Human-AI Teaming Workshop
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Panelist Biography's
July 28-29, 2021

Dr. Gary Bradski, PhD is a leading entrepreneur and researcher in computer vision and machine learning. He founded and is still President of the most popular computer vision library in the world: OpenCV http://opencv.org/. He organized the computer vision team for Stanley, the autonomous car that won the $2M DARPA Grand Challenge (now in the Smithsonian Air and Space Museum) which in turn kicked off the autonomous driving industry. Gary served as a visiting Professor at Stanford University Computer Science department for seven years. He helped develop one of the first Video Search startups, VideoSurf, that sold to Microsoft in 2011. He founded Industrial Perception Inc. which sold to Google in 2013 and he created the Silicon Valley office of Magic Leap. He co-founded Arraiy which sold to Matterport in 2019. He serves on the boards and advisory boards of over a dozen startups and is currently

- Co-Founder of OpenCV.ai, an AI contracting and product development company and
- Co-Founder/Chief Scientist of Farm-ng, a robotics acceleration company.

Dr. Joanna J Bryson is an academic recognized for broad expertise on intelligence, its nature, and its consequences. Holding two degrees each in psychology and AI (BA Chicago, MSc & MPhil Edinburgh, PhD MIT), she is since 2020 the Professor of Ethics and Technology at Hertie School of Governance in Berlin. Bryson advises governments, corporations, and other agencies globally, particularly on AI policy. Her work has appeared in venues ranging from reddit to the journal *Science*. From 2002-2019 she was Computer Science faculty at the University of Bath; she has also been affiliated with Harvard Psychology, Oxford Anthropology, The Mannheim Centre for Social Science Research, The Konrad Lorenz Institute for Evolution and Cognition Research, and the Princeton Center for Information Technology Policy. Bryson first observed the confusion generated by anthropomorphised AI during her PhD, leading to her first AI ethics publication "Just Another Artifact" in 1998. She is now a leader in AI ethics, having since coauthored the first national-level AI ethics policy, the UK's (2011) Principles of Robotics, and contributed to efforts by the OECD, EU, UN, OSCE, Red Cross and Google among others. She also continues to research the systems engineering of AI and the cognitive science of intelligence. Her present research focuses are the impacts of technology on human societies, and new models of governance for AI and digital technology. She is a founding member of Hertie School's Centre for Digital Governance, and one of Germany's nine nominated experts to the Global Partnership for AI.

Dr. Jessie Chen is a Senior Research Scientist (ST) for Soldier Performance in Socio-Technical Systems with U.S. Army Research Laboratory, located in Aberdeen Proving Ground, MD. Her research interests include human-autonomy teaming, agent transparency, human-robot interaction, and human supervisory control. Dr. Chen is a co-chair of the International Conference on Virtual, Augmented, and Mixed Reality (under the International Conference on Human-Computer Interaction), and she serves as an associate editor for *IEEE Transactions on Human-Machine Systems* and *IEEE Robotics & Automation – Letters*. She guest-edited a special issue on "Agent and System Transparency" for *IEEE Transactions on Human-Machine Systems* (2020) and a special issue on "Human-Autonomy Teaming" for *Theoretical Issues in Ergonomics Science* (2018).

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Dr. Mark Draper is a Principal Engineering Research Psychologist for the Air Force Research Laboratory's 711th Human Performance Wing. He also serves as AFRL's Core Technical Competency Lead for Adaptive Warfighter Interface research. Dr Draper's activities include chairing an eight-nation NATO research team focused on human-autonomy interaction, recently leading a 5-Nation Autonomy Strategic Challenge program, and serving as an Associate Editor of the Human Factors Journal. His research interests include operator interfaces for unmanned aerial systems, human-automation interaction, multi-modal interfaces, and advanced interface technology design & evaluation. In 2011 Dr Draper was selected as an AFRL Fellow and in 2012 he received the Harold Brown Award, the highest award given by the US Air Force to a scientist or engineer. Mark received his MSE and Ph.D. in Engineering from the University of Washington in 1998 where he studied virtual environment design effects on vestibular adaptation.

Dr. Jamie C. Gorman Ph.D. is an Associate Professor of Engineering Psychology at Georgia Tech. His research on human performance in complex sociotechnical settings focuses on understanding and modeling teamwork and human-AI coordination using dynamical systems theory, computational modeling, and real-time methods. Dr. Gorman's research incorporates communication analysis, perceptual-motor coordination, neurophysiology, and dynamical systems modeling for understanding coordination and complexity in human and human-technology teams. His research has been sponsored by AFOSR, AFRL, ARL, DARPA, ONR, and NSF. Dr. Gorman is a member of the Human Factors and Ergonomics Society and the NSF Institute for Student-AI Teaming. He serves on the editorial boards of Human Factors and the Journal of Experimental Psychology: Applied. In 2011, he and his coauthors received the Jerome H. Ely award for the best paper published in Human Factors.

Dr. Peter A. Hancock, D.Sc., Ph.D. is Provost Distinguished Research Professor in the Department of Psychology and the Institute for Simulation and Training, as well as at the Department of Civil and Environmental Engineering and the Department of Industrial Engineering and Management Systems at the University of Central Florida (UCF). In 2009 he was created the 16th ever UCF University Pegasus Professor (the Institution's highest honor) and in 2012 was named 6th ever University Trustee Chair. He directs the MIT^2 Research Laboratories. Prior to his current position he founded and was the Director of the Human Factors Research Laboratory (HFRL) at the University of Minnesota where he held appointments as Professor in the Departments of Computer Science and Electrical Engineering, Mechanical Engineering, Psychology, and Kinesiology, as well as being a member of the Cognitive Science Center and the Center on Aging Research. He continues to hold an appointment as a Clinical Adjunct Professor in the Department of Psychology at Minnesota. He is also an affiliated Scientist of the Humans and Automation Laboratory at Duke University, a Research Associate of the University of Michigan Transport Research Institute, and a Senior Research Associate at the Institute for Human and Machine Cognition in Pensacola, Florida. He is also a member of the Scientific Advisory Board of the Hawaii Academy.

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Dr. Matthew Johnson is a research scientist in the area of human-machine teaming for technologies such as robotics, software agents, and autonomous vehicles, in a variety of domains including disaster response, space applications, aviation, and military operations. Matt came to the Florida Institute for Human & Machine Cognition (IHMC) out of the military where he served as a Naval Aviator, flying both fixed wing aircraft and helicopters. Matt has been a researcher for over 19 years with IHMC. He has worked on numerous projects including the Oz flight display for reducing the cognitive workload in the cockpit, DARPA Augmented Cognition for improving human performance, and several human-robot coordination projects for both NASA and the Department of Defense. He played a leadership role in IHMC's 2nd place finish at the international robotics competition known as the DARPA Robotics Challenge. He has worked with Nissan on fleet management of autonomous vehicles and AeroVironment on the management of multiple unmanned aircraft. Matt was also part of the DARPA ALIAS project focused on developing a robotic copilot. He is currently working on DARPA ASIST which is studying how AI can facilitate teamwork within a human team and DARPA CREATE which is investigating context reasoning for autonomous teaming. He also continues to work with both the local police department and SWAT unit on their drone program. Matthew's research interest focuses on improving performance in human-machine systems through design of more effective human-machine teamwork.

Dr. Joseph B. Lyons is a Principal Research Psychologist within the 711 Human Performance Wing at Wright-Patterson AFB, OH. Dr. Lyons received his PhD in Industrial/Organizational Psychology from Wright State University in Dayton, OH, in 2005. Some of Dr. Lyons' research interests include human-machine trust, interpersonal trust, human factors, and influence. Dr. Lyons has worked for the Air Force Research Laboratory as a civilian researcher since 2005, and between 2011-2013 he served as the Program Officer at the Air Force Office of Scientific Research where he created a basic research portfolio to study both interpersonal and human-machine trust as well as social influence. Dr. Lyons has published in a variety of peer-reviewed journals, and is an Associate Editor for the journal Military Psychology. Dr. Lyons is a Fellow of the American Psychological Association and the Society for Military Psychologists. Dr. Lyons can be contacted at: joseph.lyons.6@us.af.mil.

Dr. Tim Miller is a Professor of computer science in in the School of Computing and Information Systems at The University of Melbourne, and Co-Director for the Centre of AI and Digital Ethics.His primary area of expertise is in artificial intelligence, with particular emphasis on:

- AI assisted decision making
- Human-AI interaction and collaboration
- Explainable Artificial Intelligence (XAI)

His work lies at the intersection of artificial intelligence, interaction design, and cognitive science/psychology.

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Dr. Shane Mueller as an associate professor in the department of Cognitive and Learning Sciences at Michigan Technological University. He studies applied human performance and cognition via both empirical research and the development of computational and mathematical approaches, with a focus on measurement of human and Artificial Intelligence performance and behavior. His research has been funded by a number of agencies, including DARPA, in which he was supported by the BICA program to develop the BICA Cognitive Decathlon (a comprehensive plan for testing biologically-inspired artificial intelligence across a broad spectrum of skill categories) and the XAI program to develop measurement approaches and psychological theories of explanation. His research as also been funded by IARPA, DTRA, AFRL, the Ford Foundation, ICANN, and others. He is also the developer of the PEBL Test Battery (http://pebl.sf.net), a software testing platform for measuring human cognitive skill across a wide range of neuropsychological tests.

Dr. Robin R. Murphy is the Raytheon Professor of Computer Science and Engineering at Texas A&M University, a founding director of the Center for Robot-Assisted Search and Rescue, and an ACM and IEEE fellow. She helped found the fields of disaster robotics and human-robot interaction, concentrating on developing human-centered AI for ground, air, and marine robots. Her work is captured in over 150 scientific publications including the award-winning book *Disaster Robotics* (2014) and a TED talk as well as a textbook *Introduction to AI Robotics* (second edition 2019) and *Robotics Through Science Fiction* (2018). Murphy has deployed robots to over 30 disasters in five countries including the 9/11 World Trade Center, Hurricane Katrina and Harvey, Fukushima, the Syrian boat refugee crisis, the Kilauea volcanic eruption, and the Surfside condominium collapse. Murphy's contributions have been recognized with the ACM Eugene L. Lawler Award for Humanitarian Contributions, a US Air Force Exemplary Civilian Service Award, the AUVSI Foundation's Al Aube Award, and the Motohiro Kisoi Award for Rescue Engineering Education. She is also the editor for the science fiction/science fact focus series for the journal *Science Robotics*. In addition to her research, she is active in government and professional service, serving on the Defense Science Board, the US Air Force Scientific Advisory Board, the advisory committee for both the Engineering and Computer Information Science and Engineering directorates of the National Science Foundation, and the administrative committee of the IEEE Robotics and Automation Society (RAS).

Dr. Tom O'Neil is a professor and global research leader in the areas of high-performance teamwork, virtual team and leader effectiveness, flexible remote work, human-autonomy teaming, conflict and conflict management, personality, and assessment. His research funding exceeds $7M and he currently leads a lab team of 15, which includes doctoral, post-doctoral, and masters candidates, as well as undergraduate students and staff members. Tom has published over 70 peer-reviewed journal articles in outlets such as Human Factors, Computers in Human Behavior, Journal of Applied Psychology, Journal of Management, Academy of Management Learning and Education, Organizational Research Methods, and Human Resource Management Review, and he has worked extensively to translate the science of flexible remote work into practice through consultations, workshops, public lectures, training, and other resources.

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Dr. Brian Sandberg joined DARPA's Information Innovation Office (I2O) as scientific, engineering and technical advisor in 2013. He has 30+ years of experience in software engineering, research and development, and technology leadership. His research interests include geospatial science, machine learning, data science, and anonymity technologies. Prior to his current position at DARPA, Mr. Sandberg founded Conarch LLC, where he led research and development projects for multiple government and intelligence agencies including Naval Research Laboratory, Office of Naval Research, Department of Homeland Security, and National Reconnaissance Office. He previously spent six years at DARPA and held executive leadership positions at Veridian Technologies and SET Corporation. Brian has an undergraduate degree in Mathematics from Kent State University and graduate degrees in Applied Science from Harvard University and Geoinformatics from George Mason University. He is certified by the US Geospatial Intelligence Foundation and has served nine years with the United States Air Force.

Dr. Jay Shively is Senior Scientist in the Human Autonomy Teaming Laboratory at NASA-Ames Research Center. Jay worked for the Army's Aeroflightdynamics Directorate for 25 years leading the Human Systems Integration Group in such diverse areas as cognitive modeling, night vision systems, brown-out symbology, UAS ground control stations, and control of multiple vehicles. He joined NASA in 2013 to lead the human systems effort in the UAS in the NAS project and eventually led the detect and avoid sub-project. His current work includes applying HAT principles multi-vehicle control (m:N), hazard perception and avoidance (HPA) for AAM and high density vertiplex.

Dr. Ben Shneiderman an Emeritus Distinguished University Professor in the Department of Computer Science, Founding Director (1983-2000) of the Human-Computer Interaction Laboratory (http://hcil.umd.edu), and a Member of the UM Institute for Advanced Computer Studies (UMIACS) at the University of Maryland. He is a Fellow of the AAAS, ACM, IEEE, National Academy of Inventors, and the Visualization Academy and a Member of the U.S. National Academy of Engineering. He has received six honorary doctorates in recognition of his pioneering contributions to human-computer interaction and information visualization. His widely-used contributions include the clickable highlighted web-links, high-precision touchscreen keyboards for mobile devices, and tagging for photos. Shneiderman's information visualization innovations include dynamic query sliders for Spotfire, development of treemaps for viewing hierarchical data, novel network visualizations for NodeXL, and event sequence analysis for electronic health records.

Ben is the lead author of *Designing the User Interface: Strategies for Effective Human-Computer Interaction* (6th ed., 2016). He co-authored *Readings in Information Visualization: Using Vision to Think* (1999) and *Analyzing Social Media Networks with NodeXL* (2nd edition, 2019). His book *Leonardo's Laptop* (MIT Press) won the IEEE book award for Distinguished Literary Contribution. *The New ABCs of Research: Achieving Breakthrough Collaborations* (Oxford, 2016) describes how research can produce higher impacts. His forthcoming book on *Human-Centered AI*, will be published by Oxford University Press in January 2022.

Human-AI Teaming Workshop
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Dr. Matt Turek joined DARPA's Information Innovation Office (I2O) as a program manager in July 2018, and was named Acting Deputy Director of I2O in June 2021. His research interests include computer vision, machine learning, artificial intelligence, and their application to problems with significant societal impact.

Prior to his position at DARPA, Turek was at Kitware, Inc., where he led a team developing computer vision technologies. His research focused on multiple areas, including large scale behavior recognition and modeling; object detection and tracking; activity recognition; normalcy modeling and anomaly detection; and image indexing and retrieval. Turek has made significant contributions to multiple DARPA and Air Force Research Lab (AFRL) efforts and has transitioned large scale systems for operational use. Before joining Kitware, Turek worked for GE Global Research, conducting research in medical imaging and industrial inspection.

Turek holds a Doctor of Philosophy in computer science from Rensselaer Polytechnic Institute, a Master of Science in electrical engineering from Marquette University, and a Bachelor of Science in electrical engineering from Clarkson University. His doctoral work focused on combinatorial optimization techniques for computer vision problems. Turek is a co-inventor on several patents and co-author of multiple publications, primarily in computer vision.

Dr. Chris Wickens served in the U.S. Navy as a damage control assistant on the USS Vulcan and then as a personnel response team leader in Vietnam. He received his PhD from the University of Michigan. From 1974 through 2005, he was a Professor of Psychology, Mechanical Engineering and Aviation at the University of Illinois where he directed the Aviation Research Laboratory and then the joint (between the 3 Departments) Human Factors Program. He has also served three Academic Years in the Department of Behavioral Science at the US Air Force Academy. Since retirement in 2005, he has been a Principle Scientist with the Alion Human Factors Group, and, since 2015, an Adjunct Professor of Psychology at Colorado State University, where he has worked on contracted research from the Office of Naval Research and the Marine Corps. He has authored/co-authored two textbooks, one in Engineering Psychology (In the 5th edition) and a second in Human Factors (3rd Edition). He has served on, and headed the FAA's REDAC committee on Human Factors. Dr. Wickens received the Arnold Small President's Award from the Human Factors and Ergonomics Society in 2009 and was awarded, with his co-authors, the Jerome Ely award for best article in Human Factors Journal four times. For his work on aviation displays, he was awarded the Airbus Flight safety award, and the FAA annual award for Excellent research in Aviation.

Dr. Greg Zacharias serves as Chief Scientist for the Director of Operational Test and Evaluation within the Office of the Secretary of Defense, providing scientific and technical guidance on the overall approach to assessing the operational effectiveness, suitability, and survivability of major DOD weapon systems. He recently completed a Science and Technology Strategic Plan for guiding the future evolution of the Office. Earlier, he served as US Air Force Chief Scientist, creating a roadmap for the Air Force's development and use of artificial intelligence, entitled *Autonomous Horizons: The Way Forward.* Dr Zacharias entered government service after retiring from Charles River Analytics, a company he co-founded and

helped grow from two to 200, serving a variety of government and commercial customers providing trusted product solutions that integrate computational intelligence with human-systems engineering.