

# 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 Terzopoulos, are about higher-level agent actions
  - Buying tickets, watching entertainers



Terzopoulos

## 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

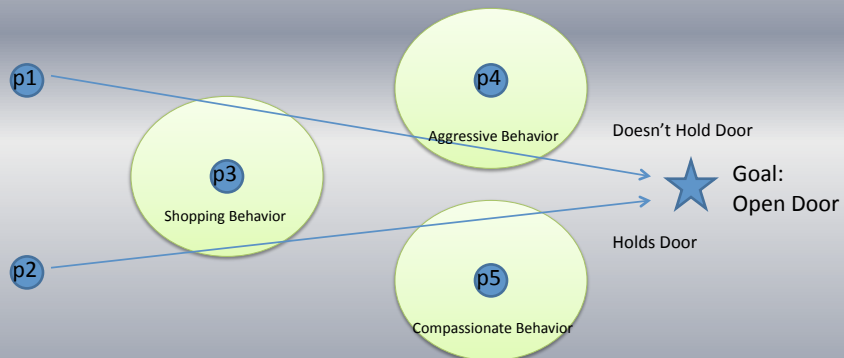
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## Our Solution

- 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*

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## Quick Example



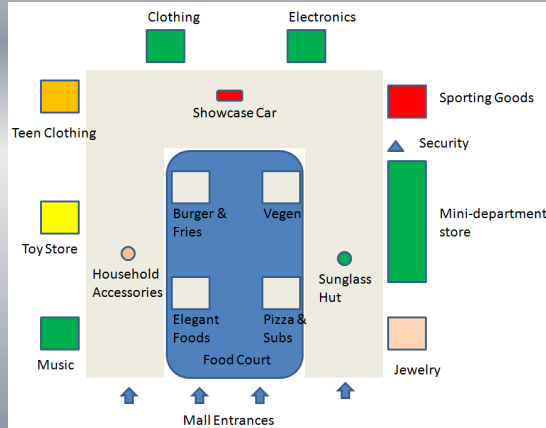
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## Scenario Objective

- 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.

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## 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

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## Example Personalities/Actions

- No offense meant. These are meant to be stereotypes

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

| Action Name                          |
|--------------------------------------|
| Arrest                               |
| Buy object (hand money)              |
| Change clothes                       |
| <b>Convince others</b>               |
| Eat/Drink                            |
| Exercise                             |
| Fix appearance (Do makeup/hair)      |
| Get money from ATM                   |
| Hold door open                       |
| Hug                                  |
| Litter                               |
| Look at (reach to touch)             |
| <b>Market/Advertise for shop</b>     |
| Open door                            |
| Play video game/floor games in store |
| Poke                                 |
| Punch                                |

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## 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

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## 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”

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## Conclusions

- Assumed no time for conclusions
  - You all understood perfectly anyway, right? 😊
  
- Questions?

end