

Preface

Recent years have witnessed increased interest in modeling emotion within cognitive and behavior-based (software and robotic) agent architectures and cognitive models of human behavior. This interest results in part from advances in agent technology, cognitive neuroscience and emotion research that make such models possible, and in part from maturing applications that require or benefit from the inclusion of different emotion-related aspects (e.g., adaptive human-computer interfaces, social and expressive robots, autonomous agents, decision support systems, etc).

This surge of interest has led to a number of emotion-based architectures and applications. However, this work is often carried in an “ad hoc” manner since, due to the short history of the field and the lack of appropriate frameworks for common reflection, there is a still very limited understanding of the mechanisms underlying such architectures, and of standards for a sound validation practice. Researchers in this area increasingly perceive the need to move in this direction to make work in the field progress beyond mere engineering applications and towards a more scientific discipline. The aim of the proposed symposium is to take a step in this direction.

The objective of this symposium is to provide a multidisciplinary forum focusing on mechanisms underlying agent architectures that include or emphasize emotion. In particular, we focus on two aspects not contemplated in previous symposia and workshops: validation of emotion models and architectures, and relevance of recent findings from affective neuroscience research, in addition to existing research in psychology. We wish to explore the ways in which neuroscience and psychology results can motivate and inform the design of emotion models and architectures, constrain specific mechanisms and processes within these models, serve as a source of data for model and architecture validation, and benefit from the feedback provided by computational models and tools.

Particular issues and focus questions addressed during the symposium include the following:

Levels of model granularity:

- What are possible alternative levels of granularity for modeling emotion, and emotion-cognition interactions, in integrated architectures (e.g., neuroanatomical circuits and components, aggregated functional units)?
- When are lower-level / higher-level (functional) models more appropriate?
- What research questions are best answered by models at distinct levels of granularity?
- What are the time scales of emotion and of emotional processing (e.g., "hot" emotions vs. moods)? Do they require different architectures? Do they have the same functions?

Availability of empirical data:

- What is the availability of empirical data required to generate models at different levels of granularity?
- Does neuroscience provide adequate data to allow modeling these phenomena at the circuit and neuroanatomical components?

- Does psychology (and neuroscience) provide adequate data supporting empirically-motivated choices for representation and inferencing involving internal mental constructs and processes (e.g., goals, expectations, plans)?

Model and architecture design and development:

- Which psychological theories, computational methods and representational formalisms are appropriate for different types of architectures and architecture components, at the different levels of granularity?
- What are the advantages/disadvantages and uses of different 'design' approaches (e.g., engineered, developmental, evolutionary)?

Model and architecture validation:

- How are the validation criteria and metrics different for different levels of granularity? For different types of architectures? For different phenomena modeled?
- What are the best ways of coupling computational modeling and empirical research approaches, for the purposes of data generation and hypothesis validation?

For further information, please visit the symposium website: <http://homepages.feis.herts.ac.uk/~comqlc/ame04>

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Symposium Chairs