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Neural-digital interface advances raise ethical and social issues

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Human-machine interfaces raise important ethical and social issues. These technological innovations have the potential to restore, alter, or enhance cognitive or physical function in humans, but also may exacerbate existing social tensions around equality, identity, security, privacy, and access. A roundtable comprising researchers, ethicists, and an individual technology user will explore questions around the development, use, and governance of neural-digital interfaces at Neuroscience 2019, the annual meeting of the Society for Neuroscience.

Ethical considerations become ever more critical in a world of rapidly expanding human-technology symbiotic unions. Recent data breaches, violations of privacy and social engineering in social media, and cyber-bullying are among the many issues that highlight the harmful potential of technology in our connected, digital age. As technological capabilities in neural-digital interfaces race forward, there is an immediate need to establish ethical frameworks and governance for protecting people againt unintended consequences.

The Social Issues Roundtable will discuss personal experiences with a directly connected sensory experience and explore the societal, ethical, and phenomenological aspects of human-technology interfaces.

Speakers at the roundtable will discuss:

- How technology can be symbiotically integrated into human neural systems (Dustin J. Tyler, Case Western Reserve

University)
- A case study of a personalized virtual reality experience (Emma-Jane Alexander, University of Wyoming)
- A first-hand account of using a directly connected sensory experience (Brandon Prestwood)
- Socioeconomic considerations of human fusions technology (David Hodge, Tuskegee University)
- Implantable and wearable technologies for the neuro-connected human (Douglas Weber, University of Pittsburgh)
- Ethical considerations in developing, testing, and deploying direct human-technology connections (Suzanne M. Rivera, Case Western Reserve University)
- The transdisciplinary experience of building a new relationship between humans and technology (Nicholas Zingale, Cleveland State University)

"The ethical and social dimensions of human-machine interfaces require approaches spanning science, engineering, social science, and humanities," said moderator Dustin J. Tyler, Ph.D., a professor of biomedical engineering at Case Western Reserve University who studies neural interfaces in prosthetics. "This roundtable will explore the societal and ethical issues raised by human-technology interfaces and should appeal to anyone who is interested in neural technology, appreciative of its promise to enhance the human experience, and aware of its potential to create new threats."

Provided by Society for Neuroscience