

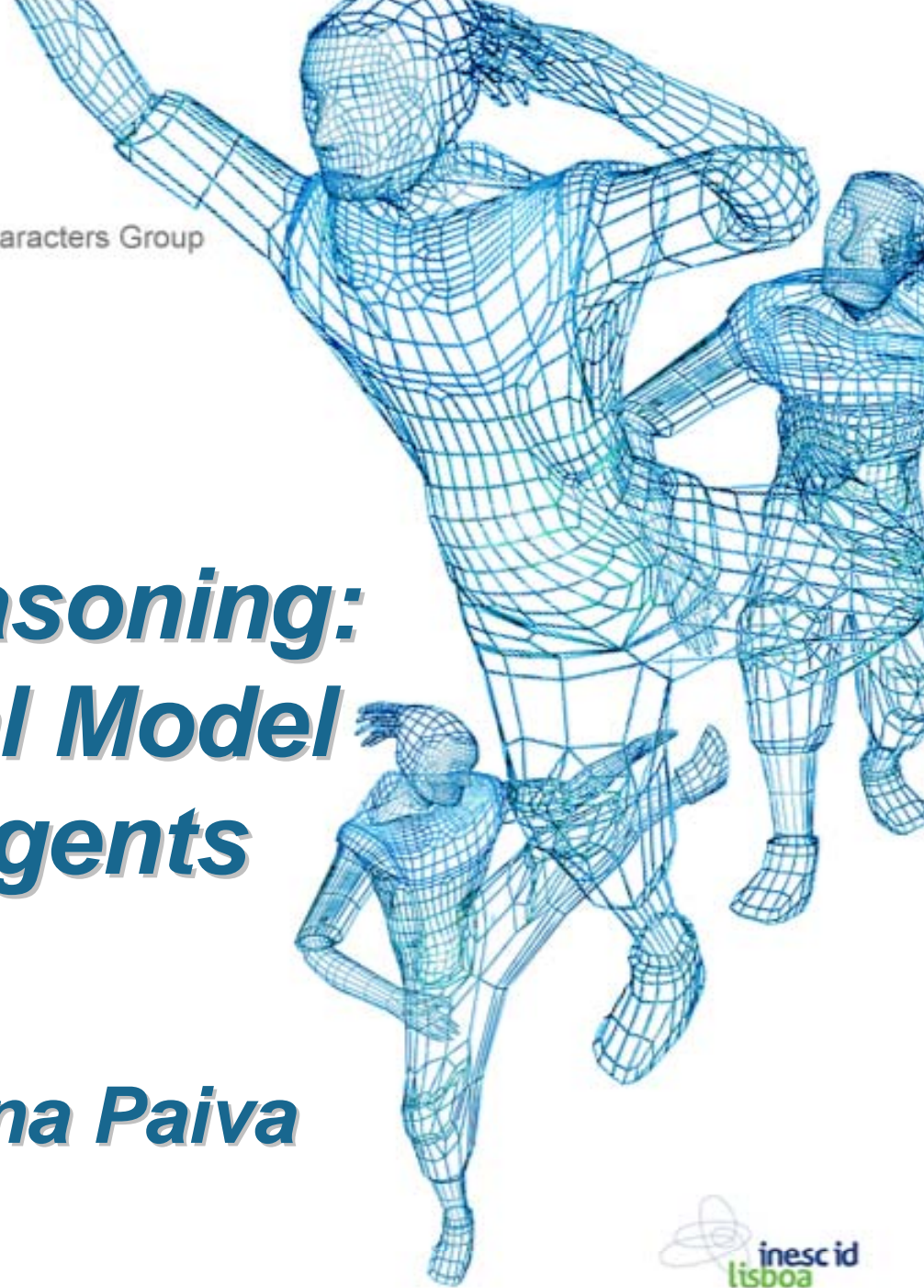


Intelligent Agents and Synthetic Characters Group

Feeling and Reasoning: a Computational Model for Emotional Agents



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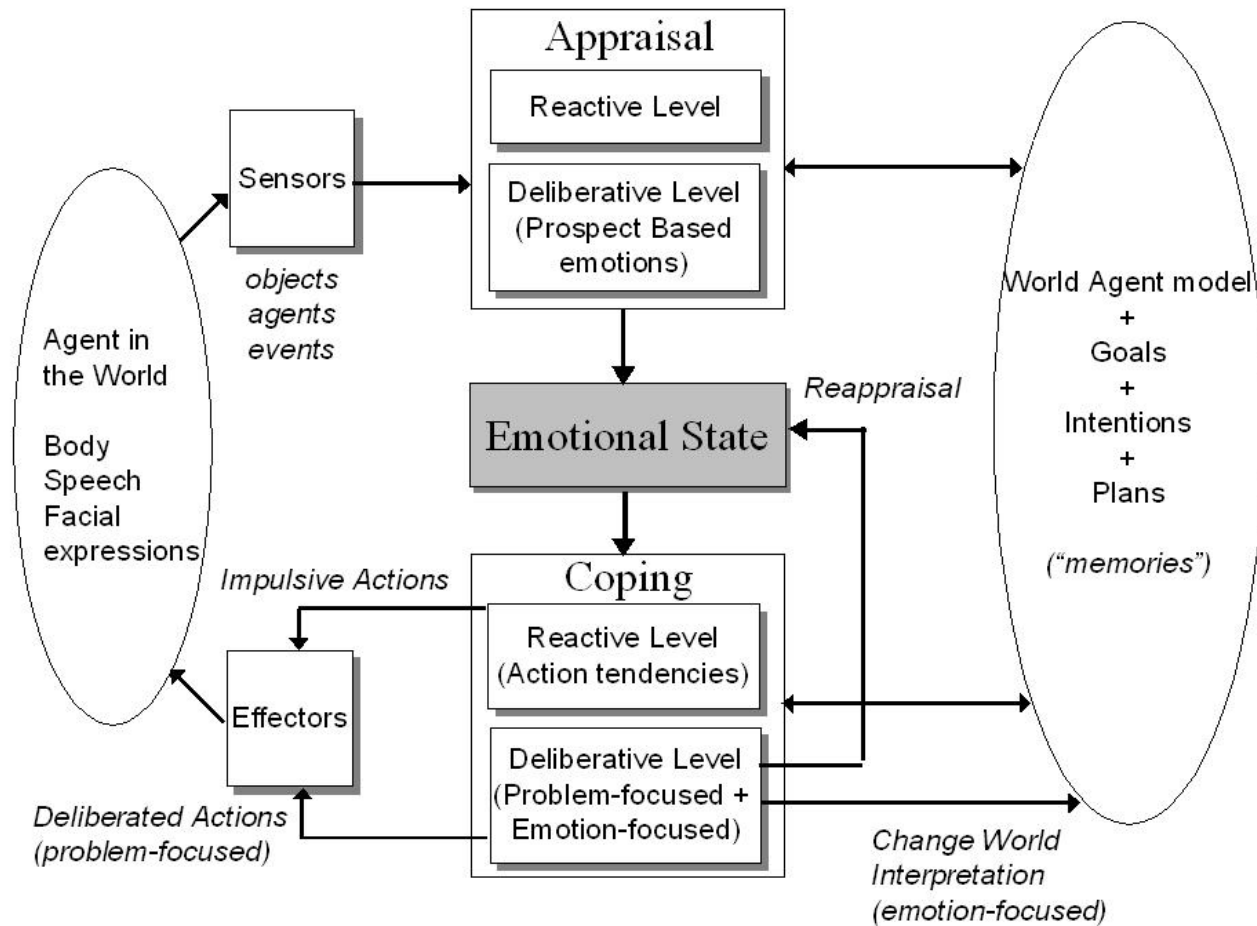
Motivation

- Interactive Virtual Environments
 - immersive and motivating
 - “safe” learning environment
 - can facilitate social learning
- How to create autonomous characters for IVEs that:
 - Are believable and allow the establishment of emphatic relations by the users
 - Have reactive/cognitive capabilities
 - Allow the user to interact with them (by receiving suggestions)

Emotions and Personality

- Emotions and personality as the key to believability (traditional animators):
 - Clearly perceivable emotions and personality
 - The character's behaviour must be influenced by it's emotional state and personality
- Emotion defined as a valenced reaction to an event (OCC)
- Personality
 - Goals
 - Action tendencies
 - Emotional Reaction Rules
 - Emotion thresholds and decay rates

Proposed Model



Deliberative Appraisal

- Prospect based emotions generated by the state of plans in memory (Gratch)
- When an event is perceived:
 - Plans are updated accordingly
 - Active pursuit goals are checked for activation
 - Trigger initial hope/fear emotions
- The process of plan focus also generates emotions

Reasoning (Focus)

In each reasoning cycle:

- A goal is selected as the focus of attention
 - The one that generates the strongest emotions (Sloman)
- The goal's best plan is brought into focus
- The plan generates emotions:
 - Hope for achieving the goal
 - Fear for not achieving the goal
 - Fear for not preserving an interest goal



Reasoning (Coping)

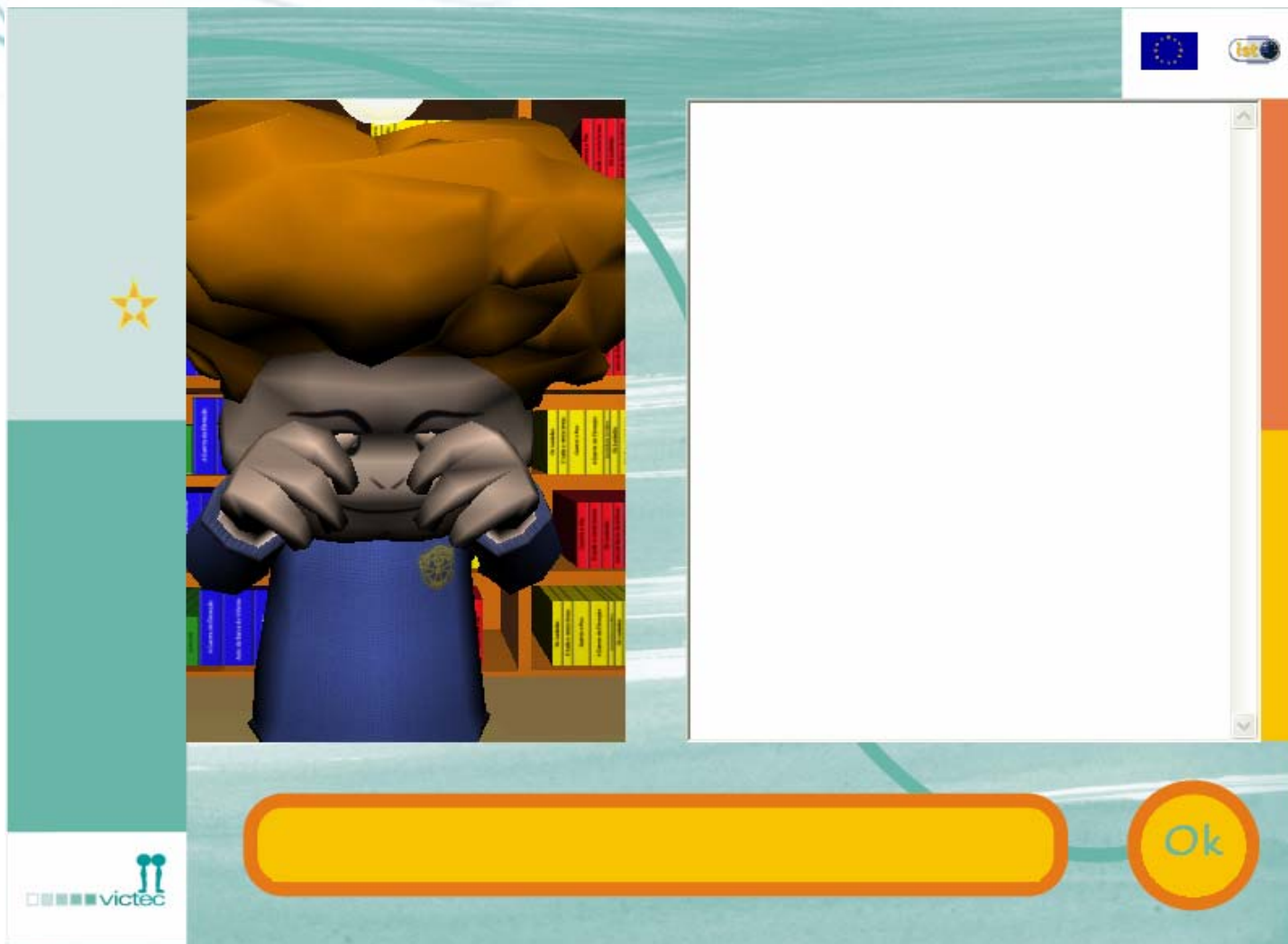
- Coping strategies applied to the plan depend on the emotional state
- Problem-focused Strategies
 - Planning (by adding actions, ordering constraints)
 - Execution
- Emotion-focused Strategies (Marsella)
 - Accepting a plan's failure
 - Accepting a goal's failure
 - Lower a goal's importance
 - Lower an effect's probability



Luke: Hello muppet

User Influence

- Indirect user interaction
 - User suggests a particular goal (advice)
 - Character raises the importance of that goal
 - The goal will generate distinct emotions which will lead to different coping strategies

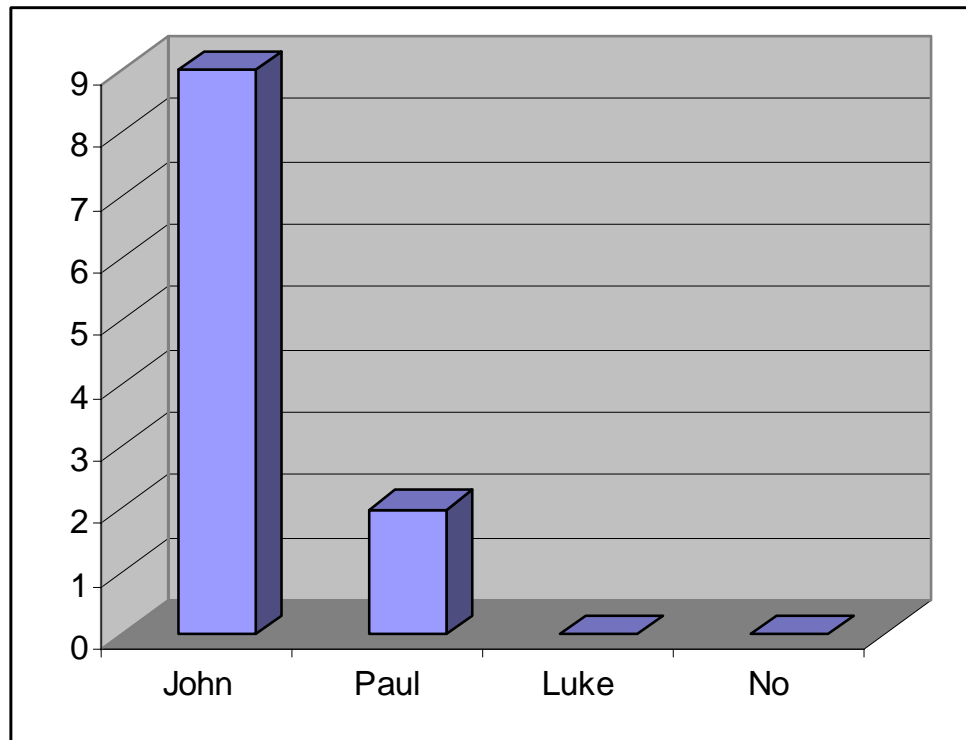




Luke:Hi stupid

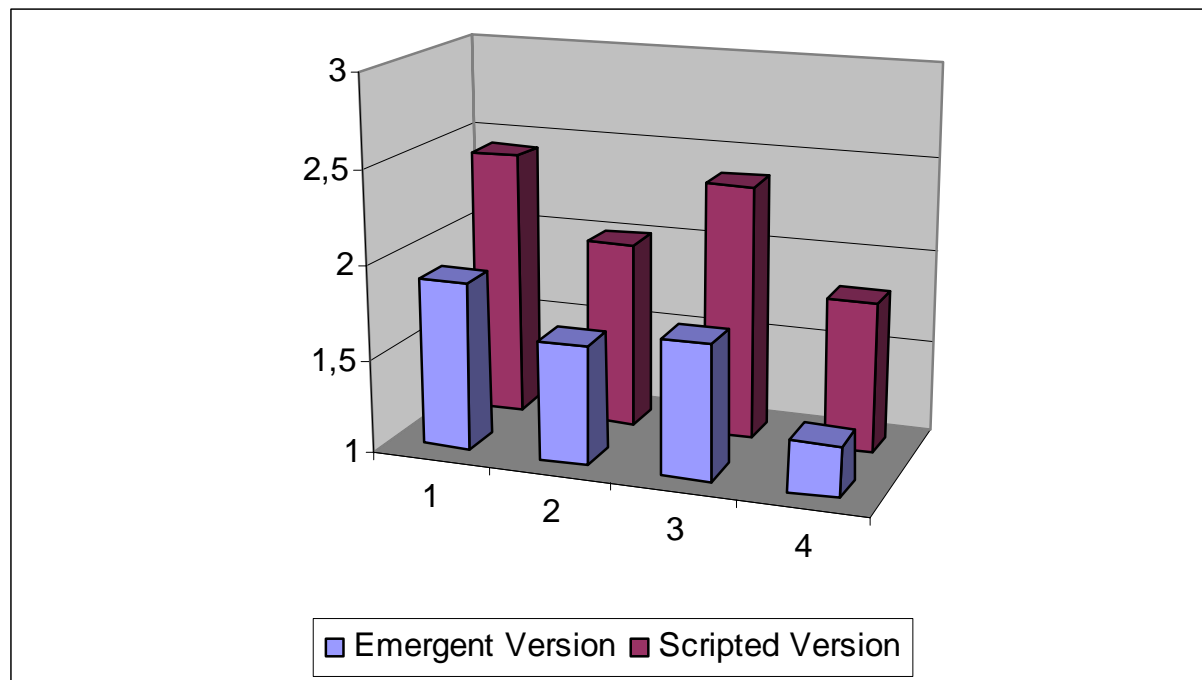
Results

- Did you feel sorry for any character? (yes:11; no:0) Whom did you feel sorry for? (John:9; Paul:2, Luke:0)



Results

- 1) Did the conversations seem real? (yes-1;no-5)
- 2) Were the conversations (interesting-1; boring-5)
- 3) Did the victim follow the advice? (yes-1; no-5)
- 4) Did you help the victim? (helped a lot-1; no- 5)



Achievements

- Emotional Based Architecture
 - Influence of emotions and personality in reasoning and action selection
- Characters are designed by specifying personality
- Believable Autonomous Characters
- Combines Reactive and Cognitive capabilities (both related to emotions)

Problems

- Confusion about concepts in literature (quoting Rene “the notion of emotion is murky”)
- Interpreting theories and concepts is “hard” for computer scientists
- OCC theory does not specify effects of emotions in behaviour
- Interaction between low level – high level
 - Deliberative layer allowed to create reactive rules
 - Action expansion
 - Reactive emotions as elicitors of attention