

SPECIAL ISSUE

AFFECTIVE COMPUTING

Edited by B. W. Schuller and M. Pietikäinen

1142 An Engineering View on Emotions and Speech: From Analysis and Predictive Models to Responsible Human-Centered Applications

By C.-C. Lee, T. Chaspari, E. M. Provost, and S. S. Narayanan

| INVITED PAPER | The article provides an overview on the state-of-the-art in speech emotion recognition, focusing on how to make the technology available to everyone.

1159 Toward Label-Efficient Emotion and Sentiment Analysis

By S. Zhao, X. Hong, J. Yang, Y. Zhao, and G. Ding

| INVITED PAPER | This article introduces label-efficient emotion and sentiment analysis from the computational perspective, focusing on state-of-the-art methodologies, promising applications, and potential outlooks.

1198 Toward Robust Facial Action Units' Detection

By J. Yang, Y. Hristov, J. Shen, Y. Lin, and M. Pantic

| INVITED PAPER | This article discusses facial expression analysis based on facial action units, outlining three key needed assets and their challenges and introducing an end-to-end approach to the problem.

1215 Facial Micro-Expressions: An Overview

By G. Zhao, X. Li, Y. Li, and M. Pietikäinen

| INVITED PAPER | This article investigates facial expressions on the “micro”-level, providing a detailed survey on a psychological and computer science perspective and the state-of-play in this exciting subfield.

1236 Unlocking the Emotional World of Visual Media: An Overview of the Science, Research, and Impact of Understanding Emotion

By J. Z. Wang, S. Zhao, C. Wu, R.B. Adams Jr., M.G. Newman, T. Shafiq, and R. Tsachor

| INVITED PAPER | Drawing insights from psychology, engineering, and the arts, this article provides a comprehensive overview of the field of emotion analysis in visual media and discusses the latest research, systems, challenges, ethical implications, and potential impact of artificial emotional intelligence on society.

1287 Approaches, Applications, and Challenges in Physiological Emotion Recognition—A Tutorial Overview

By Y. S. Can, B. Mahesh, and E. André

| INVITED PAPER | With affect not only impacting behavior, but also physiological responses, this tutorial deals with practical aspects of assessment in everyday life and the challenges coming with this setting.

1314 Affective Brain-Computer Interfaces (aBCIs): A Tutorial

By D. Wu, B.-L. Lu, B. Hu, and Z. Zeng

| INVITED PAPER | This tutorial guides the reader into the basics of brain-computer interfaces (BCIs) leading into “closed-loop” affective BCIs that include the chain from analysis to brain stimulation.

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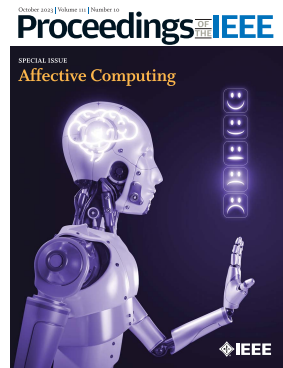
DEPARTMENTS

1139 SCANNING THE ISSUE

Affective Computing

By B. W. Schuller and M. Pietikäinen

1459 FUTURE SPECIAL ISSUE/SPECIAL SECTIONS



On the Cover:

This month's cover nicely captures the essence of affective computing, which is the study and development of systems and devices that can recognize, interpret, process, and simulate human affects.

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SPECIAL ISSUE: Affective Computing

1333 Touch Technology in Affective Human-, Robot-, and Virtual-Human Interactions: A Survey

By T. Olugbade, L. He, P. Maiolino, D. Heylen, and N. Bianchi-Berthouze

| INVITED PAPER | This survey deals with touch in human interaction as a marker of emotion, looking into the epistemology, main findings, and ever-present challenges in this subfield's literature.

1355 An Overview of Affective Speech Synthesis and Conversion in the Deep Learning Era

By A. Triantafyllopoulos, B. W. Schuller, G. İymen, M. Sezgin, X. He, Z. Yang, P. Tzirakis, S. Liu, S. Mertens, E. André, R. Fu, and J. Tao

| INVITED PAPER | This article covers the synthesis of affect and the modality of speech, particularly synthesis and conversion of speech targeted to an emotion, with a focus on deep learning.

1382 Social Functions of Machine Emotional Expressions

By C. M. de Melo, J. Gratch, S. Marsella, and C. Pelachaud

| INVITED PAPER | This article stresses the relevance of the ability to incorporate visual and motion behavior generation into human-machine interaction. It links emotional expression and social function in a psychological perspective and presents approaches to realize those expressions across multiple modalities.

1398 Engagement Detection and Its Applications in Learning: A Tutorial and Selective Review

By B. M. Booth, N. Bosch, and S. K. D'Mello

| INVITED PAPER | This article provides a multicomponential definition of engagement, reviews its conceptualization, and introduces its detection within context. It discusses pro- and reactive ways of boosting engagement in learning applications.

1423 Affective Game Computing: A Survey

By G. N. Yannakakis and D. Melhart

| INVITED PAPER | This article surveys affective computing applications in gaming. Alongside the state-of-play, principles, approaches, and tools, it discusses the affective loop: game affect elicitation, sensing, detection, and adaptation.

1445 Ethical Considerations on Affective Computing: An Overview

By L. Devillers and R. Cowie

| INVITED PAPER | This article summarizes ethical considerations on affective computing. Dangers include oversimplification of affective states, lack of grounding in reality, potential addiction to affective systems and implicit dependence on those controlling the systems, and potential manipulation among others.

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