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| **Keynote Talk 1: AI and Psychology**  **Michihiko Minoh**  *Executive Director*  RIKEN | http://cennser.org/ICIEV/minoh.jpg |
| **Abstract:**  Recent development of AI technology may make it possible to construct a robot which behaves as if it has mind from the view point of humans.  This research will be interested in both basic science in which we consider what is mind and how the mind works and AI technology in which we will develop robot easier to be used.  From this view point, RIKEN started a new project called temporarily “Psychology based AI Robotics”.  In this talk, I will give you a rough sketch of how phycology will be used in AI and Robotics. | |
| **Short Biography:**  Michihiko Minoh is appointed as Executive Director, RIKEN in April 2018. He received the B.Eng., M.Eng. and D.Eng.degrees in Information Science from Kyoto University, in 1978, 1980 and 1983, respectively. He was Professor of Academic Center for Computing and Media　Studies(ACCMS), Kyoto University from April 2002 to March 2018. He served as director of ACCMS from April 2006 to March 2010 and concurrently served as vice director in the Kyoto University President’s Office from October 2008 to September 2010. From October 2010 to September 2016, he served as chief information officer at Kyoto University and director-general at Institute for Information Management and Communication, Kyoto University.  His research interest includes a variety area of Image Processing，Artificial Intelligence and Multimedia Applications, particularly, model centered frame work for the computer system to help visual communication among humans and information media structure for human communication. | |

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| **Keynote Talk 2: Eye Movement Detection Sensors, Biometrics, and Health Assessment**  **Oleg Komogortsev**  *Professor*  Texas State University | http://cennser.org/ICIEV/oleg.jpg |
| **Abstract:**  The usage of eye tracking sensors is expected to grow in virtual (VR) and augmented reality (AR) platforms. In my talk I will discuss the past and present status of eye tracking sensors, along with my vision for future development. I will also discuss applications that necessitate the presence of such sensors in VR/AR devices, along with applications that would have the power to benefit society on a large scale when VR/AR solutions are widely adopted. | |
| **Short Biography:**  Dr. Komogortsev is currently a tenured Professor at Texas State University. Dr. Komogortsev has received his B.S. in Applied Mathematics from Volgograd State University, Russia, and M.S./Ph.D. degree in Computer Science from Kent State University, Ohio. He has previously worked for such institutions as Johns Hopkins University, Notre Dame University, and Michigan State University. Dr. Komogortsev conducts research in eye tracking with a focus on cyber security (biometrics), health assessment, human computer interaction, usability, and bioengineering. This work has thus far yielded more than 100 peer reviewed publications and several patents. Dr. Komogortsev’s research was covered by the national media including NBC News, Discovery, Yahoo, Livesience and others. Dr. Komogortsev is a recipient of four Google awards including two Virtual Reality Research Awards (2016, 2017), Google Faculty Research Award (2014), and Google Global Faculty Research Award (2018). Dr. Komogortsev has also won National Science Foundation CAREER award and Presidential Early Career Award for Scientists and Engineers (PECASE) from President Barack Obama on the topic of cybersecurity with the emphasis on eye movement-driven biometrics and health assessment. In addition, his research is supported by the National Science Foundation, National Institute of Health, National Institute of Standards, Sigma Xi the Scientific Research Society, and various industrial sources. Dr. Komogortsev’s current grand vision is to push forward eye tracking solutions in the future virtual and augmented reality platforms as enablers of more immersive experiences, security, and assessment of human state. | |

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| **Keynote Talk 3: Security and Privacy Challenges in Learning-enabled IoT Systems**  **Mani Srivastava,** *Fellow, ACM; Fellow, IEEE*  *Professor*  University of California, LA | http://cennser.org/ICIEV/mani.jpg |
| **Abstract:**  Innovative edge devices, pervasive wireless connectivity, and powerful cloud computing are leading to a new generation of learning-enabled IoT systems. Unlike their precursors that primarily focused on collecting sensor data for off-line knowledge discovery and simple control, this new generation of IoT systems harness machine learning (ML) to make rich inferences about the state of natural, engineered, and human systems; to comprehend and project it to the future; and to decide on actions that influence and nudge that state in a desired and timely manner.  While data-driven ML algorithms are helping equip these emerging IoT systems with intelligence and autonomy, they also introduce vulnerabilities to a variety of security and privacy problems. This talk will cover research in my group on (i) efficient black-box attacks on sensor data and machine learning models that cause these systems to make incorrect inferences and control actions, (ii) defense mechanisms that help detect and mitigate these attacks, and (iii) protecting against privacy loss arising from inference attacks on high-dimensional sensory data being shared by differentially-private synthetic sensor data generation. | |
| **Short Biography:**  Mani Srivastava is on the faculty at UCLA where he is associated with the ECE Department with a joint appointment in the CS Department. His research is broadly in the area of networked human-cyber-physical systems, and spans problems across the entire spectrum of applications, architectures, algorithms, and technologies. His current interests include issues of energy efficiency, privacy and security, data quality, and variability in the context of systems and applications for mHealth and sustainable buildings. He is a Fellow of both the ACM and the IEEE. More information about his research is available at his lab’s website: [http://www.nesl.ucla.edu](http://www.nesl.ucla.edu/) and his Google Scholar profile at <https://scholar.google.com/citations?user=X2Qs7XYAAAAJ>. | |

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| **Keynote Talk 4: Virtual and Augmented Reality Animals in Smart and Playful Cities**  **Anton Nijholt**  *Professor-Emeritus*  University of Twente | http://cennser.org/ICIEV/anton.jpg |
| **Abstract:**  Our future urban environments are smart. Sensors and actuators are embedded in these environments and their inhabitants. We have an Internet of Things, where the ‘Things’ include objects, cars, tools, buildings, street furniture, and whatever can be equipped with sensors and actuators, including human and non-human animals. Augmented humans and augmented animals have their senses extended with digital technology. Their smart wearables connected with the smart environment make humans and animals smarter. Rather than on living animals, in this survey paper we focus on non-living virtual and augmented reality non-human animals that will inhabit our smart and playable urban environments. They will co-exist with robotic animals and (digitally augmented) humans and nonhuman animals. We include observations on augmented humans interacting with virtual and augmented reality animals. The paper is meant to raise awareness for the possibilities of augmented reality to introduce virtual animals for social, entertainment, and educational reasons. | |
| **Short Biography:**  Anton Nijholt is Professor-Emeritus of the University of Twente. He started his professional life as a programmer at TNO-Delft, The Netherlands. He studied civil engineering, mathematics and computer science at the Delft University of Technology and did his Ph.D. in theoretical computer science at the Vrije Universiteit in Amsterdam. He held positions at the University of Twente, the University of Nijmegen, McMaster University (Canada), the Vrije Universiteit Brussels (Belgium), and at the Netherlands Institute for the Advanced Study of Humanities and Social Sciences NIAS) in Wassenaar. During some years he was a scientific advisor of Philips Research Europe, Eindhoven. A few years (2015-2017) he was a global research fellow at the Imagineering Institute in Iskandar, Johor, Malaysia. In 2018 he became a member of Microsoft's Technical Leadership Advisory Board on Brain-Computer Interfaces (BCI). Anton Nijholt has an interest in human-computer interaction, entertainment computing, affective computing, humor research, playable cities, and Brain-Computer interfacing. He has been program chair and general chair of the main international conferences and workshops devoted to these topics (ICMI, F&G, ACE, IVA, ACII). Nijholt is chief-editor of the specialty section Human-Media Interaction of the journals Frontiers in Psychology and Frontiers in Computer Science. He is also the series editor of the Springer Book Series on Gaming Media and Social Effects. | |