Session A4, Sat. June 7, 10:30 AM – Noon, Arch – Workshop: IEEE Neuroethics Framework World Café

Facilitators: **Laura Cabrera**, Pennsylvania State University, and **Rebecca Monteleone**, University of Toledo

The IEEE Neuroethics Framework is an international, multi-year, volunteer-led initiative by IEEE BRAIN and aimed to provide ethical guidance for engineers, researchers, applied scientists, practitioners, and neurotechnology companies. It brings together a range of stakeholders, including engineers, scientists, clinicians, ethicists, legal experts, social scientists, and those with lived experience in order to develop a comprehensive ethical framework across nine different applications: Medical, Wellness, Education, Work, Employment, Military, Sports, Entertainment, and Marketing. This workshop provides an avenue to solicit new perspectives for three working groups: Work, Entertainment, and Sports. It uses a "World Café" style method that the IEEE Neuroethics Framework team has employed previously to generate novel insights across a variety of stakeholders. Participants will leave with an appreciation for the complexities of current and emerging neurotech across a range of applications, with a particular focus on neurotech in the workplace, entertainment, and sport. Their feedback will directly impact the production of a series of white papers that, together, make up the IEEE Neuroethics Framework.

Session B3, Sat. June 7, 1:00 – 2:30 PM, Northwestern B - Workshop: Engineering Education for an Ethical Future: Equipping Engineers for Emerging Technologies

Facilitators: **Siobhan Oca,** Duke University, **Cameron Kim**, Duke University, and **Stacy Tantum**, Duke University

This workshop focuses on ethics education with emergent technologies that emphasize the future role of engineers to responsibly innovate, develop, and deploy for various shareholders. Our team of Duke faculty from biomedical engineering, mechanical engineering, and electrical & computer engineering have successfully integrated ethics education modules in biotechnology, robotics, automation, and machine learning within technical courses, highlighting the importance of this embedded pedagogy. Participants will reflect on the utopia and dystopic futures (plural) of their field's emergent technologies and brainstorm strategies to educate engineers on the present dilemmas of deploying technologies with risks and uncertainties while teaching the necessary technical knowledge to excel as innovators. We will discuss all of the strategies we employ in our classroom, from case studies to design function, and engage with participating faculty to embed modules such as these in their coursework. Our workshop objectives include: Participants will (1) identify emergent technologies within their engineering discipline that would benefit from a future-casting approach to identify ethical dilemmas, and (2) establish the role of engineering educators to integrate ethical inquiry within technical design and coursework to enhance the professional formation of engineers with ethical foresight in their respective fields.

Session B4, Sat. June 7, 1:00 – 2:30. Arch – Workshop: Ethical AI and Oversight: Hands-on applications of MLOps and AI governance

Facilitators: **Prahlad Sarma**, ZealStrat LLC, **Thomas Tirpak,** ZealStrat LLC, and **Ganesan Keerthivasan**, ZealStrat LLC

This interactive workshop explores the concepts of Ethical AI and oversight. The workshop is structured around three learning goals: (1) Understand the fundamentals of Ethical AI, including frameworks such as the IEEE's CertifAIEd™ AI Ethics Standard, (2) Learn and apply the MLOps framework for autonomous system development, (3) Learn and apply AI governance principles to build safe, ethical, and compliant systems. Participants will apply these learnings in simulated exercises as the head of ML Ops and the head of AI ethics for a startup company with a healthcare chatbot. Participants will analyze a system diagram and MLOps pipeline to identify risks, areas of augmentation, and required guardrails. The workshop will conclude with a debrief and areas for further exploration.

Session C4, Sat. June 7, 2:45 – 4:15 PM, Arch – Workshop: Technology Training to Improve Justice for Underrepresented Populations

Facilitators: **Laura Bingham**, Temple University, and **Leonard Bruce**, Tribal DataWorks

Technology ethics training (tech & the law, tech & courts, tech & AI) is growing in importance to ensure justice for underrepresented and indigenous populations. Currently, there isn't any training on how to do this, which has become

highly problematic with the increased use of technology. Larger companies are implementing AI into their existing software. Indigenous communities are sometimes unaware that the decision-making process is changing and that different data types are now involved in making those decisions. Decisions turn into "The computer told me so." Additionally, new AI companies are starting systems and taking data or sometimes using trash data to guide decision-making and outcomes with little capacity to audit algorithms or even understand how those decisions are being made or guided by that trash data. Experts in human rights advocacy law and ethical technology adoption in Indigenous communities introduce public interest technology to explain technology impacts to underrepresented populations. Presently, underrepresented communities must deal with AI systems being imposed on them. Still, many indigenous sovereign communities also must navigate the process of procuring and implementing these systems themselves. Either way, everyone must develop policies around training staff, informing the public, and auditing the decisions. It is essential to incorporate technology ethics practices as a standard process in the design, development, and deployment of any technology.

Session D4, Sat. June 7, 4:30 – 5:30 PM, Arch – Tutorial: Destination Public Trust: Applying Existing Ethical Framework to Emerging Technologies with a Clear Goal of Shared Understanding

Presenter: **Ianthe Bryant-Gawthrop,** Public Responsibility in Medicine and Research (PRIM&R)

Scientific disciplines have been challenged over time by establishing field-specific ethical frameworks. While it is necessary to continuously assess these principles, the central tenets should serve as the foundation for new work. Groundbreaking discoveries and technologies are often weighed by their risks and benefits, but how to predict those concepts can seem daunting. When we work toward a collective understanding together, regulators and researchers can make strides by participating in collaborative, proactive discussion. When straightforward descriptions are available, they not only contribute to each field, but also public trust. This session will utilize the rich background that exists in multiple legal and ethical concepts to construct new opportunities for application to emerging technologies.

Session E4, Sun. June 8, 10:30 AM – Noon, Arch – Workshop: Identifying Bottlenecks in the Ethical and Responsible Design of AI

Facilitator: **Sherri Conklin**, Washington State University

This is a discussion-focused, workshop-tutorial with hands-on components relating to challenges in the Ethical and Responsible Design of AI. This tutorial, which has three parts, is inspired by the 2023 Conference on Ethical and Responsible Design in the National AI Institutes, which was hosted at the Georgia Institute of Technology. In May 2023, we documented these challenges in a "Report on the Conference on Ethical and Responsible Design in the National AI Institutes: A Summary of Challenges." We will give an overview of challenges presented in the report, followed by opportunities for participants to analyze, document, and discuss challenges (and possible solutions) discovered in the course of their own work.

Session F4, Sun. June 8, 1:00 – 2:30 PM, Arch – Workshop: Developing Ethical AI Competencies through Collaborative Learning: The STRAKER Approach

Facilitators: **Katherine Chiou**, University of Alabama, and **Qin Zhu**, Virginia Tech

This interactive workshop introduces participants to STRAKER (Student Training in Responsible AI Knowledge and Ethics Research), a framework for teaching AI ethics through collaborative case study development. Drawing on the structure of the Associate for Practical and Professional Ethics' Intercollegiate Ethics Bowl, STRAKER fosters ethical reasoning, critical thinking, and interdisciplinary dialogue around real-world AI dilemmas. After a brief overview of the STRAKER model and its pedagogical foundations, participants will work in small groups to co-create original case studies addressing pressing AI ethics concerns—such as algorithmic bias, surveillance, and automation. The session emphasizes hands-on learning: participants will identify ethical tensions, draft discussion questions, and consider strategies for engaging diverse learners. Attendees will leave with adaptable teaching tools and a clearer sense of how to implement STRAKER's approach in their own classrooms or training settings. The workshop also provides opportunities to join a broader community of educators and researchers committed to advancing responsible AI education.

Session G3, Sun. June 8, 2:45 – 4:15 PM, Northwestern B – Workshop: Science Fiction for Ethical Design: A Framework for Engineering Education

Facilitators: **Sarah Papazoglakis,** Autonomous Futures**,** and **Theresa Hice-Fromille,** Ohio State University

This interactive, interdisciplinary workshop will guide participants in translating principles of ethical and inclusive design into engineering systems design and professional training. The presenters will lead participants through scenarios of building an emerging technology feature or device using Autonomous Futures (AF) design principles, which are organized around three significant themes for ethical tech: Collective Power, Inclusive Engagement, and Cultural Specificity. First, presenters will guide close readings of short Afrofuturist film clips to anticipate and imagine the future impacts of new tools. Next, presenters will shift to contrasting the values embedded in Afrofuturist design with the values prioritized in emerging professional standards to identify key gaps in implementing community-based values and ethics in engineering education. Finally, participants will engage a scenario-based exercise to blend elements from fictional technologies with real-world engineering challenges and collaborate to design a teaching module that integrates Afrofuturist perspectives and a disciplinary skill. Workshop participants will build their capacity to collaborate with designers in the arts and humanities and forge a framework through which they may engage community stakeholders to produce culturally relevant designs.

Session G4, Sun. June 8, 2:45 – 4:15 PM, Arch – Workshop: From Schrödinger's Box to Global Fairness: Ethical Dilemmas in Quantum Computing

Facilitators: **Rebecca Mossop** (DLR), **Hagen Braun** (DLR), **Anton Maidl** (DLR)

In the near future, quantum computing may fundamentally reshape our world: problems that once took years to solve could be unraveled in seconds. Yet quantum computing time remains an extremely limited and costly resource, controlled by a few powerful tech corporations. This workshop addresses a central ethical question: who should have access to this resource—and on what moral grounds? At the heart of the discussion lies the idea that computing time represents an epistemic good, and its fair distribution may become one of the defining justice challenges of our era. Drawing on five different perspectives—from medical research and climate modeling to cybersecurity and innovation in the private sector to global poverty reduction—we explore how existential risks, individual interests, and the common good can be ethically reconciled. As a thought experiment and framework for our workshop, a fictional global ethics council is tasked with evaluating the competing demands, emphasizing the importance of ethical foresight in technological development. The goal of the workshop is to collaboratively define ethical principles for allocating quantum computing time—before the technology becomes entrenched and its impacts irreversible.