First Call for Papers and Participation – 10 Jan 2018

IJCAI-2018 Workshop

2nd International Workshop on Artificial Intelligence in Affective Computing (AC)

Organizing Committee

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Technical Description of Workshop

In recent years, interest in **affective computing (AC)** have led to advances in speech recognition, natural language processing, facial expression detection, and applying machine learning using wearables. The workshop will focus on the convergence of methodologies that contribute to detecting emotional and psychometric patterns based on machine learning algorithms, wearables, Internet of Things (IoT), and databases to capture important aspects of affective computing.

Active research areas that are relevant to affective computing include:

- **Health centric applications** using affective computing to enhance healthcare
- **Multimodal sensor fusion** to comprehensively detect and classify affect in users
- **User environments** for the design of systems to better detect and classify affect
- **Applications using wearables** to detect/classify affect, stress, fatigue, and medical emergencies
- **Recognition/prediction of affect and emotion** using artificial neural networks and/or deep learning
- **Social informatics applications:** group behavioral effects and feedback, location-awareness
- **Predicting/classifying real-time annotated data using spatiotemporal learning and inference**
- **Machine learning using biometric data** to classify biosignals
- **Wearable computing applications**, especially based on experience sampling methods
- **Facial recognition** in predicting bonding in conversations
- **Electrothermal methodologies** in affective computing
- **Understanding Emotions in Context:** Home vs. work, friends vs. strangers, online vs. in person, conversations, while driving, and etc

The emphasis of this workshop shall be approaches based on the extraction of emotional and physiometric patterns from heterogeneous sources including but not limited to wearables, spatiotemporal methods, artificial neural networks, deep learning, and other machine learning and inference algorithms.

Application areas that exhibit extant needs for affective computing include:

- **Biomedical Research:** medical informatics, behavioral and cognitive neuroscience
- **Environments:** ubiquitous computing, mobile computing, user experience design
- **Data Science for Social Good:** computational sustainability, disaster management
- **Wearable Computing:** health applications, sensor analytics, mobile applications
- **Internet of Things (IoT) and Cyber-Physical Systems:** spatiotemporal, hybrid systems
- **Human Computer Interaction (HCI):** augmented reality/mixed reality systems, usability
- **Other Application Areas:** mobile computing, virtual reality

This workshop shall help to bring together people from these different areas and present an opportunity for researchers and practitioners to share new techniques for identifying and analyzing applications in affective computing that integrate multiple fields and disciplines. We also propose to coordinate with the wearables community to find opportunities for cross-fertilization and interdisciplinary collaboration.

Intended Audience and Impact

The intended audience shall consist of artificial intelligence researchers from core areas such as statistical methodologies, machine learning, pattern recognition, probabilistic reasoning, ontologies and learning representation, as well as transdisciplinary and multidisciplinary domains such as data science, spatiotemporal analytics of affect, data modeling and mining, cyber-physical systems (CPS) and hybrid systems including wearable computing and IoT analytics, and virtual reality (VR) / augmented reality (AR) / mixed reality systems. Benefits will thus accrue to the data science of affective computing and to advances in CPS/IoT, VR/AR, and smart environments. The workshop will also be of interest to researchers and practitioners of application areas, such as: Smart environments including homes, offices, and schools; assistive technologies, especially for children, the elderly, and the disabled; and medical and social uses of affect recognition.

Workshop Logistics

The workshop will be a single-day event featuring morning and afternoon technical sessions. In the spirit of fostering new research and collaboration, care will be taken to maximize available time for discussions and questions. The program committee will aim at accepting about 8-10 technical papers for full oral presentation.

Following brief welcoming remarks, a 3-hour morning session will consist of approximately half the oral technical presentations. A single invited talk following the lunch break will be aimed at serving the interests of a variety of intelligent systems researchers and attracting new researchers to the topic of heterogeneous information networks. The afternoon session will include the second half of the technical papers, concluding early with an optional poster session and a brief open discussion about possible special issues of journals on the topic. The goal of both concluding sessions is to provide additional opportunities for cross-fertilization between academic and industrial research, through introduction of applications and methodologies that may otherwise be unfamiliar to participants in diverse areas.

Relevant Past Workshops

Recent Events Related to Proposed Topic (next 2 year and last 2 years, reverse chronological order)

ACII 2019, TBD
ICACII 2018, 26 Mar – 27 Mar
AAAI 2018, 2 Feb – 7 Feb
ACII 2017, 23 Oct – 26 Oct
IJCAI AffComp – 1st workshop 2017, 19 Aug – 25 Aug
ASC 2017, 13 Feb – 17 Feb
HMII 2016, 22 Nov – 25 Nov
ERM4CT 2016, 16 Nov

Accepted IJCAI AffComp 1st Workshop 2017 Publications

- Liu, D., Fengjiao, P., Rudovic, O.(. & Picard, R.. (2017). DeepFaceLIFT: Interpretable Personalized Models for Automatic Estimation of Self-Reported Pain. *Proceedings of IJCAI 2017 Workshop on Artificial Intelligence in Affective Computing, in* PMLR 66:1-16
- Jaques, N., Rudovic, O.(., Taylor, S., Sano, A. & Picard, R.. (2017). Predicting Tomorrow's Mood, Health, and Stress Level using Personalized Multitask Learning and Domain Adaptation. *Proceedings of IJCAI 2017 Workshop on Artificial Intelligence in Affective Computing, in PMLR* 66:17-33
- Atcheson, M., Sethu, V. & Epps, J.. (2017). Gaussian Process Regression for Continuous Emotion Recognition with Global Temporal Invariance. *Proceedings of IJCAI 2017 Workshop on Artificial Intelligence in Affective Computing, in* PMLR 66:34-44
- Li, M., Lu, Q., Long, Y. & Gui, L.. (2017). Affective State Prediction of Contextualized Concepts. *Proceedings of IJCAI 2017 Workshop on Artificial Intelligence in Affective Computing, in PMLR* 66:45-57
- Yates, H., Chamberlain, B., Norman, G. & Hsu, W.H.. (2017). Arousal Detection for Biometric Data in Built Environments using Machine Learning. P*roceedings of IJCAI 2017 Workshop on Artificial Intelligence in Affective Computing, in* PMLR 66:58-72

Program Committee

- William Hsu, Professor, Kansas State University
- Jennifer Healey, Senior Research Scientist, Intel Corporation
- Nathan Hodas, Senior Research Scientist, Pacific Northwest National Labs
- Brent Chamberlain, Assistant Professor, Kansas State University
- Heath Yates, PhD Candidate, Biosecurity Research Institute

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- Asma Ghandeharioun, Massachusetts Institute of Technology (USA)
- Natasha Jaques, Massachusetts Institute of Technology (USA)
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- Sara Taylor, Massachusetts Institute of Technology (USA)
- Yuqian Zhou, University of Illinois at Urbana-Champaign (USA)