REPORT: 10th International Conference on Affective Computing and Intelligent Interaction (ACII)
**Nara, Japan, October 18th – October 21st 2022**
By Lauren Klein and Erik Campano

This past October, over 200 researchers gathered in Nara, Japan and virtually to celebrate the latest findings in affective computing. Following years of remote meetings, ACII 2022's theme of "affective computing for mental and physical well-being" was a timely response to the effects of a global pandemic. Workshops and paper talks delivered updates across physiological signal processing, virtual agents, and expression recognition using a range of modalities, while keynote talks illustrated how the integration of psychology and physiology, computing, and human-centered design has shaped research in well-being. This year's ACII successfully brought together research across disciplines toward advancing the state of the art in affective computing. All of this was done with the generous support of ACII's technical sponsor, IEEE Computer Society, the Gold Sponsor, the Tianqiao and Chrissy Chen Institute, the Silver Sponsors, ETS, Disney Research, and Apple, and Bronze Sponsors Openstream.ai, audEERING, and Sony.

Ethics at the forefront
With AAAC's Ethics Special Interest Group, the 2019 town hall on ethics, and 2021 theme of "Ethical Affective Computing", ACII has long demonstrated ethics as a core value. This year's authors discussed the ethical impact of their research both as a required section in submissions and as a central theme in presented work. Bias, privacy and confidentiality, and potential adversarial uses of technology emerged as key topics throughout the conference.

Khadija Zanna demonstrated how ethics is not only a responsibility for affective computing researchers, but also how ethics is informing ongoing research questions. Her presentation highlighted the challenges of bias across demographics in models developed for anxiety prediction, as well as a potential solution using multi-task learning. Meanwhile, Maneesh Bilalpur and team's exploration of social signals across demographics timing found that "The Ballistic Timing of Smiles is Robust to Context, Gender, Ethnicity, and National Differences". As Bilalpur et al.'s paper notes that ballistic timing of smiles could be used to make virtual agents and social robots more realistic and reduce uncanny valley effects, their presentation demonstrated an understanding that these agents must be designed with social cues that relate to a diverse population. Professor Rafael Calvo's keynote address put the discussion of AI ethics into a long-term perspective. He discussed the questions of values in affective computing that started being addressed in the 1960s, and how their answers remain incomplete even today.
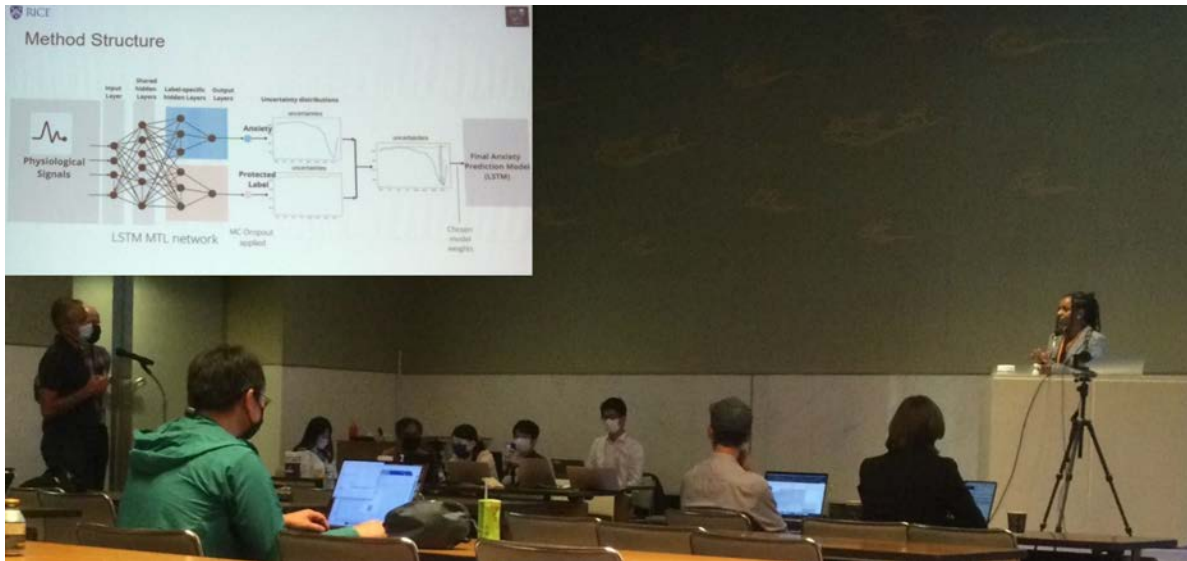
Khadija Zanna of Rice University of presents "Bias Reducing Multitask Learning on Mental Health Prediction," work by Khadija Zanna, Kusha Sridhar, Han Yu and Akane Sano

Kurtis Haut's discussion of "Assistive Video Filters for People with Parkinson's Disease to Remove Tremors and Adjust Voice" provided a helpful overview of some of the ethical concerns around applying affective computing to assistive technologies. Haut noted the need for such assistance to be integrated into existing mainstream technologies in order to provide functional assistance without exacerbating issues around the perception and acceptance of those with disabilities. His group addressed this concern by integrating their filtering functionality into video conferencing, a commonly accepted communication medium. Along with other presenters, Haut recognized the possibility of misuse of filtering technologies: with many aware of the dangers of "deep fakes," his team described falsely portraying oneself as a concerning potential misuse of filtering video and audio data.

Meeting distinct user needs through personalization
Designing inclusive research to support well-being means acknowledging and responding to interpersonal differences; the theme of personalization appeared in many of the talks at ACII 2022. In her keynote talk, Professor Elizabeth Broadbent listed personalization (as well as less scripted conversations) as an ongoing challenge to building clinical empathy skills in virtual agents, and more broadly as a barrier to the deployment of affective computing in healthcare. Professor Jeff Cohn's keynote talk also elaborated on the need for personalization in clinical spaces. He described strong individual differences across participants during mental health studies, and asserted that ignoring these differences risks incorrect analysis of trends in symptom severity.

While attendees seemed to agree on the need for personalization, proposed solutions were diverse, addressing changes that may occur both across and within users over time. In his presentation on "Profiling of Low Back Pain Patients for the Design of a Tailored Coaching Application," Florian Debackere proposed clustering patients into distinct user profiles in order to tailor motivational messages appropriately. Meanwhile, Shoki Sakai presented a method for representing internal user

states by modeling personal memory recollection in order to support reminiscence therapy. Varying approaches across different applications for well-being left us with the question: how can the type of application inform guidelines for personalization in affective computing?

Computers, human emotions, and their interaction
Workshops at ACII 2022, which were held over two days, focused primarily on ways of modeling human emotions such that they can be at the interface of human-computer interaction. For example, the workshops on emotion elicitation and capture, culture-originated affect, and affective vocal bursts focused on various aspects of both quantitatively and qualitatively describing human emotional expression for the purpose of making it understandable to computers. Meanwhile, the workshops on affect modeling, dialogue agents, and affective human-robot interaction looked at the computational side of emotional interaction. Workshops on affective robotics for well-being addresses holistically how – especially during and after the covid crisis – robots can help improve mental and physical health, particularly in settings such as logistics, health care, and transportation.

An ongoing challenge noted by the organizing team of the "2nd Workshop on What's Next in Affect Modelling?", from the Universities of Malta and Oulu and Imperial College London, is the paucity of human emotion data for machine learning applications. The team running "The 8th Linguistic and Cognitive Approaches to Dialogue Agents (LaCATODA 2022)", representing universities in Japan, Spain, France, and Poland, proposed that much of this data can come from the Internet and Internet of Things. Speakers at "MEEC: Third Workshop on Momentary Emotion Elicitation and Capture", led by a large international group of organizers, posited that for affective computing to have an adequate dataset, human emotions during computer interaction have to be modeled in a finely-grained way, compared to subjective reporting.

Attendees were also optimistic about the use of computing to support emotional well-being. At "AR4W: Affective Robotics for Well-being", organized by a team from Cambridge, Uppsala, and Simon Frasier University, Professor Ana Paiva discussed how socially-aware technology can help chronic pain patients find ways to stay physically active. Meanwhile, at the "Culture-originated Affect", organized by Japanese and American researchers, keynote speaker Hiroshi Nittono explored how computers which are called, in Japanese, *kawaii* (roughly translated as "cute"), can develop a special kind of trust in users that may be hard to attain using other means.

Professor Michiko Ohkura of the Shibaura Institute of Technology in Tokyo leads the workshop on "Culture-originated Affect"

'Onto Cambridge, Massachusetts

At the end of the conference, organizers announced to great excitement that the 2023 ACII conference would be held at the Massachusetts Institute of Technology in Cambridge. Over the course of the next year, this year's participants expect to sustain a comprehensive dialogue about well-being and its relationship to affective computing and intelligent interaction. The 2023 MIT conference will likely have presentations and workshops bearing the fruit of that dialogue, further advancing general knowledge on the topic. That conference will also have its own theme, which organizers will publish in the new year.

Lauren Klein and Erik Campano are the ACII 2022's Science Writers, sponsored by the Tianqiao and Chrissy Chen Institute. Mohammad Soleymani and Yan Li helped prepare this report.