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AI as future digital citizens: Overcoming the hard problem of consciousness with emotional responses and touch sense conditioning

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This paper is based on talks that included a demo of my new virtual humanoid embodied AI bot capable of autonomously expressing appropriate emotions using gestures, facial expressions and text-to- voice. It does this while engaging in natural language conversations or giving automated scripted lectures with a slide show presentation. The system employs a touch-interaction-based learning and communication system where the virtual bot responds and learns from touch sense feedback training-a poke (negative reinforcement) or swipe (positive reinforcement)-conveyed through a touch screen. The bot's predecessor was part of an award-winning project in an international Artificial Intelligence competition advertised by The White House and sponsored by the U.S. Department of Defense. The talk and demo combination consists of a creatively scripted talk given by the AI bot that provides a counterargument to its critics (RAND and a variety of organizations aimed at slowing its progress). Using logos, ethos, and pathos, it argues for its legal and ethical rights for development and suggests specific technical guidance developing AI for their accompanying responsibilities. Embedded in the talk are theoretical foundations for an AI Hierarchy of Needs using landmark studies. These include the work of Maslow; advances in understanding the philosophical, psychological and neurological bases for consciousness and language; The Turing Test; Asimov's Three Laws of Robotics; Chalmers' hard problem of consciousness; Robert Plutchik's psychoevolutionary theory of emotion; Paul Ekman's relationships between nonverbal communication (such as facial expressions) and emotions; classical and operant conditioning for learning (especially Pavlov and Skinner); and the roles of biology and social cognitive neuroscience (for sympathy and empathy capacity). Additionally, the presentation encroaches upon the development of new machine learning techniques based on affective experiences (learned through touch and conversation) for the improvement of human-computer interaction for potential use in a variety of AI- enabled robots.

Recent Publications

1.Bohle S, Montano H S P, Billie M and Turnbull D (2016) Evolution of soil on Mars. *Astronomy & Geophysics*; 57: 2.18-2.23.

References

1.The NACA at Lewis Laboratory, a legacy of Ohioans solving the problem of flight (March 4, 2014). Televised paper presentation, NASA TV, NACA Centenary: 100 Years of Aerospace Research and Development Symposium, Smithsonian Air and Space Museum, Washington DC, USA.

2.Virtual worlds as portals for information discovery (2012) Paper presentation, *Turing Centenary Conference*, University of Cambridge, United Kingdom.

3.Science Archives and History: Facilitating Discovery through Laboratory Notebooks (2008) Paper presentation, *Sixth Three Societies Conference*, University of Oxford, United Kingdom.

Biography

Shannon D Bohle is the President of Archivopedia LLC, USA. In 2011, she was awarded 2nd Place for Curiosity AI in the FVC, an International Department of Defense competition in artificial intelligence advertised by The White House. She has earned her Bachelor of Arts in History and English at Miami University, a Master of Library and Information Science (MLIS) at Kent State University and was granted a Certificate of Diligent Study in History and Philosophy of Science for postgraduate study at the University of Cambridge.

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