

Emotional Interactive Agents

Randolph M. Jones,
Amy henninger,
Eric chown (et al.)

Objectives

- A serious cognitive model of complex behavior under the influence of emotions
- Incorporate a modern theory of emotions into an existing intelligent agent
- Build a hybrid architecture that appropriately integrates subsymbolic and symbolic processes

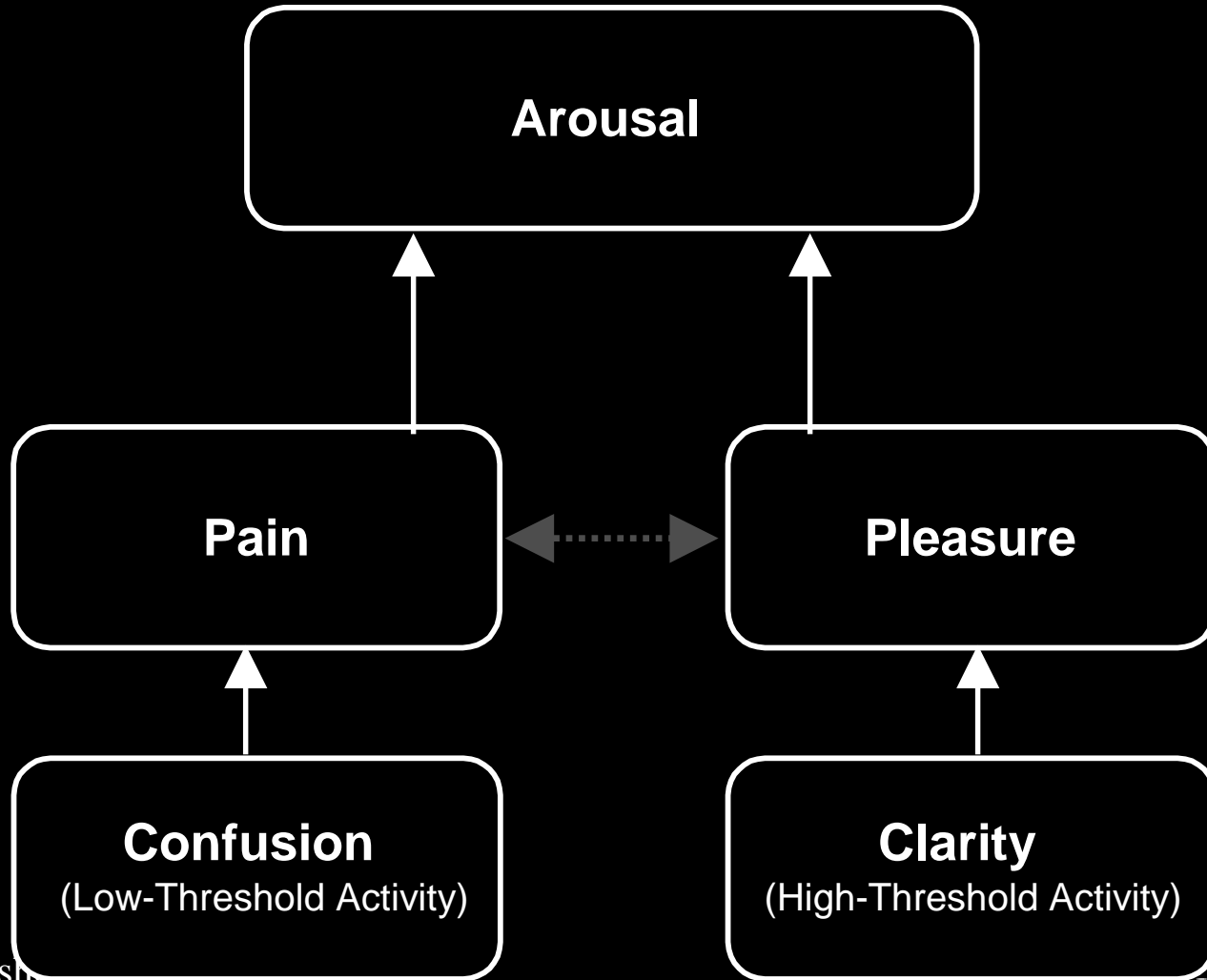
Theoretical Assumptions

- Emotions derive from subconscious signals that affect body/mind states
- Emotional factors influence aspects of perception and decision preferences
- Emotions are influenced by physical and cognitive factors

Hybrid Approach

- Connectionist model of emotion-related signals
- Rwa-soar command agent, with augmented plan monitoring and planning preferences

Connectionist Framework



Connectionist Framework

- Pleasure/pain interpret physical and cognitive signals
- Clarity/confusion interpret cognitive signals
- Arousal provides interface between emotions and perception/memory/cognition

Planner Modifications

- Parameterize knowledge along dimensions of pain, pleasure, clarity/confusion, arousal
- Arousal influences perception, interpretation, and possibly working memory
- Pain, please, and clarity/confusion influence decision-making preferences

Planner Modifications

- Plan execution monitoring results feed into connectionist network
 - Pain, pleasure, clarity/confusion
 - Network processing depends on personality parameters

Personality Parameters

- Susceptibility to pleasure and pain (physical and cognitive)
- Susceptibility to confusion
- Susceptibility to arousal

Proposed Evaluation: Empirical

- The connectionist model dictates a fairly complex personality space
- Select extreme and representative points in this space for test simulations
- Configure simulations to explore favorable and unfavorable emotional influences

Proposed Evaluation: Contextual

- Connectionist framework dictates space of personality types
- Investigate mapping between this space and modern frameworks for personality
- Explore mapping of emotionally influenced behavior to “traditional” emotion labels (e.G., “Fear”, “anger”, “joy”)