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Abstract:
Design and Implementation of Kawaii (Cute) Companion Robots by a Cross-cultural Team
As robots are increasingly used to help people across the globe, it is important to design these devices to curate positive experiences for a broad range of people. For example, among student populations, who are susceptible to high levels of stress and anxiety, mental health has become a significant concern in countries including the United States and Japan. This presents the opportunity to design robots with the intent of fostering companionship, which may help with mental health.

We present a collaborative effort between Japanese and American university students, funded with a National Science Foundation Grant, to design and implement Kawaii (Japanese cuteness) companion robots through in-person collaboration. The long-term objective is to investigate whether the perceived cuteness of these robots contributes to increased user satisfaction across cultures. Over seven weeks, we researched the Japanese concept of Kawaii and its application in design. During this time we also designed Kawaii and non-Kawaii virtual companion robots and evaluated the initial designs, including analyzing the design team's response to the designs using electroencephalograms (EEGs) and heart-rate variability sensors. Utilizing these results, we revised the initial designs and then implemented them using Blender, a 3D Printer, and an Arduino-controlled Zumo robot. The robots were designed to have "Kawaii" and "non-Kawaii" attributes through visual, auditory, and mobile design elements. Therefore, some robots were more "Kawaii" than other robots due to variations in the design. Through designing, implementing, and evaluating user-response to "Kawaii" companion robots, we gained a deeper understanding of Japanese culture and cross-cultural collaboration. We will present our crosscultural design process, the robots we designed, and data that shows how college students responded to the various designs through follow-up surveys.