tr>
<td>Religious</td>
<td>Religious objects, self-sacrifice, authority, divine, influencing others</td>
<td>Blasphemy, liberalism (©)</td>
</tr>
</tbody>
</table>

Action Names

- Arrest
- Buy object (hand money)
- Change clothes
- Convince others
- Eat/Dine
- Exercise
- Fix appearance (do makeup/hair)
- Get money from ATM
- Hold door open
- Hug
- Litter
- Look at (reach to touch)
- Market/Advertise for shop
- Open door
- Play video game/floor games in store
- Poke
- Punch
Finally: Definitions

• Agent traits
  – Some innate characteristics of the agent
  – Money, ability to influence, number of children, or introversion level

• Personality – called Tendency
  – Defined by its positive/negative values and actions associated
  – Weighted

• Social Circle – collection of Tendencies
  – Think of reality. We all belong to them.

• Mood
  – Changes the weights of the tendencies/social circles

Other Definitions

• Value
  – Every object has a given tag, which defines the things we, as people, interpret about objects
    • Hello-Kitty backpack tagged “pink”, “sparkly”
  – Agent tags are their personalities/values
  – Could also tag situations
    • A fight is tagged “violent”
  – Note: objects, agents, and situations aren’t tagged as relationship to personalities. Up to personalities to relate the tags
    • Hello-Kitty not tagged as “girly”
Conclusions

• Assumed no time for conclusions
  – You all understood perfectly anyway, right? 😊

• Questions?