

# Implications of Affective Computing for Diverse Populations

**Abstract**—Affective computing, a field dedicated to enabling machines to understand human behavior and emotions, is increasingly integrated into various societal domains such as, mental healthcare. The predominant focus of affective computing in Western societies raises potential risks for implementing these technologies in the diverse, global real-world. This paper briefly describes ethical and regulatory concerns of deploying affective computing technologies globally, emphasizing on needs to address privacy, security, and cultural sensitivity concerns.

**Keywords**— *affective computing, emotion inference, cross-cultural differences in emotion experience and inference*

## I. OVERVIEW

We seamlessly make judgements about what others around us feel and these inferences of others' emotions impact our decisions and behaviors. Humans mutually and routinely engage in this understanding of other's emotions, but whether technological systems could, or rather should, simulate this understanding of human emotions is a prominent area of research in the field of artificial intelligence.

Artificial intelligence (or, AI) technologies are increasingly being integrated into societies. The development of AI technologies to predict people's psychological states like emotions is rapidly increasing, the affective computing market is projected to grow by ~18% by 2027 [1]. Such technologies may meet legitimate needs in mental healthcare and other domains such as recommending optimal treatment plans for online medical services and deploying chatbots or conversational agents for counseling and therapeutic purposes. Affective computing has also been proposed to find utility in education and professional development domains, where it might offer tools for students and professionals to maintain engagement. However, real world implications of affective computing technologies has also raised several regulatory concerns, including privacy (access to people's sensitive emotion data) and fears of manipulation: the June 2023 version of the European Union (EU) AI Act lists emotion AI as a "high risk" technology. Safe and ethical application of affective computing in the real world requires assessing its potential risks across global societies representing diverse views and practices. In this article, we discuss some potential ethical concerns and risks associated with applying affective computing technologies to diverse global populations.

## II. RISKS AND CONCERNS ACROSS GEOGRAPHIES

Research in the field of affective computing is predominantly centered in western, developed nations such as the United States or European Union (EU) while its application is unrestricted to all parts of the globe. This intrinsically raises questions about the extent to which global, diverse perspectives are incorporated in the development of affective technologies and how the lack thereof could impact people from these societies. Regulatory approaches to affective computing will vary based on cultural values, legal traditions, and societal priorities, and understanding these differences is crucial for researchers, developers, and policymakers.

### A. Privacy, Security and Data Management Concerns

Affective computing technologies rely on collecting and analyzing personal data including facial expressions, voice, verbal speech, and even physiological signals. Access to such personal

data raises concerns for privacy and confidentiality. In lab-based research, computational models are often built on crowdsourced, open-source datasets or strict practices for maintaining confidentiality are implemented when collecting personal data from human subjects. In real world implication of such technology, the unit of application (e.g., public versus corporate institution) and its power over lay people is an important concern. For instance, people's trust in public institutions varies across societies [2, 3] which in turn will result in variability in their concerns for such institutions collecting and storing personal, confidential data. Different societies also encourage different regulatory bodies to collect and store personal data, some enforce greater state control (e.g., China) while others emphasize more on user consent (e.g., European Union). Societies from the global south may have other challenges related to lack of technological infrastructure required to manage and store such large, confidential datasets and managing the disparity in implementation of such technology, particularly within the economically weaker sections of their societies. Finally, increased globalization along with variability in regulatory policies across societies will likely raise challenges for immigrant communities, cross-societal data sharing practices is another area of concerns for ethically implementing affective computing in the real-world.

#### B. Cultural Variability in Emotion Expressivity and Inference

Experiences shared within a cultural context shape and promote experience and inference of emotions [4]. Cultural environment shapes the frequency and intensity of experiencing emotions [5], the expression of emotions in facial and bodily movements [6], and the cues relevant for inferring emotions [7, 8]. There is also variation in cultural norms defining what emotion is appropriate to express in particular contexts (referred to as Display Rules) [9-11]. This variability in expression and inference of emotions is important to incorporate in the development of affective computing technologies to implement it ethically and effectively in diverse global societies. Research on emotions lacks a comprehensive understanding of the cultural variability in emotion experience and inference, simulating emotion understanding in technologies is consequently even farther away in its pursuit to incorporate such cultural nuances. The lack of cultural variability in affective computing may raise ethical concerns and pose risks of bias and discrimination against underrepresented populations. To deal with bias and discrimination across diverse, global societies it is important to incorporate and robustly test affective computing technologies across diverse populations.

### III. CONCLUSION

The application of affective computing from laboratory research to real-world applications is fraught with ethical and regulatory challenges that must be carefully navigated to ensure its ethical, inclusive, and beneficial use across diverse global societies. The primary concerns of privacy, data security, and cultural sensitivity necessitate robust frameworks that respect individual rights and societal norms. As regulatory approaches vary significantly across geographies, a one-size-fits-all solution is not feasible. Instead, culturally tailored regulatory strategies and international collaboration would be necessary to address these challenges effectively

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