

# The IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems

## Initiative Membership

### Executive Committee Descriptions & Members *(As of 18 May 2017)*

#### **Raja Chatila, Executive Committee Chair, The IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems**

Raja Chatila, IEEE Fellow, is Director of Research at the French National Center of Scientific Research (CNRS), and Director of the Institute of Intelligent Systems and Robotics (ISIR) at Pierre and Marie Curie University in Paris, France. He is also Director of the Laboratory of Excellence "SMART" on human-machine interactions.

His work covers several aspects of autonomous and interactive Robotics, in robot navigation and SLAM, motion planning and control, cognitive and control architectures, human-robot interaction, and robot learning, and to applications in the areas of service, field and space robotics. He is author of over 150 international publications on these topics. Hse is past President of the IEEE Robotics and Automation Society (2014-2015) and member of the French Commission on the Ethics of Research in Digital Sciences and Technologies (CERNA). IEEE Pioneer Award in Robotics and Automation.

#### **Kay Firth-Butterfield, Executive Committee Vice-Chair, The IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems**

Kay Firth-Butterfield is a Barrister and part-time Judge who has worked as a mediator, arbitrator, business owner and professor in the United Kingdom. In the United States, she is the Executive Director and Founding Advocate of AI-Austin which is a non-profit dedicated to the development of laws and ethics around the development and use of AI and socially beneficial use of AI the community specifically in Healthcare and Education. She is the former Chief Officer of the Lucid.ai Ethics Advisory Panel. Kay is a Senior Fellow and Distinguished Scholar at the Robert S. Strauss Center for International Security and Law, University of Texas, Austin and Vice-Chair, The IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems Additionally, she is a Partner in the Cognitive Finance group and an adjunct Professor of Law.

Kay is a humanitarian with a strong sense of social justice and has advanced degrees in Law and International Relations. She advises governments, think tanks, businesses, inter-governmental bodies and non-profits about artificial intelligence, law and policy. Kay co-founded the Consortium for Law and Policy of Artificial Intelligence and Robotics at the University of Texas and taught its first course: Artificial Intelligence and Emerging Technologies: Law and Policy.

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She thinks about and works on how AI and other technologies will impact society and business. Kay regularly speaks to international audiences addressing many aspects of these challenging changes. Twitter: @KayButterfield

### **John C. Havens, Executive Director of The IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems**

John C. Havens is a regular contributor on issues of technology and wellbeing to Mashable, The Guardian, HuffPo and TechCrunch and is author of *Heartificial Intelligence: Embracing Our Humanity To Maximize Machines* and *Hacking Happiness: Why Your Personal Data Counts and How Tracking it Can Change the World*.

John was an EVP of a Top Ten PR Firm, a VP of a tech startup, and an independent consultant where he has worked with clients such as Gillette, P&G, HP, Wal-Mart, Ford, Allstate, Monster, Gallo Wines, and Merck. He is also the Founder of The Hapathon Project, a non-profit utilizing emerging technology and positive psychology to increase human wellbeing.

John has spoken at TEDx, at SXSW Interactive (six times), and as a global keynote speaker for clients like Cisco, Gillette, IEEE, and NXP Semiconductors. John was also a professional actor on Broadway, TV and Film for fifteen years.

### **Dr. Greg Adamson, President, IEEE Society on Social Implications of Technology**

Dr. Greg Adamson is President of the IEEE Society on Social Implications of Technology (SSIT) 2015-16. SSIT has addressed issues of ethics and emerging technologies throughout its 44-year history. Greg also chairs the Ethics, Society and Technology Committee of the IEEE Technical Activities Board, which oversees the IEEE TechEthics™ program. He is an Associate Professor at the University of Melbourne School of Engineering, and a consultant in cybercrime and blockchain with Digital Risk Innovation. He initiated the IEEE Conference on Norbert Wiener in the 21<sup>st</sup> Century series, (Boston 2014, Melbourne 2016, Budapest 2018). Wiener's 20<sup>th</sup> century work in both the technical and social impact of technology fields foreshadowed current discussions in ethics in the design of autonomous systems. Greg was the invited keynote on Ethics at the World Engineering Conference and Convention in Kyoto November 2015. His primary area of research interest is barriers to the uptake of socially beneficial technology.

### **Ronald C. Arkin, Regents' Professor, Associate Dean for Research in the College of Computing at Georgia Tech**

Ronald C. Arkin is Regents' Professor and Associate Dean for Research in the College of Computing at Georgia Tech and is the Director of the Mobile Robot Laboratory. He served as STINT visiting Professor at KTH in Stockholm, Sabbatical Chair at the Sony IDL in Tokyo, and in the Robotics and AI Group at LAAS/CNRS in Toulouse. Dr. Arkin's research interests include behavior-based control and action-oriented

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perception for mobile robots and UAVs, deliberative/reactive architectures, robot survivability, multiagent robotics, biorobotics, human-robot interaction, machine deception, robot ethics, and learning in autonomous systems. His books include Behavior-Based Robotics (MIT Press), Robot Colonies (Kluwer), and Governing Lethal Behavior in Autonomous Robots (Taylor & Francis). He has provided expert testimony to the United Nations, the International Committee of the Red Cross, the Pentagon and others on Autonomous Systems Technology. Prof. Arkin served on the Board of Governors of the IEEE Society on Social Implications of Technology, the IEEE Robotics and Automation Society (RAS) AdCom, and is a founding co-chair of IEEE RAS Technical Committee on Robot Ethics. He is a Distinguished Lecturer for the IEEE Society on Social Implications of Technology and a Fellow of the IEEE.

### **Virginia Dignum, Associate Professor, Faculty of Technology Policy and Management, TU Delft**

Virginia Dignum (female, 1964) is an Associate Professor at the Faculty of Technology Policy and Management at TU Delft. She holds a PhD from the Utrecht University, in 2014. Previously, she worked for more than 12 years in consultancy and system development in the areas of expert systems and knowledge management. Her research focuses on value-sensitive design of intelligent systems and multi-agent organizations, focusing on the formalization of moral and normative behaviors and social interactions. In 2006, she was awarded the prestigious Veni grant from NWO (Dutch Organization for Scientific Research) for her work on agent-based organizational frameworks. She has participated and reviewed several EU and national projects, is member of the reviewing boards for the main journals and conferences in AI and has chaired many international conferences and workshops. She has published more than 180 peer-reviewed papers and several books, yielding an h-index of 27. She is secretary of the International Foundation for Autonomous Agents and Multi-agent Systems (IFAAMAS) and co-chair of the European Conference on Artificial Intelligence (ECAI) in 2016.

### **Philip Hall, Member, IEEE-USA Government Relations Council**

Philip Hall serves on the IEEE-USA Government Relations Council (GRC) as Chair of the IEEE-USA Committee on Transport and Aerospace Policy, and also as Co-Chair of the recently established IEEE-USA Ad Hoc Committee on Artificial Intelligence Policy (which also covers autonomous systems). He is also Vice President of the IEEE Society on Social Implications of Technology (SSIT), a member of the Working Group for IEEE P7000™ Model Process for Addressing Ethical Concerns During System Design and was General Co-Chair of the 2016 IEEE International Symposium on Ethics in Engineering, Science, and Technology (IEEE ETHICS 2016) held in Vancouver BC in May 2016.

In addition, Philip is a Principal Fellow ('Professor-at-Large') in the Department of Electrical and Electronic Engineering at The University of Melbourne (Australia), and

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co-Founder & CEO of RelmaTech Limited (UK), a company developing innovative technology solutions for the spatial management of semi-autonomous and autonomous vehicles. In 2013 he co-chaired a high-level roundtable sponsored by the Australian Government to consider the role of new technologies in Securing Australia's Future, and participated in the 2nd World Emerging Industries Summit in China as a guest of the Asia-Pacific CEO Association and the Wuhan Municipal Government. More recently he organized and chaired exclusive seminars in Melbourne, Australia and Washington DC to consider the National Security and Societal Implications of Remotely Piloted Airborne Vehicles and Related Technologies. He was a finalist judge for the United Arab Emirates 2015 and 2016 'Drones for Good' Awards and the 2016 'Robotics & AI for Good' Award, and is currently an associate editor for the international Journal of Unmanned Vehicle Systems.

Philip is also a member of the IEEE Aerospace & Electronics Systems Society (AESS) where he is Vice Chair of the AESS Unmanned Airborne Vehicle Technical Panel, a member of the Working Group for IEEE P1920.1™ Aerial Communications and Networking Standards, and Chair IEEE Region 4 Southeastern Michigan Chapter 3: Aerospace & Electronics Systems, Communications.

### **Malavika Jayaram, Executive Director, The Digital Asia Hub**

Malavika is the inaugural Executive Director of the [Digital Asia Hub](#). Prior to her relocation to Hong Kong, she spent three years as a Fellow at the Berkman Klein Center for Internet & Society at Harvard University, focused on privacy, identity, biometrics and data ethics, and eight years in London, with the global law firm Allen & Overy in the Communications, Media & Technology group and as Vice President and Technology Counsel at Citigroup. While a partner at Jayaram & Jayaram in India, she was one of 10 Indian lawyers selected for The International Who's Who of Internet e-Commerce & Data Protection Lawyers directory for 2012 and 2013. In August 2013, she was voted one of India's leading lawyers – one of only 8 women to be featured in the "40 under 45" survey conducted by Law Business Research, London.

A graduate of the National Law School of India, Malavika has an LL.M. from Northwestern University School of Law, Chicago. She taught India's first course on information technology and law in 1997, and is Adjunct Faculty at Northwestern as part of the Master of Science in Law program bridging STEM subjects and the law. She has been a Fellow with the Centre for Internet & Society, India, since 2009 where she helped start their privacy program. She was a Visiting Scholar at the Annenberg School for Communication, University of Pennsylvania, and has had fellowships at the University of Sydney and the Institute for Technology & Society, Rio de Janeiro. She is on the Advisory Board of the Electronic Privacy Information Center (EPIC).

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### **Raj Madhavan, Founder & CEO, HumRobTech, LLC, USA & Distinguished Visiting Professor of Robotics, Amrita University, India**

Raj Madhavan is an internationally recognized expert in humanitarian robotics and automation technologies. His current research interests lie in the application and tailoring of existing and emerging technologies that are cost effective, reliable, efficient and geared towards improving the quality of lives of people in underserved and underdeveloped communities around the globe. He is particularly invested in the development of sustainable technologies and systems in a variety of domains that enable the realization of the UN's 2030 agenda for sustainable development and the sustainable development goals for the benefit of humanity.

Dr. Madhavan is the Founder & CEO of Humanitarian Robotics Technologies, LLC, focusing on applied technology consulting, training, and research. Most recently he was a Distinguished Visiting Professor of Robotics at Amrita University, Kerala, India (February 2016-January 2017) and has held appointments with the Oak Ridge National Laboratory (March 2001-January 2010) as an R&D staff member based at the National Institute of Standards and Technology (March 2002-June 2013), and as an assistant and associate research scientist, and as a member of the Maryland Robotics Center with the University of Maryland, College Park (February 2010-December 2015). He received a Ph.D. in Field Robotics from the University of Sydney, an ME (Research) in Systems Engineering from the Australian National University, and a BE in Electrical and Electronics Engineering from the College of Engineering, Guindy, Anna University in 2001, 1997, and 1995, respectively.

Over the last 20 years, he has contributed to various topics in field robotics, humanitarian technologies, and systems and control theory. He has published over 200 papers in archival journals, conferences, and magazines and has co-edited two book and four journal special issues. He has served as an invited independent judge for robotics competitions, has given numerous invited presentations in research organizations in several countries, has served on editorial boards and program and organization committees of premier robotics, automation, and control conferences, and on several national and international panels and review boards. He is a senior member of IEEE, a 2008 Volunteer of the Year awardee of the IEEE Washington Section, was recognized for his services to RAS as VP of the Industrial Activities in 2014 & 2016, and is the 2016 recipient of the IEEE Robotics and Automation Society's Distinguished Service Award for his "distinguished service and contributions to RAS industrial and humanitarian activities.

### **Richard Mallah, Director of Artificial Intelligence Projects Future of Life Institute**

Richard is Director of AI Projects at NGO the Future of Life Institute, where he works to support the robust, safe, beneficent development of both short-term and long-term artificial intelligence via analysis, metaresearch, organization, research

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direction, and advocacy. Issues tackled range from AI-induced unemployment and legal issues around autonomy to meaningful control and deep value alignment.

Mallah also heads research in AI at enterprise knowledge integration platform firm Cambridge Semantics, Inc., as Director of Advanced Analytics, leading R&D of technologies for knowledge representation, machine learning including deep learning, computational linguistics, conceptual middleware, and automated systems generation, powering applications ranging from fraud analytics to drug discovery.

He is an advisor to other nonprofits and companies where he advises on AI, knowledge management, and sustainability. He has over fifteen years' experience in AI algorithms development, product team management, and CTO-level roles. Richard holds a degree in intelligent systems and computer science from Columbia University.

### **AJung Moon, Co-founder Open Roboethics initiative**

AJung Moon is a co-founder of the Open Roboethics initiative (ORi), an international roboethics think tank that investigates ways in which stakeholders of robotics technologies can work together to influence how robots should shape our future. What should a robot do? What decisions are we comfortable delegating to robots? These are some of the questions ORi has been exploring in the domain of self-driving vehicles, care robots, as well as lethal autonomous weapons systems.

AJung is also CEO and Technology Analyst of Generation R Consulting Inc., the “do” part of the think tank that provides ethics assessment of robotic and AI technologies.

AJung holds a PhD in Mechanical Engineering from the University of British Columbia with a specialization in the design of human-inspired interactive robot behaviours. As a roboticist with experience in both roboethics and HRI, she has been heavily involved in international and Canadian discussions and shaping of policy that pertain to artificial intelligence and autonomous systems. She frequently serves as an expert panelist, speaker, and guest lecturer on roboethics.

### **Monique Morrow, Chief Technology Strategist**

Monique has a track record of co-innovating with customers that has transcended the globe from North America, Europe and Asia. Monique's current focus is on the intersection between research in economics and technology to portfolio execution (e.g. Circular and Exponential Economies) along with defining mechanisms and marketplace scenarios for cloud federation constructs to include security.

Monique is passionate about the humanitarian use of technology, in addition to exploring the use of AI/VR to create a people neutral system that is both experiential and ethical without losing the beauty of randomness in human behavior. She is focused on developing the use of blockchain to create identity as a service, applying

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humanistic and purposeful values in an organization, and creating modes of privacy that are understood by all members of our ecosystem.

### **Francesca Rossi, Full Professor of Computer Science University of Padova, Italy**

Francesca Rossi is a full professor of computer science at the University of Padova, Italy, currently on leave at the IBM Research Center at Yorktown Heights, NY. Her research interests include constraint reasoning, preferences, multi-agent systems, computational social choice, and artificial intelligence. She has been president of the international association for constraint programming (ACP) and of the international joint conference on AI (IJCAI). She has been program chair of several international conferences, among which CP 2003 and of IJCAI 2013. She is a Radcliffe fellow, as well as an AAAI and an ECCAI fellow.

She is in the editorial board of Constraints, Artificial Intelligence, AMAI, and KAIS. She is the associate editor in chief of JAIR. She has published more than 170 papers and one book, and she co-edited 13 volumes, among which the handbook of constraint programming. She is co-chairing the AAAI committee on AI and ethics and she is in the scientific advisory board of the Future of Life Institute and of Insight (Ireland). She has given interviews on various topics related to AI to several media and newspapers, such as the Wall Street Journal, CNBS Italy, Motherboard, Science, the Washington Post, Sydney Morning Herald, Euronews, New Scientist, La Repubblica, Corriere della Sera. She has delivered three TEDx talks on Artificial Intelligence.

### **Alan Winfield, Professor of Robot Ethics, University of the West of England, Bristol UK**

Alan Winfield is Professor of Robot Ethics at the University of the West of England (UWE), Bristol, UK, and Visiting Professor at the University of York. He received his PhD in Digital Communications from the University of Hull in 1984, then co-founded and led [APD Communications Ltd](#) until taking-up appointment at UWE, Bristol in 1992. Alan co-founded the [Bristol Robotics Laboratory](#) where his research is focussed on the engineering and science of cognitive robotics; current projects are focussed on robots with simulation-based internal models and multi-robot systems in critical environments.

Alan is passionate about communicating research and ideas in science, engineering and technology; he led UK-wide public engagement project Walking with Robots, awarded the 2010 Royal Academy of Engineering Rooke medal for public promotion of engineering. Until recently he was director of UWE's [Science Communication Unit](#). Alan is frequently called upon by the press and media to comment on developments in AI and robotics; recently he was a guest on the BBC national radio series [The Life Scientific](#).

### Committee Descriptions & Members (As of 18 May 2017)

#### General Principles

This Committee is working on the overarching principles of the ethical design and use of autonomous and intelligent systems, focusing on the broader issues related to the acceptance of these systems by the general public.

- **Alan Winfield** (Co-Chair) – Professor, Bristol Robotics Laboratory, University of the West of England; Visiting Professor, University of York
- **Mark Halverson** (Co-Chair) – Founder and CEO at Human Ecology Holdings and Precision Autonomy
- **Huw Price** – Bertrand Russell Chair of Philosophy, University of Cambridge; Centre for the Future of Intelligence, University of Cambridge
- **Seán Ó hÉigeartaigh** – Centre for the Study of Existential Risk, University of Cambridge; Centre for the Future of Intelligence, University of Cambridge
- **Irakli BERIDZE** – UN Centre for AI and UNICRI
- **Michelle Tuveson** – Executive Director, Cambridge Centre for Risk Studies at the University of Cambridge Judge Business School.
- **Shahar Avin** – University of Cambridge, Centre for the Study of Existential Risk, Post-Doc
- **Niels ten Oever** – Head of Digital, Article 19, Co-chairing Research Group on Human Rights Protocol Considerations in the Internet Research Taskforce (IRTF)
- **Elizabeth D. Gibbons** – Senior Fellow and Visiting Scientist at the FXB Center for Health and Human Rights at Harvard University and a Distinguished Visiting Fellow at the Kozmetsky Center of Excellence in Global Finance at St. Edwards University
- **Alexei Grinbaum** – Researcher at CEA (French Alternative Energies and Atomic Energy Commission) and Member of the French Commission on the Ethics of Digital Sciences and Technologies CERNA
- **Olia Kanevskaja** – Tilburg Law and Economic Center, PhD Candidate in International Standardization; Graduate Intern at the World Trade Organization
- **Cyrus Hodes** – Director and Co-Founder, The AI Initiative; Representative for the MENA Region, The Future Society at Harvard Kennedy School
- **Gry Hasselbalch** – CoFounder, DataEthicsEU, CoAuthor, *Data Ethics - The*



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### *New Competitive Advantage*

- **Rupak Rathore** - Principal Consultant: Strategy, Innovation Incubation and Transformation Journey Management
- **Peet van Biljon** – Owner BMNP Strategies LLC, ethics author, senior advisor to Innovation360 Group, member of Innovation Council at Capital Expert Services

### Embedding Values into Autonomous Intelligent Systems

As we design autonomous systems that we interact with on an everyday basis, technologists and engineers are left today with the daunting task of determining and imbuing certain human values and ethics onto these autonomous and intelligent systems. In addition, a set of values identified for the design of systems for one user context or user group often does not translate directly to the design of another system, making the process of developing human aligned autonomous systems a challenge. This Committee focuses on addressing the challenges of identifying, prioritizing and imbuing human values into autonomous and intelligent systems such that we can better advance technology for humanity.

- **AJung Moon** (Co-Chair) - Director of Open Roboethics Institute
- **Raja Chatila** – CNRS-Sorbonne UPMC Institute of Intelligent Systems and Robotics, Paris, France; Member of the French Commission on the Ethics of Digital Sciences and Technologies CERNA; Past President of IEEE Robotics and Automation Society
- **Malo Bourgon** – COO, Machine Intelligence Research Institute
- **Vanessa Evers** – Professor, Human-Machine Interaction, and Science Director, DesignLab, University of Twente
- **Alan Mackworth** – Professor of Computer Science, University of British Columbia; Former President, AAI; Co-author of “Artificial Intelligence: Foundations of Computational Agents”.
- **Laurel Riek** – Associate Professor, Computer Science and Engineering, University of California San Diego
- **Alan Winfield** – Professor, Bristol Robotics Laboratory, University of the West of England; Visiting Professor, University of York
- **Wendell Wallach** – Consultant, ethicist, and scholar, Yale University's Interdisciplinary Center for Bioethics
- **Mike Van der Loos** – Associate Prof., Dept. of Mechanical Engineering, Director of Robotics for Rehabilitation, Exercise and Assessment in Collaborative Healthcare (RREACH) Lab, and Associate Director of CARIS Lab, University of British Columbia
- **Brenda Leong** – Senior Counsel, Director of Operations, The Future of Privacy Forum
- **Francesca Rossi** – (Co-Chair) Full Professor, computer science at the University of Padova, Italy, currently at the IBM Research Center at Yorktown Heights, NY
- **Karolina Zawieska** – SMARTlab, University College Dublin (UCD), Ireland

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- and Industrial Research Institute for Automation and Measurements (PIAP), Poland
- **Virginia Dignum** – Associate Professor, Faculty of Technology Policy and Management, TU Delft
  - **Edson Prestes** - Professor, Institute of Informatics, Federal University of Rio Grande do Sul (UFRGS), Brazil; Head, Phi Robotics Research Group, UFRGS; CNPq Fellow.
  - **John P. Sullins** - Professor of Philosophy, Chair of the Center for Ethics Law and Society (CELS), Sonoma State University
  - **Laurence Devillers** –Professor of Computer Sciences, University Paris Sorbonne, LIMSI-CNRS 'Affective and social dimensions in spoken interactions' - member of the French Commission on the Ethics of Research in Digital Sciences and Technologies (CERNA)
  - **Leanne Seeto** – Strategy and Operations at Human Ecology Holdings and Precision Autonomy
  - **Sara Jordan** – Assistant Professor of Public Administration in the Center for Public Administration & Policy at Virginia Tech
  - **Pablo Noriega** – Scientist, Artificial Intelligence Research Institute of the Spanish National Research Council (IIIA-CSIC ), Barcelona.
  - **Catholijn Jonker** – Full professor of Interactive Intelligence at the Faculty of Electrical Engineering, Mathematics and Computer Science of the Delft University of Technology.
  - **Nell Watson** – FRSA FIAP– Faculty AI & Robotics, Singularity University; Co-Founder of OpenEth.org; Senior Scientific Advisor to The AI Initiative at The Future Society at Harvard Kennedy School; Advisor to The Future of Sentience Society, University of Cambridge. {How to Imbue}
  - **Bertram Malle** – Professor, Department of Cognitive, Linguistic, and Psychological Sciences, Co-Director of the Humanity-Centered Robotics Initiative, Brown University
  - **Stephen Cave** - Executive Director of the Leverhulme Centre for the Future of Intelligence, University of Cambridge
  - **Ebru Dogan** – Research Engineer VEDECOM
  - **Jaan Tallinn** – Founding engineer of Skype and Kazaa; co-founder of the Future of Life Institute
  - **Michael Fisher** - Professor of Computer Science, University of Liverpool and Director of the UK Network on the Verification and Validation of Autonomous Systems
  - **Catherine Berger** – IEEE Standards Senior Program Manager, IEEE
  - **Mark Coeckelbergh** – Professor, Philosophy of Media and Technology, the University of Vienna

### Methodologies to Guide Ethical Research and Design

This Committee is focusing on identifying the specific tools and practices that will bring applied ethics methodologies to the workplace and any design process.

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- **Raja Chatila** (Co-Chair) – CNRS-Sorbonne UPMC Institute of Intelligent Systems and Robotics, Paris, France; Member of the French Commission on the Ethics of Digital Sciences and Technologies CERNA; Past President of IEEE Robotics and Automation Society
- **John C. Havens**– Executive Director, The IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems; Author, *Heartificial Intelligence: Embracing Our Humanity to Maximize Machines* (Founding Committee Co-Chair)
- **Jared Bielby** – Co-chair, International Center for Information Ethics
- **Tim Hwang** – Fellow, Data & Society
- **Jason Millar** – Professor, robot ethics at Carleton University
- **Sarah Spiekermann** Chair of the Institute for Management Information Systems at Vienna University of Economics and Business; Author of Ethical IT-Innovation and Blogger on The Ethical Machine
- **Tom Guarriello, Ph.D.** – Founding Faculty member in the Master’s in Branding program at New York City’s School of Visual Arts, Host of RoboPsych
- **Corinne J.N. Cath** – (Co-Chair) PhD student at The University of Oxford, Programme Officer at ARTICLE 19
- **Thomas Arnold** – Research Associate at Tufts University Human-Robot Interaction Laboratory
- **Pamela Pavliscak** – Founder, Change Sciences
- **Illah Nourbakhsh** – Professor of Robotics, The Robotics Institute, Carnegie Mellon University
- **Shannon Vallor** – William J. Rewak Professor in the Department of Philosophy at Santa Clara University in Silicon Valley; President of the international Society for Philosophy and Technology (SPT) and Executive Board member of the Foundation for Responsible Robotics
- **Sara Jordan** – Assistant Professor of Public Administration in the Center for Public Administration & Policy at Virginia Tech
- **Björn Niehaves** – Chair of Business computer science at University of Siegen

### Safety and Beneficence of Artificial General Intelligence (AGI) and Artificial Superintelligence (ASI)

This Committee is focusing on issues related to Artificial General Intelligence (AGI) and Artificial Superintelligence (ASI). AGI generally refers to a computer or system that can perform tasks at the same level of a human or better in multiple arenas, which raises concerns about control leakage, value alignment, and system self-improvement. This Committee is discussing issues surrounding how to build systems, today and in the near-mid future that can be designed in ways that foster safety and beneficence for society while also advancing innovation for AI and autonomous technology.

- **Malo Bourgon** (Co-Chair) – COO, Machine Intelligence Research Institute
- **Richard Mallah** (Co-Chair) – Director of Advanced Analytics, Cambridge

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- Semantics; Director of AI Projects, Future of Life Institute
- **Paul Christiano** – PhD Student, Theory of Computing Group, UC Berkeley
- **Bart Selman** – Professor of Computer Science, Cornell University
- **Carrick Flynn** – Research Assistant at Future of Humanity Institute, University of Oxford
- **Roman Yampolskiy, PhD** – Associate Professor and Director, Cyber Security Laboratory; Computer Engineering and Computer Science, University of Louisville

### Personal Data and Individual Access Control

This Committee is focusing on issues of personal information and privacy in relation to how individual data is used in regards to autonomous and artificially intelligent systems. While it is a given that more data provided to a system will improve its ability to foster useful insights, it is also imperative that individuals have access to and can share their data in ways that protects their rights to privacy, security, and identity.

- **Michelle Finneran Denedy** – Vice President, Chief Privacy Officer, Cisco; Author, *The Privacy Engineer's Manifesto: Getting from Policy to Code to QA to Value*
- **John C. Havens** (Co-Chair) – Executive Director, The IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems; Author, *Heartificial Intelligence: Embracing Our Humanity to Maximize Machines*
- **Mahsa Kiani** – PhD Candidate, Faculty of Computer Science, University of New Brunswick; Executive Member, IEEE, New Brunswick Chapter.
- **Dr. Zoltan Szlavik** – Researcher, IBM Center for Advanced Studies Benelux
- **Sean Bohan** – Steering Committee Member, Project VRM
- **Gry Hasselbalch** – CoFounder DataEthicsEU, CoAuthor, *Data Ethics - The New Competitive Advantage*
- **Emma Lindley** – Founder, Innovate Identity
- **Joseph Jerome** – Policy Counsel, Center for Democracy & Technology
- **Katryna Dow** – (Co-Chair) CEO & Founder at Meeco
- **Walter Burrough** – Co-Founder, Augmented Choice; PhD Candidate (Computer Science) - Serious Games Institute
- **Walter Pienciak** – Senior Manager, Strategic Programs, IEEE
- **Jean-Gabriel Ganascia** – Professor, University Pierre et Marie Curie; LIP6 Laboratory ACASA Group Leader
- **Ariel H. Brio** – Privacy and Data Counsel at Sony PlayStation
- **Ugo Pagallo** – University of Turin Law School; Center for Transnational Legal Studies, London; NEXA Center for Internet & Society, Politecnico of Turin.
- **Danny W. Devriendt** – Managing director of Mediabrands Publishing (IPG) in Brussels, and the CEO of the Eye of Horus, a global think-tank for communication-technology related topics.

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## Initiative Membership

- **Sofia C. Olhede** – Professor of Statistics and an Honorary Professor of Computer Science at University College London, London, U.K; Member of the Programme Committee of the International Centre for Mathematical Sciences.
- **Dr. Louise Dennis** – Post-Doctoral Researcher in the Autonomy and Verification Laboratory at the University of Liverpool.
- **Ajay Bawa** - Technology Innovation Lead, Avanade Inc.
- **Adrian Gropper, M.D.** - CTO, Patient Privacy Rights Foundation; HIE of One Project
- **Dr. Yves-Alexandre de Montjoye** - Imperial College London; Data Science Institute and Department of Computing
- **Serena Quattrocolo** - Centre for Transnational Legal Studies, London, University of Piemonte Orientale, Law School, Italy.
- **Gilad Rosner** - Internet of Things Privacy Forum; Horizon Digital Economy Research Institute, UK; UC Berkeley Information School
- **Dr. Yanqing Hong** - Researcher at the Cybersecurity Research Institute of Sichuan University; Lead, the Standardization Task Force of the Personal Data Protection Specification, National Information Security Standardization Technical Committee of China.
- **Dr. Deborah C. Peel** - Founder, Patient Privacy Rights & Creator, the International Summits on the Future of Health Privacy
- **Eleonore Pauwels** – Director of Biology Collectives and Senior Program Associate, Science and Technology Innovation Program, Woodrow Wilson International Center for Scholars, Washington D.C.
- **Katie Shilton** – Associate Professor at College of Information Studies and leads the Ethics & Values in Design (EViD) Lab at the University of Maryland iSchool
- **Carolyn Robson** – Group Data Privacy Manager at Etihad Aviation Group
- **David Goldstein** – Seton Hall University
- **Ewa Luger** – Chancellor’s Fellow at the University of Edinburgh, within the Design Informatics Group
- **Marsali S. Hancock** – Chair, IEEE Standards for Child and Student Data governance, Commissioner at GIIC, Chief Digital Officer, DQ Institute
- **Rose Shuman** – Partner at BrightFront Group & Founder, Question Box
- **Mads Schaarup Andersen** – Senior Usable Security Expert in the Alexandra Institute's Security Lab
- **Professor Meg Leta Jones** – Assistant Professor in the Communication, Culture & Technology program at Georgetown University
- **Professor Serena Quattrocolo** – University of Turin Law School
- **Udbhav Tiwari** - Centre for Internet and Society, India
- **Sheila Dean** – Author, Privacy Solutions Consultant
- **Yanqing Hong** – Graduate, University of Utrecht Researcher at Tsinghua University
- **Dr. Juuso Parkkinen** – Senior Data Scientist and AI Designer, Reaktor; Programme Team Member, MyData 2017 conference.

### Reframing Autonomous Weapons Systems

A central area of global concern around autonomous technology is potential application to physical weapons. This Committee is focused on discussing

# The IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems

## Initiative Membership

methodologies and tools to ensure that issues of accountability, human-control/intervention, and overall societal safety are adequately addressed in contemporary deliberations.

- **Richard Mallah** – Director of Advanced Analytics, Cambridge Semantics; Director of AI Projects, Future of Life Institute (*Founding Committee Chair*)
- **Peter Asaro** – (Chair) Assistant Professor of Media Studies, The New School
- **Ryan Gariepy** – CTO/Co-Founder, Clearpath; Director of the Board, Open Source Robotics Foundation
- **Heather Roff, Ph.D** – Senior Research Fellow, Department of Politics and International Relations, University of Oxford; Research Scientist, Global Security Initiative, Arizona State University; Fellow, New America Foundation, Cybersecurity Initiative
- **Stuart Russell** – Professor of Computer Science, University of California, Berkeley
- **Bernhard Schölkopf** – Director, Department of Empirical Inference, Max Planck Institute for Intelligent Systems
- **Noel Sharkey** – Professor of AI and Robotics, University of Sheffield; Leverhulme Research Fellow on battlefield robots
- **Toby Walsh** – Prof. Toby Walsh, University of New South Wales and Data61
- **Eric Horvitz** – Technical Fellow, Microsoft Research
- **Catherine Tessier** – Researcher at ONERA, France, and professor at ISAE-SUPAERO
- **Danit Gal** – Peking University and Tsinghua University; Chair, Outreach Committee for The IEEE Global Initiative

### Economics/Humanitarian Issues

Evolution of technology doesn't happen in isolation – rapid advances in machine automation are changing the nature of how humans work and how many jobs may be available in the future. This Committee is focusing on how to leverage these powerful emerging technologies while ensuring their benefits can be evenly distributed throughout society with an overall positive impact on humanity.

- **Kay Firth-Butterfield** (Co-Chair) – Executive Director, AI Austin; Senior Fellow and Distinguished Scholar, Robert S. Strauss Center for International Security and Law, University of Texas, Austin; Co-Founder, Consortium for Law and Ethics of Artificial Intelligence and Robotics, University of Texas, Austin; Partner, Cognitive Finance Group, London, U.K.
- **Raj Madhavan** (Co-Chair) – Founder & CEO of Humanitarian Robotics Technologies, LLC, Maryland, U.S.A.
- **William Hoffman** – Associate director and head of Data-Driven Development, The World Economic Forum
- **Renaud Champion** – Founder of Robolution Capital & CEO of Primnext; Executive Director of euRobotics aisbl

# The IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems

## Initiative Membership

- **Scott L. David** – Director of Policy at University of Washington - Center for Information Assurance and Cybersecurity
- **Yves-Alexandre de Montjoye** – Lecturer (eq. Assistant Professor), Imperial College London, Dept. of Computing and Data Science Institute
- **Rose Shuman** – Partner at BrightFront Group & Founder, Question Box
- **Hruy Tsegaye** – One of the founders of iCog Labs; a pioneer company in East Africa to work on Research and Development of Artificial General Intelligence, Ethiopia
- **Ronald C. Arkin** – Regents' Professor & Director of the Mobile Robot Laboratory; Associate Dean for Research & Space Planning, College of Computing, Georgia Institute of Technology
- **Joanna J. Bryson** – Reader (Associate Professor), University of Bath, Intelligent Systems Research Group, Department of Computer Science; Affiliate, Center for Information Technology Policy, Princeton University
- **Rozita Dara** – Assistant Professor in the School of Computer Science, University of Guelph
- **Nicolas Mialhe** – MC-MPA 15' Senior Visiting Research Fellow, Program on Science Technology and Society at Harvard Kennedy School; Co-Founder & President, The Future Society; Executive Director, People for Global Transformation
- **Jia He** – Chief of Staff and Director of Toutiao Research (Think Tank), Bytedance Inc.
- **Chandramuli Chaudhuri**, Senior Data Scientist; Customer Genomics

### Law

This Committee is focusing on the legal issues related to the design and use of autonomous and intelligent systems.

- **Kay Firth-Butterfield** (Co-Chair) – Executive Director, AI Austin; Senior Fellow and Distinguished Scholar, Robert S. Strauss Center for International Security and Law, University of Texas, Austin; Co-Founder, Consortium for Law and Ethics of Artificial Intelligence and Robotics, University of Texas, Austin; Partner, Cognitive Finance Group, London, U.K.
- **Derek Jinks** (Co-Chair) – Marrs McLean Professor in Law, University of Texas Law School; Director, Consortium on Law and Ethics of Artificial Intelligence and Robotics (CLEAR), Robert S. Strauss Center for International Security and Law, University of Texas
- **Tom D. Grant** – Fellow, Wolfson College; Senior Associate of the Lauterpacht Centre for International Law, University of Cambridge, UK
- **Andrew Woods** – Assistant Professor of Law, University of Kentucky
- **Gary Marchant** – Regents' Professor of Law, Lincoln Professor of Emerging Technologies, Law and Ethics, Arizona State University
- **Thomas Burri** – Assistant Professor of International Law and European Law, University of St. Gallen (HSG), Switzerland
- **John Frank Weaver** – Lawyer, McLane Middleton, P.A, Contributing Writer for Slate, Author, *Robots Are People Too*

# The IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems

## Initiative Membership

- **Ryan Calo** – Assistant Professor of Law, the School of Law at the University of Washington
- **Yan Tougas** – Global Ethics & Compliance Officer, United Technologies Corporation; Adjunct Professor, Law & Ethics, University of Connecticut School of Business
- **Clemens Canel** – Referendar (Trainee Lawyer) at Hanseatisches Oberlandesgericht, graduate of the University of Texas School of Law and Bucerius Law School.
- **Paul Moseley** – Master’s student, Electrical Engineering, Southern Methodist University; graduate of the University of Texas School of Law.
- **Danielle Keats Cirton** – Lois K. Macht Research Professor & Professor of Law, University of Maryland Carey School of Law
- **Joseph Jerome** – Policy Counsel, Center for Democracy & Technology
- **Miles Brundage** – AI Policy Research Fellow, Strategic AI Research Center, University of Oxford; PhD candidate, Human and Social Dimensions of Science and Technology, Arizona State University
- **Matthew Scherer** – Attorney at Buchanan Angeli Altschul & Sullivan LLP and legal scholar based in Portland, Oregon, USA; Editor, LawAndAI.com.
- **Deven Desai** – Associate Professor of Law and Ethics, Georgia Institute of Technology, Scheller College of Business
- **Daniel Hinkle** – State Affairs Counsel for the American Association for Justice.
- **Sandra Wachter** - Research Fellow in Data Ethics, AI and Robotics, Oxford Internet Institute, University of Oxford.
- **Julius Weitzdörfer** - Affiliated Lecturer, Faculty of Law, University of Cambridge; Research Associate, Centre for the Study of Existential Risk, University of Cambridge.
- **Nicolas Jupillat** Visiting Professor, University of Detroit Mercy School of Law and Center for Cybersecurity and Intelligence Studies; LL.M. Candidate, University of California, Berkeley, School of Law; Google Policy Fellow, University of Ottawa, Canadian Internet Policy and Public Interest Clinic.
- **Yueh-Hsuan Weng** - Assistant Professor, Frontier Research Institute for Interdisciplinary Sciences, Tohoku University; Co-founder of ROBOLAW.ASIA
- **Aden Allen** - Senior Associate, Patent Litigation, Wilson Sonsini Goodrich & Rosati, P.C.
- **John Casey** - Attorney-at-Law, Corporate, Wilson Sonsini Goodrich & Rosati, P.C
- **Cordel Green** - Attorney-at-Law; Executive Director, Broadcasting Commission - Jamaica.
- **Irene Kitsara** - Lawyer; IP Information Officer, Access to Information and Knowledge Division, World Intellectual Property Organization, Switzerland
- **Axel Walz** - Lawyer; Senior Research Fellow at the Max Planck Institute for Innovation and Competition, Germany



# The IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems

## Initiative Membership

*The following Committees will be providing Content/Language for The Initiative's Conference scheduled for June, 2017.*

### Affective Computing

This Committee addresses the impact on individuals and society that autonomous and intelligent systems capable of sensing, modeling, or exhibiting affective behavior such as emotions, moods, attitudes, and personality can produce. Affective computational and robotic artifacts have or are currently being developed for use in areas as diverse as companions, health, rehabilitation, elder and childcare, training and fitness, entertainment, and even intimacy. The ethical concerns surrounding human attachment and the overall impact on the social fabric may be profound and it is crucial that we understand the trajectories that affective autonomous and intelligent systems may lead us on to best provide solutions that increase human wellbeing in line with innovation.

- **Ronald C. Arkin** (Co-Chair) – Regents' Professor & Director of the Mobile Robot Laboratory; Associate Dean for Research & Space Planning, College of Computing  
Georgia Institute of Technology
- **John C. Havens** – Executive Director, The IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems; Author, *Heartificial Intelligence: Embracing Our Humanity to Maximize Machines*
- **Rosalind Picard** – Rosalind Picard, (Sc.D, FIEEE) Professor, MIT Media Laboratory, Director of Affective Computing Research; Faculty Chair, MIT Mind+Hand+Heart; Co-founder & Chief Scientist, Empatica Inc.; Co-founder, Affectiva Inc.
- **Rafael Calvo** – Professor & ARC Future Fellow, School of Electrical and Information Engineering, The University of Sydney
- **Joanna J. Bryson** – (Co-Chair) Reader (Associate Professor), University of Bath, Intelligent Systems Research Group, Department of Computer Science; Affiliate, Center for Information Technology Policy, Princeton University
- **Jonathan Gratch** – Research Professor of Computer Science and Psychology, Director for Virtual Human Research, USC Institute for Creative Technologies
- **Matthias Scheutz** – Professor, Bernard M. Gordon Senior Faculty Fellow, Tufts University School of Engineering
- **Cynthia Breazeal** – Associate Professor of Media Arts and Sciences, MIT Media Lab; Founder & Chief Scientist of Jibo, Inc.
- **Edson Prestes** – Professor, Institute of Informatics, Federal University of Rio Grande do Sul (UFRGS), Brazil; Head, Phi Robotics Research Group, UFRGS; CNPq Fellow.
- **John P. Sullins** – Professor of Philosophy, Chair of the Center for Ethics Law and Society (CELS), Sonoma State University
- **Robert Sparrow** – Professor, Monash University, Australian Research Council "Future Fellow", 2010-15.
- **Laurence Devillers** – Professor of Computer Sciences, University Paris Sorbonne, LIMSI-CNRS 'Affective and social dimensions in spoken

# The IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems

## Initiative Membership

- interactions' - member of the French Commission on the Ethics of Research in Digital Sciences and Technologies (CERNA)
- **Joost Broekens** – Assistant Professor Affective Computing, Interactive Intelligence group; Department of Intelligent Systems, Delft University of Technology
  - **Genevieve Bell** – Intel Senior Fellow Vice President, Corporate Strategy Office Corporate Sensing and Insights
  - **Mark Halverson** – Founder and CEO at Human Ecology Holdings and Precision Autonomy
  - **Noreen Herzfeld** – Reuter Professor of Science and Religion, St. John's University
  - **Bjoern Niehaves** - Professor, Chair of Information Systems, University of Siegen
  - **Jason Borenstein** - Director of Graduate Research Ethics Programs, Georgia Institute of Technology

### Classical Ethics in Information & Communication Technologies

This Committee will focus on examining classical ethics ideologies (utilitarianism, etc) in light of AI and autonomous technologies.

- **Jared Bielby** – Co-chair, International Center for Information Ethics
- **Rafael Capurro** – Founder, International Center for Information Ethics
- **Bendert Zevenbergen** – Oxford Internet Institute, University of Oxford, Creator of the Networked Systems Ethics Guidelines
- **Katie Shilton** – Leader, Ethic & Values in Design Lab at the University of Maryland, College of Information Studies, Director of the Center for the Advanced Study of Communities and Information
- **Kai Kimppa** – Postdoctoral Researcher, Information Systems, Turku School of Economics, University of Turku
- **Rachel Fischer** – Research Officer: African Centre of Excellence for Information Ethics, Information Science Department, University of Pretoria, South Africa.
- **Soraj Hongladarom** – President at The Philosophy and Religion Society of Thailand
- **Pak-Hang Wong** – Lecturer, Department of Social Science, Hang Seng Management College, Hong Kong
- **Oliver Bendel** – Professor of Information Systems, Information Ethics and Machine Ethics, University of Applied Sciences and Arts Northwestern Switzerland FHNW
- **Miguel Á. Pérez Álvarez** – Coord. Pedagogía (modalidad a distancia) Div. Sistema de Universidad Abierta y Educación a Distancia Facultad de Filosofía y Letras Universidad Nacional Autónoma de México
- **Dr Sara Wilford** – Senior Lecturer, Research Fellow, School of Computer

# The IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems

## Initiative Membership

- Science and Informatics, Centre for Computing and Social Responsibility, De Montfort University
- **Dr Neil McBride** – Reader in IT Management, School of Computer Science and Informatics, Centre for Computing and Social Responsibility, De Montfort University
  - **Dr. John Burgess** – John T. F. Burgess, PhD, STM, MLIS. Assistant Professor / DE Coordinator, School of Library and Information Studies, The University of Alabama
  - **Kristene Unsworth** – Assistant Professor, The College of Computing & Informatics, Drexel University
  - **Wolfgang Hofkirchner** – Associate Professor, Institute for Design and Technology Assessment, Vienna University of Technology
  - **Derek Poitras** - Independant Consultant, Object Oriented Software Development

### The Policy Committee

The Policy Committee works to synergize existing IEEE policy relating to Artificial Intelligence and Autonomous Systems while including explicit ethical considerations and factors core to The IEEE Global Initiative overall.

- **Anja Kaspersen** – Former Head of International Security, World Economic Forum and head of strategic engagement and new technologies at the international committee of Red Cross (ICRC)
- **Corinne J.N. Cath** – PhD student at The University of Oxford, Researcher at the Oxford Internet Institute Digital Ethics Lab, Doctoral student at the Alan Turing Institute, Digital Consultant at ARTICLE 19
- **Darrell M. West** – Vice President and Director, Governance Studies | Founding Director, Center for Technology Innovation | The Douglas Dillon Chair
- **John C. Havens** – Executive Director, The IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems; Author, *Heartificial Intelligence: Embracing Our Humanity to Maximize Machines*
- **Karen S. Evans** – National Director, U.S. Cyber Challenge and former Administrator for the Office of Electronic Government and Information Technology, Executive Office of the President.
- **Kay Firth-Butterfield** (Co-Chair) – Executive Director, AI Austin; Senior Fellow and Distinguished Scholar, Robert S. Strauss Center for International Security and Law, University of Texas, Austin; Co-Founder, Consortium for Law and Ethics of Artificial Intelligence and Robotics, University of Texas, Austin; Partner, Cognitive Finance Group, London, U.K.
- **Dr. Konstantinos Karachalios** – Managing Director, IEEE-Standards Association
- **Manu Bhardwaj** – Senior Advisor on Technology and Internet Policy to the Under Secretary of State at U.S. Department of State
- **Dr. Peter S. Brooks** – Institute for Defense Analyses; Science and

# The IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems

## Initiative Membership

- Technology Policy Institute
- **Evangelos Simoudis** – Co-Founder and Managing Director, Synapse Partners Author, *The Big Data Opportunity in our Driverless Future*
- **Carolyn Nguyen** - Director, Technology Policy at Microsoft
- **Michelle Finneran Denedy** – Vice President, Chief Privacy Officer, Cisco; Author, *The Privacy Engineer's Manifesto: Getting from Policy to Code to QA to Value*
- **Philip Hall** (Co-Chair) – Member, IEEE-USA Government Relations Council
- **Danit Gal** – Peking University and Tsinghua University; Chair, Outreach Committee for The IEEE Global Initiative
- **Yueh-Hsuan Weng** - Assistant Professor, Frontier Research Institute for Interdisciplinary Sciences, Tohoku University; Co-founder of ROBOLAW.ASIA
- **Stan Byers** – Frontier Markets Specialist

### Mixed Reality Committee

Mixed reality could alter our very notions of identity and reality over the next generation, as these technologies infiltrate more and more aspects of our lives, from work to education, from socializing to commerce. An AI/AS backbone that would enable real-time personalization of this illusory world raises a host of ethical and philosophical questions, especially as the technology moves from headsets to much more subtle and integrated sensory enhancements. This Committee will work to discover the methodologies that could provide this future with an ethical skeleton and the assurance that the rights of the individual, including control over one's increasingly multifaceted identity, will be reflected in the encoding of this evolving environment.

- **Monique Morrow** (Co-Chair) – Chief Technology Strategist, Co-Founder and President of the Humanized Internet
- **Jay Iorio** Chair (Co-Chair) – Director of Innovation, IEEE Standards Association
- **Leanne Seeto** – Strategy and Operations at Human Ecology Holdings and Precision Autonomy
- **Katryna Dow** – CEO & Founder at Meeco
- **Pablo Noriega** – Scientist, Artificial Intelligence Research Institute of the Spanish National Research Council (IIIA-CSIC), Barcelona.
- **BC Biermann, PhD** - Founder, Heavy Projects, Civic Media Fellow at USC Annenberg Innovation Lab
- **Scott Kesselman** – Advocacy and Public Affairs, Association for Unmanned Vehicle Systems International; Co-founder, writer, director and producer of experimental theater company, Blacknote Theatre
- **Todd Richmond** – Director, Mixed Reality Lab/Studio, University of Southern California Institute for Creative Technologies/School for Cinematic Arts
- **Albert "Skip" Rizzo** - Research Professor and Director of Medical Virtual Reality, University of Southern California Institute for Creative Technologies
- **Francesca Rossi** is a full professor of computer science at the University of Padova, Research Director at USC, Higher Education Consultant

# The IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems

## Initiative Membership

- **Danit Gal** – Peking University and Tsinghua University; Chair, Outreach Committee for The IEEE Global Initiative
- **Dr. Stephen Rainey** – Research Fellow in De Montfort University's Centre for Computing and Social Responsibility.
- **Preeti Mohan** – Senior at the University of Michigan double majoring in Computer Science and Cognitive Science.
- **Ann E. Greenberg** – Founder & CEO of Sceneplay, Inc. (Previously) Co-Founder of Gracenote and ION.
- **Jesse Woo** - Research Associate Faculty in Privacy and Cybersecurity, Georgia Institute of Technology.

### The Wellbeing Committee

The Wellbeing Committee's focus is on discovering the integration points between metrics of human wellbeing and the design, manufacture and proliferation of AI/AS technologies. The Committee's goal is to redefine modern innovation by the prioritization of holistic metrics of wellbeing beyond the current GDP-centric models driving the economy today

- **Rafael A. Calvo** – Professor and ARC Future Fellow at The University of Sydney. Co-author of Positive Computing: Technology for Well-Being and Human Potential.
- **Richard Mallah** – Director of AI Project, Future of Life Institute.
- **Jon Hall** – Policy Specialist, National Human Development Reports at UNDP (United Nations Development Programme)
- **Dr. Peggy Kern** – Senior lecturer at the Centre for Positive Psychology at the University of Melbourne's Graduate School of Education.
- **Andra Keay** – Managing Director of Silicon Valley Robotics, cofounder of Robohub.
- **Eimear Farrell** – Human Rights Officer: Business and Human Rights (P4) United Nations Office of the High Commissioner for Human Rights.
- **Laura Musikanski** – Executive Director at The Happiness Alliance - home of The Happiness Initiative & Gross National Happiness Index
- **Venerable Tenzin Priyadarshi** - Founding Director of The Dalai Lama Center for Ethics and Transformative Values at the Massachusetts Institute of Technology
- **Anja Kaspersen** – Head of Strategic Engagement and New Technologies, International Committee of the Red Cross.
- **Alan Mackworth** – Professor of Computer Science at the University of British Columbia, former President and Trustee of International Joint Conferences on AI (IJCAI) Inc., member of the AI 100 Standing Committee, Stanford University.
- **Bhavani Rao** – Director, *AMMACHI Labs*
- **Peet van Biljon** – Owner BMNP Strategies LLC, ethics author, senior advisor to Innovation360 Group, member of Innovation Council at Capital Expert Services
- **Mark Halverson** – Founder and CEO at Human Ecology Holdings and

# The IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems

## Initiative Membership

- Precision Autonomy
- **Eleonore Pauwels** – Director of Biology Collectives and Senior Program Associate, Science and Technology Innovation Program, Woodrow Wilson International Center for Scholars, Washington D.C.
- **Celina Bottino** – Project Director at the Institute for Technology & Society of Rio de Janeiro (ITS Rio).
- **Fabrice Murtin** – Senior Economist, OECD Statistics Directorate
- **Danit Gal** Peking University and Tsinghua University; Chair, Outreach Committee for The IEEE Global Initiative
- **Liz Alexander**, Ph.D. Futurist.
- **Rumman Chowdhury**, Ph.D. – Senior Manager Artificial Intelligence, Accenture

*The following Committees (in conjunction with the Executive Committee) provide ongoing strategic guidance for The Initiative.*

### The Drafting Committee

The Drafting Committee is tasked with helping take drafts of *Ethically Aligned Design* and iterating them with Committee Chairs after face-to-face meeting of The IEEE Global Initiative.

- **Kay Firth-Butterfield** (Co-Chair) – Executive Director, AI Austin; Senior Fellow and Distinguished Scholar, Robert S. Strauss Center for International Security and Law, University of Texas, Austin; Co-Founder, Consortium for Law and Ethics of Artificial Intelligence and Robotics, University of Texas, Austin; Partner, Cognitive Finance Group, London, U.K.
- **John C. Havens** – Executive Director, The IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems; Author, *Heartificial Intelligence: Embracing Our Humanity to Maximize Machines*
- **Raja Chatila** – CNRS-Sorbonne UPMC Institute of Intelligent Systems and Robotics, Paris, France; Member of the French Commission on the Ethics of Digital Sciences and Technologies CERNA; Past President of IEEE Robotics and Automation Society
- **Tom D. Grant** – Fellow, Wolfson College; Senior Associate of the Lauterpacht Centre for International Law, University of Cambridge, UK
- **Dr. Victoria Wang** – CEO, China IP Group
- **Deven Desai** (Co-Chair) – Associate Professor of Law and Ethics, Georgia Institute of Technology, Scheller College of Business, Atlanta, Georgia, U.S.A.
- **Francesca Rossi** – Full Professor, computer science at the University of Padova, Italy, currently at the IBM Research Center at Yorktown Heights, NY

### The Industry Committee

The Industry Committee is tasked with identifying ways to best communicate portions or all of Ethically Aligned Design and the overall work of The IEEE Global Initiative to the corporate community / industry at large.

# The IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems

## Initiative Membership

- **Virginia Dignum** (Co-Chair) – Associate Professor, Faculty of Technology Policy and Management, TU Delft
- **Malavika Jayaram** (Co-Chair) – Executive Director, The Digital Asia Hub
- **William Hoffman** – Associate director and head of Data-Driven Development, The World Economic Forum
- **Rob McCargow** – PricewaterhouseCoopers, Programme Leader - Artificial Intelligence | Technology & Investment
- **Christina Berkley** – Executive Coach to leaders in exponential technologies, cutting-edge science, and aerospace
- **Daniel Fagella** – Founder, TechEmergence

### The Communications Committee

The Communications Committee is tasked with increasing inter-Initiative communications along with highlighting the work of Initiative members relating to Ethically Aligned Design and AI Ethics in general (in conjunction with IEEE PR/marketing teams).

- **Leanne Seeto** (Co-Chair) – Strategy and Operations at Human Ecology Holdings and Precision Autonomy
- **Mark Halverson** – (Co-Chair) Founder and CEO at Human Ecology Holdings and Precision Autonomy
- **Scott Kesselman** – Advocacy and Public Affairs, Association for Unmanned Vehicle Systems International; Co-founder, writer, director and producer of experimental theater company, Blacknote Theatre
- **Walter Pienciak** – Senior Manager, Strategic Programs, IEEE Standards Association
- **Lee Stogner**, PMP – Vincula Group
- **Lloyd Green** – Director, Engagement Marketing & Creative Community Services, IEEE Standards Association
- **Renée Ayer** – Account Manager, Interprose
- **Rudi Schubert** – Director, New Initiatives, IEEE Standards Association

### The Glossary Committee

The Glossary Committee is tasked with creating a common set of working definitions for the IEEE Global Initiative to use when drafting *Ethically Aligned Design*.

**Sara Jordan** (Chair) – Assistant Professor of Public Administration in the Center for Public Administration & Policy at Virginia Tech

### The Outreach Committee

The Outreach Committee is tasked with identifying key organizations and individuals interested in collaboration with The IEEE Global Initiative.

- **Danit Gal** – (Chair) Peking University and Tsinghua University

# The IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems

## Initiative Membership

- **John C. Havens** – Executive Director, The IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems; Author, *Heartificial Intelligence: Embracing Our Humanity to Maximize Machines*

### Special Thanks to Our China Translation Team who translated the Executive Summary of *Ethically Aligned Design*, Version 1:

- 王亮迪：博士、IEEE 董事会高级顾问  
**Victoria Wang** – PhD, Senior Advisor of IEEE Board
- 赵盟：IEEE 标准协会中国区经理  
**Meng Zhao** – Standard Manager, China IEEE
- 贺佳：今日头条研究院  
**Jia He** – Bytedance Research (Chair, Translation Committee)
- 周硕彦：国立台湾科技大学特聘教授、物联网中心主任  
**Shuo-Yan Chou** – Distinguished Professor, director of Center for IOT Innovation, National Taiwan University of Science and Technology
- 翁岳暄，日本东北大学前沿学际科学研究所专任助理教授; ROBOLAW.ASIA 联合创始人  
**Yueh-Hsuan Weng** – Assistant Professor, Frontier Research Institute for Interdisciplinary Sciences, Tohoku University; Co-founder, ROBOLAW.ASIA
- 洪延青：博士、四川大学网络空间安全研究院特聘副研究员、《个人信息安全规范》国家标准制定工作组负责人  
**Yanqing Hong** – PhD, Researcher at the Cybersecurity Research Institute of Sichuan University; Lead, the Standardization Task Force of the Personal Data Protection Specification, National Information Security Standardization Technical Committee of China.
- 徐龙第：博士、中国国际问题研究院欧洲研究所副研究员  
**Longdi Xu, PhD** – Associate Research Fellow, China Institute of International Studies
- 刘战雄：东南大学人文学院科技哲学专业博士研究生、代尔夫特理工大学技术伦理联培博士生



# The IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems

## Initiative Membership

**Zhanxiong Liu** – PhD Candidate on Philosophy of Technology of Southeast University, Visiting researcher in Department of Responsible Innovation of Delft University of Technology

### **Thanks also to:**

- 顾学雍：清华大学 基础工业训练中心 ( iCenter ) 副教授
- **Ben Koo** – Associate professor, iCenter, Tsinghua University

### **Special Thanks to our esteemed colleagues / Initiative Members from Japan providing feedback for and helping translate *Ethically Aligned Design, Version 1:***

- **Ryota Kanai** – CEO, Araya, Inc.,
- **Takashi Egawa** – NEC Corporation, Standardization Expert
- **Iwao Hyakutake** –Director, Japan Office, IEEE
- **Arisa Ema** – Assistant Professor at the University of Tokyo and Visiting Researcher at the RIKEN Center for Advanced Intelligence Project
- **Yuzuki Nagakoshi** – Research Associate at RCAST, University of Tokyo
- **Katsue Nagakura** – Science writer

### **Special Thanks to our esteemed colleagues / Initiative Members from Korea providing feedback for and helping translate *Ethically Aligned Design, Version 1:***

- **Hyo-eun Kim** – Assistant professor at the Hanbat National University Department of Humanities in Daejeon, Korea.
- **Kyung Sin Park** – Professor, Korea University Law School. Executive Director of Open Net Korea.
- **Sang-Wook Yi** – Professor, department of philosophy at Hanyang University, Seoul.
- **Kishik Park** – ETRI(Electronics and Telecommunications Research Institute), IEEE-SA BOG Member
- **Kyungjoon Oh** – Hanyang University
- **Chihyung Jeon** – Korea Advanced Institute of Science and Technology

# The IEEE Global Initiative for Ethical Considerations in Artificial Intelligence and Autonomous Systems

## Initiative Membership

**Special Thanks to our esteemed colleagues / Initiative Members from Brazil providing feedback for and helping translate *Ethically Aligned Design*, Version 1:**

- **Lucas Anjos** – Institute for Research on Internet and Society - IRIS; Deputy Director
- **Celina Bottino** – Institute of Technology and Society of Rio -ITS Rio, Project Director
- **Carlos Affonso Souza** – Institute of Technology and Society of Rio - ITS Rio, Director
- **Juliana Nolasco** – Google, Public Policy Manager
- **Gabriela Agustini** – Olabi Makerspace, Executive Director
- **Ronaldo Lemos** – Director of the Institute of Technology and Society of Rio -ITS Rio

**Special Thanks to People Who Contributed Feedback to our Request For Input for *Ethically Aligned Design*, Version 1:**

- **Amitai Etzioni** – University Professor, George Washington University
- **Corinne Cath and Jon Crowcroft**, – Alan Turing Institute
- **Tom Kurihara** – TKstds Management
- **Dr. Yanqing Hong** – Researcher at the Cybersecurity Research Institute of Sichuan University; Lead, the Standardization Task Force of the Personal Data Protection Specification, National Information Security Standardization Technical Committee of China
- **Manfred Bürger** – Expert in Nuclear Reactor Safety
- **Stephen Rainey** – research fellow in the Centre for Computing and Social Responsibility in De Montfort University, Leicester
- **Reji M. Issac** – B. P. C. College, Piravom, Ernakulam, Kerala, India
- **Marijn van der Pas**, – FullAI
- **Prof. Dr. Oliver Bendel** – School of Business, University of Applied Sciences and Arts Northwestern Switzerland
- **Lawrence Sheraton** – EthicsDefined.org
- **Shinichi NOMOTO** – Executive Principal Researcher, KDDI Research, Inc.
- **Rogelio Piña Vega** – Autonomous University of Querétaro
- **Hyo-eun Kim** – Hanbat National University, College of Liberal Arts
- **Francisco López Caracheo** – Universidad Autónoma de Querétaro
- **Zoe Porter**, University of York
- **Pérez Covarrubias Juan Carlos** – Biomedical engineering, Autonomous University of Querétaro
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