

Developing More Realistic Characters for Virtual Worlds: Developments in Human-Like Minds

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Overview

- Basis of Work
- Progress So Far
- Next Steps
- Questions

- Work focuses on adding to human-like qualities through the integration of emotional elements.
- Particular emphasis on adding emotions to characters in virtual environments including mobile, web, Virtual Worlds and Games.
- Proposed emotion architecture grounded in formal psychology.
- Overview of proposal based on Scherer's emotional process.

Scherer Six Stage Emotional Process

Proposed Architecture Flow - Based on Scherer's Model of Emotion



Scherer, K.R. (2005). Unconscious Processes in Emotion: The Bulk of the Iceberg. In P. Niedenthal, L. Feldman-Barret & P. Winkielman (Ed.). *The Unconscious Emotion*. NY.

Add a Categorical View of Emotions Suggested by Ekman

i.e. 5 emotions in one category/basic emotions/primary emotions

- Anger
- Disgust
- Fear,
- Happiness
- Sadness
- Plus Surprise composed on Interest, Surprise, Shock and Startle.
- This provides emergent emotional states when category one emotions are active at different levels i.e. *jealousy* which could be considered a blend of *anger*, *sadness*, *fear* and *disgust*

Ekman, P., Friesen, W.V. (1975). Unmasking the Face: A Guide to Recognizing Emotions from Facial Cues. Englewood Cliffs, N.J: Prentice-Hall

Implementation 1

Quake 3 Combat Bot



Bots won less games, but in this implementation not quite statistically significant when it came to combat performance, i.e. Killing when encountering an enemy.

Did not affect user experience.

Implementation 2

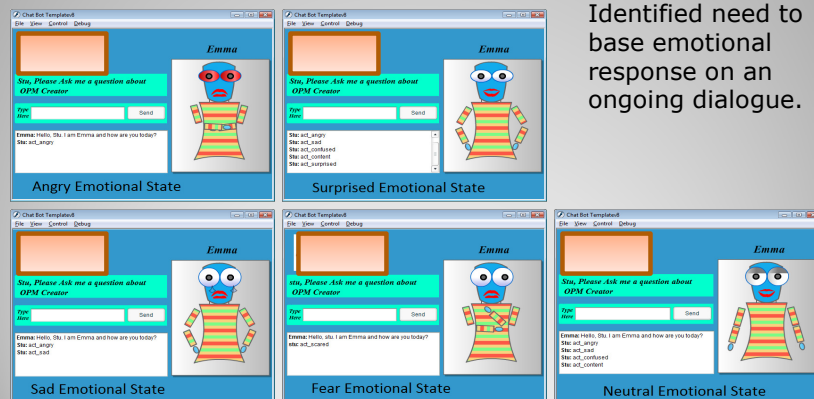
HALO by Daden Ltd



Users preferred interacting with emotionally enhanced bot when blind testing 2 bots.

Implementation 3

Web Chat Bot



Identified need to base emotional response on an ongoing dialogue.

Implementation 4

Torque Game Engine : Emotions & Behaviour



Difficulties creating a whole infrastructure for agents, much easier to adapt the architecture for pre-existing behaviour system. Too limited to target platform.

Present Work: Virtual Staff

Xbox-Avatar



This application has a text facility for Q & A

Avatars are interesting as their behaviour systems are easily accessible to developers and the applications can be delivered easily to a broad range of end users.

Next Steps

Further end-user interaction

Further work in the role of both:

- Memory
- Motivation

Thanks

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Also related research at

<http://emotion-research.net/>