Prom Week: Enabling Playable Social Models

Josh McCoy and Mike Treanor

expressiveintelligencestudio

UC Santa Cruz
Paris Game/AI Conference
Static Story Graph

http://dohistory.org/film/process_preprod.html
Interactivity

UFO 54-40  
http://samizdat.cc/cyoa/

Journey Under the Sea  
http://flowingdata.com/2009/08/11/choose-your-own-adventure-most-likely-youll-die
Price of Interactivity: Authoring Explosion

World of Music
http://www.stanford.edu/~dgleich/demos/worldofmusic/interact.html
Managing Authorial Burden
Useful Patterns of Social Interaction

no, I think it looks fine!

Facade
http://www.interactivestory.net/
Social Science + Media = Social Exchange
A **pattern** of multi-character social interactions whose function is to **modify** the **social state** existing within and across the participants.
A pattern of multi-character social interactions whose function is to modify the social state existing within and across the participants.

Enable re-usable, dramatic patterns of interaction that feature personality-specific variation in behavior.
More Examples of Social Exchange

Sex and the City
Season 4 Episode 1
Sex and the City Example
Computational Models

World of Goo
http://www.worldofgoo.com/

Angry Birds
as it should be

Being in accord with conventions or accepted standards; proper.
Goal is to make a entertaining, readable, playable model of social interaction that is appropriate for media.

Goal is not to create a ground-truth model of social interaction.
Prom Week
CiF’s Architecture

- Character
  - Traits
- Social Networks
- Relationships
- Statuses
  - Status Trigger Rules
- Social Facts Database
  - Backstory

Procedure
- Desire Formation
- Intent Selection
- Social Exchange
- Performance Realization
  - Character Prospective Memory
  - Social Exchange Intent
    - Volition

Social Exchange Library
- Social Exchange
  - Intent
  - Preconditions
  - Initiator Influence Rule Set
  - Responder Influence Rule Set
  - Effects
  - Instantiations

Microtheory Library
- Influence Rule Set

Cultural Knowledgebase
Social Exchange

Social Exchange Library

Social Exchange
Intent
Preconditions
Initiator Influence Rule Set
Responder Influence Rule Set
Effects
Instantiations

Ask on a Date
Show Off
Idolize
Share Interest
Conversational Flirt
“You’re hot when you’re angry”
Open Up
Text Message Break Up
Make Plans
Insult Friend Of
Sabotage Relationship
Bully

and more...
Relationships, Statuses, Character Desc.

**Relationships**
- Friends
- Dating
- Enemies

**Statuses**
- Heartbroken
- Cheerful
- Popular
- ...

**Character Description**
- Traits (compassionate, sex magnet)
- Character-specific locutions ("noob", "word")
Social Networks

Buddy
Romance
Cool
2: Doug was all fawning over Kate and it was like embarrassing

3: Nicholas used looks to shoot down Kate’s text message break up.

4: Nicholas bragged Monica about being like a prodigy or whatever
The Cultural Knowledgebase

Robert reads
likes
likes
likes
despises
has hobby

Karen

Dostoevsky

Roses

Bears

Fire Tossing

is
is
is
is

Romantic

Cool

Lame

expressiveintelligencestudio
Predicates and Influence Rules

Influence Rule
- Predicates
- Evaluation Mode
- Weight

Predicate
- Character Variables
  - Primary
  - Secondary
  - Tertiary

Evaluation Mode
- Type

Trait
- Relationship
- Cultural
- History
- Network
- Status

Time Ordered
- True Now

Times True
- True in History
- True Now
- Intent
Social Considerations

• Influence rules are *social considerations*.

• Stored in *microtheories* and social exchange rule sets.

• Roles in social exchange:
  • Initiator
  • Responder
  • Other
## Example Influence Rules

<table>
<thead>
<tr>
<th>Rule</th>
<th>Weight</th>
<th>Intent</th>
</tr>
</thead>
<tbody>
<tr>
<td>friends(i, r)</td>
<td>+4</td>
<td>nice(i, r)</td>
</tr>
<tr>
<td>friends(i, r) and lowRomance(i,r) and</td>
<td>-2</td>
<td>friendly(i, r)</td>
</tr>
<tr>
<td>romantic(r, i, recently)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>friends(i, r) and hasCrushOn(i, o) and</td>
<td>+2</td>
<td>mean(i, r)</td>
</tr>
<tr>
<td>romantic(r, o, recently)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Example Influence Rules

<table>
<thead>
<tr>
<th>Rule</th>
<th>Weight</th>
<th>Intent</th>
</tr>
</thead>
<tbody>
<tr>
<td>friends(i, r)</td>
<td>+4</td>
<td>nice(i, r)</td>
</tr>
<tr>
<td>friends(i, r) and lowRomance(i,r) and romantic(r, i, recently)</td>
<td>-2</td>
<td>friendly(i, r)</td>
</tr>
<tr>
<td>friends(i, r) and hasCrushOn(i, o) and romantic(r, o, recently)</td>
<td>+2</td>
<td>mean(i, r)</td>
</tr>
</tbody>
</table>

And 4,300 more!
Desire Formation

- Simon
- Prospective Memory
- Zack
- Microtheories
- Monica

Social Exchanges:
- Ask Out
- Verbally Abuse
- Rough Up
- Physical Flirt
- Insult
- Make Plans
Performing a Social Exchange

Initiator Starts Chosen Interaction

Responder
Considerations
Confident?
Cheat?
Embarassed?
Cool?
Friends?

Accept
Microtheories
Reject

Outcomes
Flavorless Accept
Friends Accept
Romance Accept
Flavorless Reject
Bad Past Reject
Cheat Reject

Outcome Saliency Check

Most Salient Outcome
Dialog
Social Change
Performing a Social Exchange

Initiator Starts Chosen Interaction → Responder
- Considerations
  - Confident?
  - Cheat?
  - Embarrassed?
  - Cool?
  - Friends?

Microtheories
- Accept
- Reject

Outcomes
- Flavorless Accept
- Friends Accept
- Romance Accept
- Flavorless Reject
- Bad Past Reject
- Cheat Reject

Outcome Saliency Check

Most Salient Outcome
- Dialog
- Social Change

expressiveintelligencestudio
Choosing the Most Salient Effect

- Accept
- i has done something to embarrass o recently
- responder is enemies with o
Responder: Hey %i%. Man, I can't stand %o%...

Initiator: Tell me about it. Hey, remember that time when %SFDB_(embarrassing,i,o,0)%?

Responder: Oh god, I totally do! Man, that was so embarrassing. %pronoun(o,he/she)% is such a %pejorative%!

Initiator: I know! You should totally join me next time. I feel another practical joke coming on!

Responder: Totally! Text me!
Performance Realization and Fallout

Social Fall Out

Social Exchange Context
- Social Change

Social Facts Database

Triggers
- Jealous
- Cheat
- Enmity

Social State
- Social Networks
- Relationships
- Statuses

Update
Social Trigger Rules

- Cascading consequences of social exchanges

- Cheating(i,r):
  - Dating(i,r) then Dating(i,o)

- AnnoyedWith(i,r):
  - Dating(i,r) and Flirt(r,o)

- AngryAt(i,r):
  - AnnoyedWith(i,r) and Flirt(r,o)
Prom Week Gameplay Demo
AI-based Game Design

What game is "about"?

AI-based Design's Iterative Cycle

- AI System
- Game Prototype
- Prototype/demo/game

drives design

exposes faults
Lots of Authoring

• Thousands of rules
• Hundreds of dialogue instantiations
• Multiple authors
  • Some not technical...
Making CiF Approachable

Showing System State

VS

Character Performance
Constructing Stories with Social Exchanges

• Series of social exchanges sometimes lacked dramatic narrative

• Story Sequences: sequential social exchange effects across social exchanges
  • Popular person agrees to date with nerd if he will let her cheat on bio final
  • Popular person dumps nerd after test
Meaningful Choices and Puzzles

- Failure invalidates player choices
- Players move on whether they win or not
- Future levels may be harder
  - Who knows! Emergent solutions...
- Narrative coherence is maintained win or lose
Take Aways

AI-based Design's Iterative Cycle

What game is "about"

AI System

Game Prototype

Prototype/demo/game

drives design
exposes faults

Richly Realized Characters

Static Social Space

Highly Dynamic Social Space

No Character Realization

CiF Prom Week

Baby, you're the light of my life. I want us to be completely open with each other, show our true feelings, bare our souls.
Questions?

University of California at Santa Cruz

expressiveintelligencestudio

http://promweekgame.com

Josh McCoy
mccoyjo@soe.ucsc.edu

Mike Treanor
mtreanor@soe.ucsc.edu
Additional Slides
Related Work: Playable Models of Social Life

PsychSim
- Decision Theoretic Social Behavior
- Theory of Mind
- Reward-based Goal Persuasion
- Goal Weight Fitting

Thespian
- Socially Normative Behavior
  - Turn taking
  - Conversation Flow
  - Character Affinity
  - Obligation Management
- Authored Plot Development

Virtual Sex
Little Red Riding Hood Story
The Tactical Language Training Project (Tactical Iraqi)
Related Work: Playable Models of Social Life

---

**Pataphysic Institute**

The central focus of the Pataphysic Institute is the invention of the least real, the most lucid fiction, including that which has not yet been invented. Their manifestations are hidden by your mind and joint forces with your friends.

The people at PFI need your help. Most Real Invaders, the former head of staff who studies codes of the PFI personnel, tells us of one PFI’s limitations, and tells us of the limitations of our personality in contrast with the emergence of “Most Magic.” Most taverns, the current PFI student wins simm “Almost Actors” — the critical interactions between people suddenly result in merely common emotional relations — there needs to be patterns to discover.

**Fear Not!**

**ORIENT**

**Restaurant Game**

**Virtual Beer Garden**
Goal: Have Zack Date Someone Popular
The Social Landscape
2 Possible Strategies

- Make Popular
- Get New Girlfriend
Date Monica
Obstacles

Oh please, Zack. I heard all about that time when you told Doug that his clothes were so 2000s. Leave me alone.
Overcoming Obstacles

Oh... uh... hi, Buzz. Is your phone on?

That is so lame. I can't believe what a crapface you are. I just removed you from my contact list.
Why Monica, oh hai. I wonder if you received the package I had sent over to your home?

You mean that one filled with all those expensive chocolates?
Overcoming Obstacles

Baby, you're the light of my life. I want us to be completely open with each other, show our true feelings, bare our souls.
But wouldn't you rather be doing that with Monica?
Overcoming Obstacles

Talk to the hand, jerk.
Now Monica Wants to Ask Zack Out!