Meeting of Global Current and Emerging Brain Initiatives Agenda

Tuesday, October 9, 9:30-18:30, Room: 2F Fountain

9:30-10:00   Opening Ceremony, Introductions, IEEE President

10:00-12:30   Status of Global Brain Projects, International Brain Initiative, IEEE Brain Initiative, current research and future applications to benefit humanity.

12:30-13:30   Working Lunch:
Future Research and funding opportunities among brain initiatives and funding agencies.
Future Collaborations and Cooperation:
a. Brain Initiatives, industry, and other stakeholders (joint proposals);
b. Funding agencies (open process for joint partnerships between funding agencies with other countries);
c. Ability of performers/researchers to support multiple global initiatives.

13:30-14:30   Neuroethics, sharing brain data, open data repositories, attracting engineers, scientists, programmers, mathematicians, quantitative analysts, and others to the multi-disciplinary field of neuroscience.

14:30-15:30   Topics that brain researchers should undertake, translational neuroscience, neural engineering, encouraging future development of neurotechnologies to benefit those in need.

15:30-16:00	Coffee Break and Posters
16:00-17:00	Role of IEEE in brain community, development of standards, formation of International Brain Initiative, other important issues.
17:00-18:00	Open discussion, future plans, establishment of working groups to address issues discussed at this meeting and making future recommendations.
18:00-18:30	Networking, posters
19:00	Banquet

Michael Smith, Ph.D., is the **Chair of the 2018 IEEE SMC Meeting of Global Current and Emerging Brain Initiatives**.

He has also served as the Chair or Co-Chair of eight IEEE SMC BMI Workshops, including this year's workshop. He currently is the Chairman of the Board of Furaxa, Inc, a biotech company, and a Visiting Scholar at the University of California, Berkeley. He also serves on the Advisory Board of UC Berkeley's Center for Neural Engineering & Prostheses, is a Senior Advisor of the IEEE Brain Initiative, and is also the Chair of IEEE SMC's Technical Committee on Brain-Machine Interface Systems. He previously served as President of the Intelligent Robotics Corporation, President of the IEEE Systems, Man, and Cybernetics (SMC) Society, and President of the North American Fuzzy Information Processing Society. He is also the recipient of the IEEE SMC Joseph G. Wohl Outstanding Career Award. His research interests include the development of low-cost, real-world Brain-Computer Interface Systems, AI, and robotics. Dr. Smith received four degrees from UC Berkeley, including a M.S., MBA, and Ph.D.

James, A. Jefferies, IEEE President & CEO. Jim Jefferies retired from AT&T and Lucent Technologies following 33 years in engineering and executive positions including fiber optic cable development and manufacturing, quality assurance, and supply chain management. He managed the engineering teams that delivered the first commercial fiber optic cables for AT&T. He served as logistics vice president, responsible for worldwide supply chain and export planning. He has led teams in major technology transfers, transitions of information technology, and organizational change. He has also worked in the entrepreneurial sector as Chief Operating Officer for USBuild.com in San Francisco, CA, USA.

Jim served two separate terms on the IEEE Board of Directors, as well as the 2015 IEEE-USA President. As President of IEEE-USA, Jim supported the expanded focus on public visibility, young professionals, and humanitarian outreach. He received his BS in Electrical Engineering from the University of Nebraska and an MS in Engineering Science from Clarkson University. He attended the Stanford University Graduate School of Business as a Sloan Fellow and earned an MS in Management. Jim is a member of the IEEE Eta Kappa Nu honorary society and a licensed professional engineer (Emeritus).

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Nick B. Langhals, Ph.D. serves as Program Director for Neural Engineering within the Repair and Plasticity Cluster at the **National Institute of Neurological Disorders and Stroke (NIH/NINDS)**. Nick Langhals is a team lead in both the **Brain Research through Advancing Innovative Neurotechnologies® (BRAIN) Initiative** as well as the Stimulating Peripheral Activity to Relieve Conditions (SPARC) program. He currently manages a grant portfolio in the areas of neurotechnology development, validation, and translation for applications in neuroscience, neurophysiology, neuromodulation, and other interfaces with the nervous system. Prior to arriving at the NIH in 2015, Dr. Langhals served as a Research Assistant Professor in Plastic Surgery and Biomedical Engineering at the University of Michigan. Dr. Langhals served as Co-Director of the Neuromuscular Laboratory, which has developed a regenerative peripheral nerve interface (RPNI) to extract prosthetic control signals and restore lost sensation to amputees for the control of replacement upper and lower extremity prostheses.

Uri Hasson serves as Program Director for the Cognitive Neuroscience program at the US **National Science Foundation**. He is a member of NSF's "**Understanding the Brain**" coordinating group and is involved in NSF's **Integrative Strategies for Understanding Neural and Cognitive Systems (NCS) program**. Dr. Hasson obtained his Ph.D. in Cognitive Psychology from Princeton University (2004), and then completed post-doctoral training at the University of Chicago where, as part of his work, he developed methods for utilizing grid-computing resources for analysis of neuroimaging data. He holds joint appointments at the University of Trento (Italy) and the University of Chicago (USA) and his scientific work addresses the computations that support language comprehension and the coding of uncertainty.

Mitsuo Kawato received a B.S. degree in physics from Tokyo University in 1976 and M.E. and Ph.D. degrees in biophysical engineering from Osaka University in 1981. From 1981 to 1988, he was a faculty member and lecturer at Osaka University. From 1988, he was a senior researcher and then a supervisor in ATR. Since 2003, he has been Director of ATR Computational Neuroscience Laboratories. Since 2004, he has been an ATR Fellow. In 2010, he became **Director of ATR Brain Information Communication Research Laboratories**. In 2018, he was jointly appointed as a Special Advisor, RIKEN Center for Advanced Intelligence Project (AIP). For the last fifteen years he has been working in computational neuroscience and neural network modeling. He published about 250 papers, reviews and books. Research topics include decoded neurofeedback as an experimental tool to manipulate spatiotemporal brain activity patterns, rs-fcMRI based biomarkers of mental disorder, advanced fMRI neurofeedback therapy, simulation study of dendritic spines, feedback-error-learning model and its applications to industrial robot manipulators, movement trajectory formation, bi-directional theory for interactions between cortical areas, cerebellar internal models, and teaching by demonstration for robots.

Andrzej Cichocki received the M.Sc. (with honors), Ph.D. and Dr.Sc. (Habilitation) degrees, all in electrical engineering from Warsaw University of Technology (Poland). He spent several years at University Erlangen (Germany) as an Alexander-von-Humboldt Research Fellow and Guest Professor. In 1995-2018, he was a Senior Team Leader and Head of the laboratory for Advanced Brain Signal Processing, at RIKEN Brain Science Institute (Japan) and now he is a Professor in the **Skolkovo Institute of Science and Technology - SKOLTECH (Russia)** and adjunct/visiting professor in Tokyo University of Agriculture and Technology (TUAT) in Japan, Hangzhou Dianzi University (HDU) in China, Nicolaus Copernicus University, in Poland, and Institute of Systems Research Institute of Polish Academy of Science. He is author of more than 500 peer-review papers and 5 monographs in English (two of them translated to Chinese). He serves or served as Associated Editor of, IEEE Trans. on Signals Processing, IEEE Trans. on Neural Networks and Learning Systems, IEEE Trans. on Cybernetics, Journal of Neuroscience Methods and he was as founding Editor in Chief for Journal Computational Intelligence and Neuroscience. Currently, his research focus on deep learning, tensor decompositions, tensor networks for big data analytics, multiway blind source separation, and Brain Computer Interface. His publications currently report over 36,000 citations according to Google Scholar, with an h-index of 82. Dr Cichocki is currently among 3 the most cited Polish computer scientists and he is Fellow of the IEEE since 2013.

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Bo Xu has been working on speech and language research for more than 20 years. Now he is the President of the Institute of Automation, Chinese Academy of Sciences (CAS) and Associate Director, **Center for Excellence in Brain Science and Intelligence Technology, CAS**. His currently interests include auditory modeling, spoken dialogue understanding and translation based on brain-inspired cognition model.
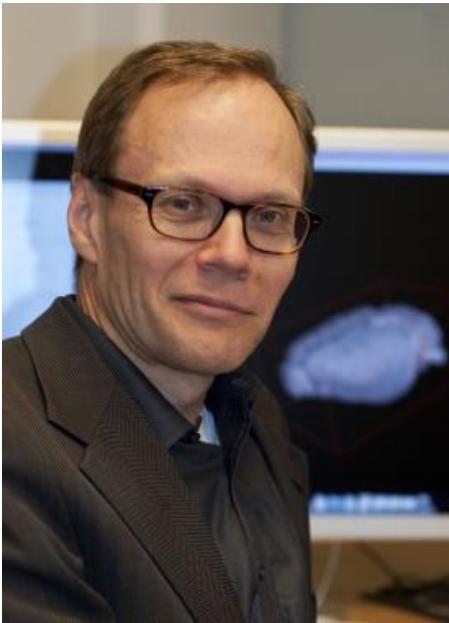
Jan Bjaalie, M.D., Ph.D. is professor at the **Institute of Basic Medical Sciences, University of Oslo**, and leader of the Neuroinformatics Platform of the **EU Human Brain Project**. He was founding Executive Director of the **International Neuroinformatics Coordinating Facility (INCF)** and is currently head of the INCF Norwegian Node and member of the INCF Council for Training, Science, and Infrastructure. His research group has studied wiring patterns in the brain and developed data systems for organizing and managing heterogeneous neuroscience research data by use of a new generation of digital brain atlases. The group develops software and workflows for analysis of data integrated in the atlases ("Google maps of the brain"). Jan Bjaalie is Chief Editor of Frontiers in Neuroinformatics and Section editor of Brain Structure and Function.

Wlodzislaw Duch heads the Neurocognitive Laboratory in the Center of Modern Interdisciplinary Technologies at Nicolaus Copernicus University (NCU), Torun, Poland. His Lab is using neuroimaging techniques, behavioral experiments and computational modelling working with infants, children and adults, and is currently hosting Polish node of the International Neuroinformatics Coordination Facility (INCF), working on integration of various activities in the country to form **Polish Brain Initiative**. His MSc (1977) was in theoretical physics, Ph.D. in quantum chemistry (1980), postdoc at the USC, Los Angeles (1980-82), D.Sc. in applied math (1987). He has worked as the Nanyang Visiting Professor (2010-12) and Visiting Professor (2003-07) in the School of Computer Engineering, Nanyang Technological University, Singapore; University of Florida; Max-Planck-Institute, Munich, Germany, Kyushu Institute of Technology, Meiji and Rikkyo University in Japan, and several other institutions. He is/was on the editorial board of IEEE TNN, CPC, NIP-LR, Journal of Mind and Behavior, and 14 other journals; was co-founder & scientific editor of the "Polish Cognitive Science" society and journal; served two terms as the President of the European Neural Networks Society executive committee (2006-2008-2011), a member of IEEE CIS Technical committee; Fellow of the International Neural Network Society. Expert of the EU science programs, member of the high-level expert group of European Institute of Innovation & Technology Health (EIT) program. He has served as the **deputy minister for science and higher education in Poland** (2014-15), as the Vice-President for Research and ICT Infrastructure at NCU University (2012-14).

Jeong-woo Sohn is a member of the Working Group, **Korea Brain Initiative**. He is a professor at the department of medical science at the University of Catholic Kwandong University in the Republic of Korea. He also serves as a vice president of the National Association of Cognitive Science Industry in Korea. He obtained his bachelor's degree in nuclear engineering, and a master's degree in cognitive science from the Seoul Nation University in Korea. He also received a Ph.D. degree in Brain and Cognitive Sciences from the University of Rochester, USA. After this, he was a post-doctoral researcher at the University of Pittsburgh, USA. He then returned to Korea and became a principal researcher at the Medical Device Development Center of the Daegu-Gyeonbuk Medical Innovation Foundation. He led a research group who did medical imaging investigations during this time. As a recognition of his contributions to the medical device industry, he was awarded the Medical Device Achievement Award by the Ministry of Food and Drug Safety of Korea. His research interests are brain and machine interface, motor learning, and statistical analysis on neural data.

Sharath Sriram is engaged extensively in science policy and advocacy, with current roles on the Executive of the **Australian Brain Alliance** and the Policy Committee of peak body Science and Technology Australia. He jointly leads the Functional Materials and Microsystems Research Group at RMIT University. He is also the Founding Deputy Director and Scientific Coordinator of RMIT University's $30 million Micro Nano Research Facility. He specializes in the use of oxide thin films and nanofabrication for nanoelectronics and electromagnetic devices. He was a recipient of an ARC Post-Doctoral Fellowship (2011-2014) and examples of his recognition includes the 2012 NMI Prize for Measurement Excellence from the National Measurement Institute, Australia; a 2012 Victoria Fellowship; the 2016 Australian Museum 3M Eureka Prize for Emerging Leader in Science; and being named among Australia's Most Innovative Engineers 2016 by Engineers Australia.

Tiago H. Falk is an Associate Professor at the Institut national de la recherche scientifique **(INRS, University of Quebec)** in Montreal, **Canada** where he directs the Multimodal Signal Analysis and Enhancement (MuSAE) Laboratory. His research interests lie at the crossroads of telecommunications and biomedical engineering with particular focus on the development of affective brain/body-machine interfaces and anthropomorphic, human-inspired multimedia technologies, as well as on new signal processing and machine learning paradigms for improved brain health diagnostics. He is Editor of the recently-released book Signal Processing and Machine Learning for Biomedical Big Data, published by CRC Press in July 2018. Prof. Falk is a Senior Member of the IEEE, a member of the Sigma Xi Research Society, and an elected member of the Global Young Academy (GYA), the IEEE SPS Audio Processing Technical Committee (2017-2020), Academic Chair of the Canadian Biomedical and Biological Engineering Society and Co-Chair of the IEEE SMC BMI Technical Committee. He is also Area Editor for the IEEE Signal Processing Magazine, an Associate Editor for the International Journal of Healthcare Engineering, and a Guest Editor for Frontiers in Neurology on the Research Topic Neurotrauma: from emergency room to back to day-to-day life. He is **co-chair of the 2018 IEEE SMC Brain-Machine Interface Systems Workshop**, as well as the 2017 and 2018 IEEE SMC BMI Hackathon.

Yingxu Wang, Hotchkiss Brain Institute, University of Calgary, **Canada**, is professor of cognitive systems, brain science, software science, and denotational mathematics. He is the Founding President of International Institute of Cognitive Informatics and Cognitive Computing (ICIC, http://www.ucalgary.ca/icic/). He is Fellows of BCS, ICIC and WIF, P.Eng of Canada, and Senior Members of IEEE and ACM. He has held visiting professor positions at Oxford University (1995), Stanford University (2008 | 2016), UC Berkeley (2008), and MIT (2012), respectively. He received a PhD in Computer Science from the Nottingham Trent University, UK, in 1998 and has been a full professor since 1994. He is the founder and steering committee chair of the annual IEEE International Conference on Cognitive Informatics and Cognitive Computing (ICCI*CC) since 2002. He is founding Editor-in-Chiefs of Int'l Journal of Cognitive Informatics & Natural Intelligence, Int'l Journal of Software Science & Computational Intelligence, and Journal of Mathematical & Computational Methods. He is Associate Editor of IEEE Trans. on Cognitive and Development Systems (TCDS) and the Computer Society Representative to the steering committee of TCDS. Dr. Wang is the initiator of a few cutting-edge research fields such as cognitive informatics, denotational mathematics, abstract intelligence (aI), mathematical models of the brain, the spike frequency modulation (SFM) theory, cognitive computing systems, cognitive learning engines, and the cognitive knowledge base theory. He has published 490+ peer reviewed papers and 36 books in aforementioned transdisciplinary fields. He has presented 42 invited keynote speeches in international conferences. He has served as general chairs or program chairs for more than 26 international conferences. He has led 10+ international, European, and Canadian research projects as PI by intensive collaborations with renowned peers and leading industrial partners. He is the recipient of dozens international awards in the past three decades.

Cliff Abraham is Professor of Psychology and co-Director of a national research centre on the aging brain, **Brain Research New Zealand**. He received a PhD in Neuroscience from the University of Florida and spent 5 years of postdoctoral research at the University of Otago and the University of Gothenburg, Sweden. He returned to Psychology at Otago to take up a Lectureship at Otago, where he has remained since. He is a Fellow of the Royal Society of New Zealand, and in 2009 was awarded the University of Otago's Distinguished Research Medal. Professor Abraham's research is focused on the neural mechanisms of learning and memory, particularly with respect to the mechanisms of synaptic plasticity and metaplasticity, as well as the mechanisms and therapeutic potential of secreted amyloid precursor protein.

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Peter Thorn is Co-Director of Brain Research New Zealand–Rangahau Roro Aotearoa, and has a joint professorial appointment in the Section of Audiology and Department of Physiology at the University of Auckland. He is Director of the Eisdell Moore Centre, a centre for research in hearing and balance disorders. He is on the Directorate of **Brain Research New Zealand**, a national Centre of Research Excellence. He completed his PhD at the University of Auckland and post-doctoral studies at the University of Auckland and at the Kresge Hearing Research Institute, University of Michigan. His research is in the area of sensory neurobiology particularly inner ear homeostasis and the influence of noise exposure and aging on hearing. He is the Chairman of the National Foundation for the Deaf and is on the Board of the Deafness Research Foundation. In 2009, he was made a Companion of the New Zealand Order of Merit (CNZM) for services to audiology and auditory neuroscience.
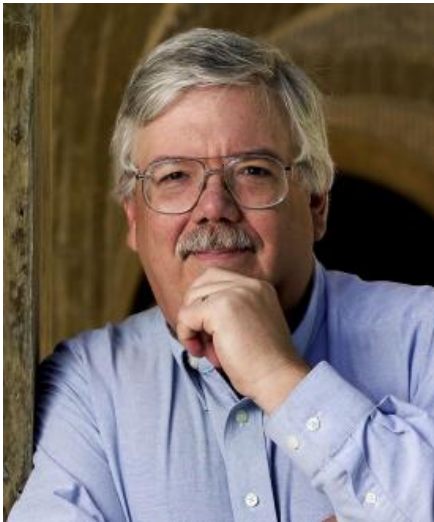
Henry T. (Hank) Greely is the Deane F. and Kate Edelman Johnson Professor of Law and Professor, by courtesy, of Genetics at Stanford University. He specializes in ethical, legal, and social issues arising from advances in the biosciences, particularly from genetics, neuroscience, and human stem cell research. He is President of the **International Neuroethics Society**; directs the Stanford Center for Law and the Biosciences and the Stanford Program on Neuroscience in Society; chairs the California Advisory Committee on Human Stem Cell Research; and serves on the Neuroscience Forum of the National Academy of Medicine; the Committee on Science, Technology, and Law of the National Academy of Sciences; and the NIH BRAIN Initiative's Multi-Council Working Group, whose Neuroethics Division he co-chairs. He was elected a fellow of the American Association for the Advancement of Science in 2007.

Randy Schekman is the Advisory Council Chair of the **Aligning Science Across Parkinson's Initiative**. He is also a Professor in the Department of Molecular and Cell Biology, University of California, Berkeley, and an Investigator of the Howard Hughes Medical Institute. He studied the enzymology of DNA replication as a graduate student with Arthur Kornberg at Stanford University. His current interest in cellular membranes developed during a postdoctoral period with S. J. Singer at the University of California, San Diego. At Berkeley, he developed a genetic and biochemical approach to the study of eukaryotic membrane traffic. Among his awards are the Gairdner International Award, the Albert Lasker Award in Basic Medical Research and the **Nobel Prize in Physiology or Medicine**, which he shared with James Rothman and Thomas Südhof. He is a member of the National Academy of Sciences, the Institute of Medicine, the American Academy of Arts and Sciences, the American Philosophical Society, a Foreign Associate of the Accademia Nazionale dei Lincei and a Foreign Associate of the Royal Society of London. In 1999, he was elected President of the American Society for Cell Biology. In 2002 he was appointed Editor-in-Chief of the Annual Reviews of Cell and Developmental Biology. From 2006 - 2011 he served as Editor-in-Chief of the Proceedings of the NAS. In 2011, he was appointed Editor-in-Chief of an Open Access journal, eLife, sponsored by the HHMI, Wellcome Trust and the Max Planck Society.

Dimitar Filev is a **Henry Ford Technical Fellow** at the Ford Research & Innovation Center, Dearborn, Michigan. He is conducting research in computational intelligence, AI and intelligent control, and their applications to autonomous driving, vehicle systems, and automotive engineering. Dr. Filev has published 4 books, over 250 journal articles and conference papers, and holds 104 US patents and numerous foreign patents. He was awarded six times with the highest Ford Motor Company Award – the Henry Ford Technology Award. He is the recipient of the 2008 Norbert Wiener Award of the IEEE SMC Society and the 2015 Pioneer's Award of the IEEE CIS Society. He received his PhD. degree in Electrical Engineering from the Czech Technical University in Prague in 1979. Dr. Filev is a Fellow of the IEEE and a member of the NAE. He was president of the IEEE Systems, Man, and Cybernetics Society (2016-2017).

Ljiljana Trajkovic serves as **IEEE Division X Delegate-Elect/Director-Elect (2018)** and **IEEE Division X Delegate/Director (2019–2020).** She also serves as Senior Past President (2018–2019) of the IEEE Systems, Man, and Cybernetics Society and previously served as its President (2014–2015). Dr. Trajkovic also served as the 2007 President of the IEEE Circuits and Systems Society.

She is **General Co-Chair of the IEEE SMC 2018 Workshop on BMI Systems** and was Technical Program Chair of the IEEE SMC 2017 and 2016 Workshops on BMI Systems. She served as an Associate Editor of the IEEE Transactions on Circuits and Systems and the IEEE Circuits and Systems Magazine. Dr. Trajkovic was a Distinguished Lecturer of the IEEE Circuits and Systems Society. She is a Professional Member of IEEE-HKN and a Fellow of the IEEE.

Dr. Trajkovic is currently a Professor in the School of Engineering Science at Simon Fraser University, Burnaby, British Columbia, Canada. From 1995 to 1997, she was a National Science Foundation (NSF) Visiting Professor in the Electrical Engineering and Computer Sciences Department, University of California, Berkeley. She was a Research Scientist at Bell Communications Research, Morristown, NJ, from 1990 to 1997, and a Member of the Technical Staff at AT&T Bell Laboratories, Murray Hill, NJ, from 1988 to 1990. Her research interests include high-performance communication networks, control of communication systems, computer-aided circuit analysis and design, and theory of nonlinear circuits and dynamical systems.

Edward Tunstel serves as 2018-2019 President of the **IEEE Systems, Man, and Cybernetics Society**. He is an Associate Director of Robotics in the Systems Department of UTRC. He joined UTRC in 2017 after 10 years at Johns Hopkins Applied Physics Laboratory where he served as a senior roboticist in its research department and Intelligent Systems Center, and as space robotics & autonomous control lead in its space department. Prior to APL he was with NASA JPL for 18 years, where he was a senior robotics engineer and group leader of its Advanced Robotic Controls Group.

Dr. Tunstel maintains expertise in robotics and intelligent systems with current research interests in mobile robot navigation, autonomous control, cooperative robotics, robotic systems engineering and soft computing applications to autonomous systems. He has authored over 150 technical publications and co-edited four books in these areas. He worked on the NASA Mars Exploration Rovers mission as both a flight systems engineer responsible for autonomous rover navigation and associated V&V, and as rover engineering team lead for the mobility and robotic arm subsystems. He was involved in the daily performance assessment, planning, and operations of the Spirit and Opportunity rovers during their first four years on Mars. At APL he was recently engaged in modular open systems development efforts supporting the advanced EOD robotic systems programs, as well as robotics and autonomy research for future national security and space applications. He is now additionally engaged in human-collaborative robotics enabling operations within businesses spanning the aerospace and building industries, including manufacturing.

Paul Sajda is a Professor of Biomedical Engineering, Electrical Engineering and Radiology (Physics) at Columbia University. He is also a Member of Columbia's Data Science Institute. He received a BS in electrical engineering from MIT in 1989 and an MSE and PhD in bioengineering from the University of Pennsylvania, in 1992 and 1994, respectively. Professor Sajda is interested in what happens in our brains when we make a rapid decision and, conversely, what processes and representations in our brains drive our underlying preferences and choices, particularly when we are under time pressure. His work in understanding the basic principles of rapid decision-making in the human brain relies on measuring human subject behavior simultaneously with cognitive and physiological state. Important in his approach is his use of machine learning and data analytics to fuse these measurements for predicting behavior and infer brain responses to stimuli. Professor Sajda applies the basic principles he uncovers to construct real-time brain-computer interfaces that are aimed at improving interactions between humans and machines. He is also applying his methodology to understand how deficits in rapid decision-making may underlie and be diagnostic of many types of psychiatric diseases and mental illnesses. Professor Sajda is a co-founder of several neurotechnology companies and works closely with a range of scientists and engineers, including neuroscientists, psychologists, computer scientists, and clinicians. He is a fellow of the IEEE, AMBIE and AAAS and Chair of the IEEE Brain Initiative.

Konstantinos Karachalios is managing director of the **IEEE Standards Association** and a member of the IEEE Management Council. As managing director, he has been enhancing IEEE efforts in global standards development in strategic emerging technology fields, through technical excellence of staff, expansion of global presence and activities and emphasis on inclusiveness and good governance, including reform of the IEEE standards-related patent policy.

As member of the IEEE Management Council, he championed expansion of IEEE influence in key techno-political areas, including consideration of social and ethical implications of technology, according to the IEEE mission to advance technology for humanity. Results have been rapid in coming and profound; IEEE is becoming the place to go for debating and building consensus on issues such as a trustworthy and inclusive Internet and ethics in design of autonomous systems.

Before IEEE, Konstantinos played a crucial role in successful French-German cooperation in coordinated research and scenario simulation for large-scale nuclear reactor accidents. And with the European Patent Office, his experience included establishing EPO's patent academy, the department for delivering technical assistance for developing countries and the public policy department, serving as an envoy to multiple U.N. organizations. Konstantinos earned a Ph.D. in energy engineering (nuclear reactor safety) and masters in mechanical engineering from the University of Stuttgart.

Ricardo Chavarriaga is the coordinator of the IEEE industry activities group on Neurotechnologies. He is a senior researcher at the Center for Neuroprosthetics of the École Polytechnique Fédérale de Lausanne (EPFL), Switzerland. He holds a B.Sc. degree in Electronics Engineering from the Pontificia Universidad Javeriana in Cali, Colombia and a PhD in computational neuroscience from EPFL. He co-chairs the **IEEE SMC Technical Committee on BMI Systems**, and is part of the steering committee of the **IEEE Brain Initiative**.

His research focuses on robust brain-machine interfaces and multimodal human-machine interaction. Specifically, the decoding of cortical potentials that convey information about the user's cognitive processes. Furthermore, He investigates on how the exploitation of such processes can be integrated with shared control principles and hybrid approaches for BMI control of complex devices.