Affective Computing and Interaction: Psychological, Cognitive and Neuroscientifc Perspectives

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Since interactions may occur between animals, humans, or computational agents, an interdisciplinary approach which investigates foundations of affective communication in a variety of platforms is indispensable. In the field of affective computing, a collection of research, merging decades of research on emotions in psychology, cognition and neuroscience will inspire creative future research projects and contribute to the prosperity of this emerging field.

Affective Computing and Interaction: Psychological, Cognitive and Neuroscientifc Perspectives examines the current state and the future prospects of affect in computing within the context of interactions. Uniting several aspects of affective interactions and topics in affective computing, this reference reviews basic foundations of emotions, furthers an understanding of the contribution of affect to our lives and concludes by revealing current trends and promising technologies for reducing the emotional gap between humans and machines, all within the context of interactions.

Topics Covered:

• Affect and Cognition
• Affect in Computer Mediated Interactions
• Affective Agents
• Affective Component in Human Interactions
• Applications of Affective Computing
• Biological Roots of Affect
• Processing of Affect in Communication, Body Language, Facial Expressions and Speech
• Processing of Context in Affective Interactions
• Representation of Affect and Computational Models

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Didem Gökçay received her BS and MS degrees in the Department of Electrical and Electronics Engineering at Middle East Technical University. She finished her PhD in the Department of Computer Science at University of Florida as a Fulbright scholar. She worked as a research assistant in the Cognitive Neuropsychology Laboratory of the University of Florida Brain Institute for 6 years developing tasks with emotional stimuli and programs for the analysis of psychophysiology and fMRI measurements. Her postdoctoral fellowship was mutually funded by the Salk Institute and University of California San Diego, while she worked at the Research Center for the Neuroscience of Autism on morphology and function of neuroanatomical structures. Currently she is an Assistant Professor at the Informatics Institute of Middle East Technical University. She also directs the METUNEURO Laboratory which specializes in MRI and fMRI postprocessing. Her main interest is the interplay between emotion and cognition, and more specifically key anatomical structures such as the anterior cingulate which participate in the underlying emotional processes.
Section 1: Foundations

Chapter 1
Neurophysiology of Emotions
Erdem Ayşen (Hacettepe University, Turkey)
Karaismaîloğlu Serkan (Hacettepe University, Turkey)

Chapter 2
Functions of Unconscious and Conscious Emotion in the Regulation of Implicit and Explicit Motivated Behavior
Smith Mark Ashton (Girne American University, Turkey)

Chapter 3
Emotional Axes:
Gökçay Didem (Middle East Technical University, Turkey)

Section 2: Emotional Frameworks and Models

Chapter 4
Evolution of Affect and Communication
Scheutz Matthias (Tufts University, USA)

Chapter 5
A Computational Basis for the Emotions
Korsten N (King's College London, UK)
Taylor JG, (King's College London, UK)

Chapter 6
For a 'Cognitive Anatomy' of Human Emotions and a Mind-Reading Based Affective Interaction
Castelfranchi Cristiano (CNR, Italy)

Section 3: Affect in Non-Verbal Communication

Chapter 7
Towards a Technology of Nonverbal Communication:
Vinciarelli Alessandro (University of Glasgow, UK)
Mohammadi Goleizhe (Idiap Research Institute, Switzerland)

Chapter 8
Communication and Automatic Interpretation of Affect from Facial Expressions
Sahib Allbert Ali (University of Amsterdam, the Netherlands)
Sebe Nica (University of Trento, Italy)
Gevers Theo (University of Amsterdam, the Netherlands)

Chapter 9
Facial Expression Synthesis and Animation
Buciu Ioan (University of Oradea, Romania)
Nafornita Ioan (University of Timisoara, Romania)
Gordan Cornelia (University of Oradea, Romania)

Section 4: Affect in Language-Based Communication

Chapter 10
The Role of Affect and Emotion in Language Development
Hohenberger Annette (Middle East Technical University, Turkey)

Chapter 11
Problems Associated with Computer-Mediated Communication: Cognitive Psychology and Neuroscience Perspectives
Yıldırım Gülsen (Informatics Institute, METU, Turkey)
Gökçay Didem (Informatics Institute, METU, Turkey)

Chapter 12
The Influence of Intimacy and Gender on Emotions in Mobile Phone Email
Kato Yuuki (Tokyo University of Social Welfare, Japan)
Scott Douglass J. (Waseda University, Japan)
Kato Shogo (Tokyo Woman's Christian University, Japan)

Section 5: Emotions in Human-Computer Interaction

Chapter 13
A Scientific Look at the Design of Aesthetically and Emotionally Engaging Interactive Entertainment Experiences
El-Nasr Magdy Seif (Simon Fraser University, Canada)
Moic Jacquetyn Ford (University of Southern California, USA)
Drachen Anders (Dragon Consulting, Copenhagen)

Chapter 14
Bringing Affect to Human Computer Interaction
Akgun Mahir (Pennsylvania State University, USA)
Akilli Gokturk Kaplan (Middle East Technical University, Turkey)
Cagilay Kursar (Middle East Technical University, Turkey)

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Affect-Sensitive Computing and Autism
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Lahiri Uttama (Vanderbilt University, USA)
Sarkar Nilanjan (Vanderbilt University, USA)
Warren Zachary (Vanderbilt University, USA)
Stone Wendy (Vanderbilt University, USA)
Liu Changchun (The MathWorks, USA)

Chapter 16
Affective Games:
Sykes Jonathan (eMotionLab, Glasgow Caledonian University, Scotland)

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