

General Framework and Plenary Keynote Speakers of the Collocated Conferences
The 24th World Multi-Conference on Systemics, Cybernetics and Informatics: WMSCI 2020
The 14th International Multi-Conference on Society, Cybernetics and Informatics: IMSCI 2020
The 19th Ibero-American Conference on Systems, Cybernetics, and Informatics
Décima Novena Conferencia Iberoamericana en Sistemas, Cibernética e Informática: CISCi 2020

Plenary Keynote Addresses – Sunday, September 13th, 2020, 8:00 AM – 10:00 AM

8:00 AM – 8:40 AM



Professor Shigehiro Hashimoto, Japan, Kogakuin University, Dean of the Faculty of Engineering, Former Associate to the President, Doctor of Engineering and Doctor of Medicine, Research Area: Biomedical Engineering.

Dr. Shigehiro Hashimoto now is a professor of Biomedical Engineering, Dean of the Faculty of Engineering of Kogakuin University, Tokyo, Japan. He got his Bachelor of Engineering in Mechanical Physics (1979), and Master of Engineering at Tokyo Institute of Technology (1981), Tokyo, Doctor of Medicine at Kitasato University (1987), Sagamihara, and Doctor of Engineering at Tokyo Institute of Technology (1990), Tokyo.

He was Research Associate in School of Medicine (1981-1989), and Assistant Professor in School of Medicine (1989 -1994), at Kitasato University, Associate Professor in the Department of Electronics (1994- 2001), and Professor at Osaka Institute of Technology (2001-2011). He also was the Creator of the first Department of Biomedical Engineering in Japan at Osaka Institute of Technology (2005) and Director of its Medical Engineering Research Center (2005-2011). He was Associate to President and Dean of Admissions Center at Kogakuin University, Tokyo (2012-2018). He experienced internship in Research Center for Artificial Heart in Free University in Berlin (1977). He is the author of the books of “Introduction to Biosystems Engineering (1996)”, “Introduction to Biomedical Measurement Engineering (2000)”, and “Introduction to Biomechanical Engineering (2013)”. His present researches focus on bio-cellular mechanics study using micro-machined flow channel. shashimoto@cc.kogakuin.ac.jp, <http://www.mech.kogakuin.ac.jp/labs/bio/>

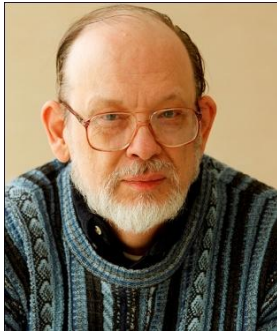
Plenary Keynote Address: *Does Multidisciplinary Learning Help Global Problem: Covid-19 by Biomedical Engineering?*

ABSTRACT: The academic field has been divided into each specialized field. Many problems in the global society (including Coronavirus disease 2019 (COVID-19)) cannot be solved by the single disciplinarian. They are waiting for the multidisciplinary. For students, it is not easy to find the way how to learn multidisciplinary field: curriculum, textbook, learning team, and teacher (adviser). “Biomedical Engineering” is one of the multidisciplinary fields, which have many related fields: Biology, Medicine, Informatics,

and Engineering. The topic includes case studies (education for undergraduate, and graduate courses) based on author's experiences. Finding related subjects of the case study is effective to motivate students to learn multidisciplinary field.

Multidisciplinary conferences give students opportunities to improve their communication ability. Inter-disciplinarians are necessary to make bridges over the barrier between global problems.

8:40 AM – 9:20 AM



Professor Thomas Marlowe, USA, Seton Hall University, Professor Emeritus, Department of Mathematics and Computer Science, PhD in Computer Science and PhD in Mathematics

Thomas J. Marlowe is Professor Emeritus in the Department of Mathematics and Computer Science at Seton Hall University, where he taught a wide variety of courses in both disciplines for almost 40 year, and where he continues to teach occasionally as an adjunct. Professor Marlowe enjoys working with students and with professional colleagues—almost all his research is collaborative. His professional interests have included, in mathematics, abstract algebra and discrete mathematics; in computer science, programming languages, real-time systems, software engineering, and pedagogy; and in information science, collaboration and knowledge management. His two PhDs are from Rutgers, The State University of New Jersey. He has over 100 publications in refereed conferences and journals in mathematics, computer science and information science, and has been a member on more than 10 Ph.D. thesis and 5 M.S. thesis committees, a member of more than 25 conference program committees, and a reviewer for numerous conferences, journals, and grants. He is the founder of an ongoing professional conference, and has been active with the IIIS and the WMSCI multiconference since 2008.

Plenary keynote Address: *The agile universe—its development and evolution*

Abstract: Agile processes and agility form a major theme in modern industry and commerce—although sometimes it seems no more than the latest buzzword. Agility began in software development, with the Agile Manifesto, a statement of core values that became associated with a set of principles and practices. Key ideas include early and constant customer involvement, self-organizing teams, rapid delivery of value, short timeboxed iterations coordinated by a Product Backlog and driven by “user stories” and use cases, clean test-driven development, and continuous integration. The values, principles and practices have permeated the technical and business world, translated, modified, and analogized to fit many domains, affecting both production and management—where some aspects are more useful than others. But as with any good idea, agility can be misinterpreted, or used when inappropriate, or fail to respect other considerations, such as security or timeliness. Even a proper implementation must be tempered with good understanding of the domain, overall context, and appropriateness of selected agile practices, appropriately adapted. This keynote will explore the origin, intent, evolution, use, and misuse of agility, placing it within a wider organizational framework, and look at its various incarnations and its possible future.

9:20 AM – 10:00 AM



Dr. Robert Cherinka, USA, MITRE Corporation, Chief Engineer, Software Engineering Technical Center at MITRE.

Dr. Robert Cherinka is the Chief Engineer of the Software Engineering Technical Center for the MITRE Corporation. His expertise is in software, systems and process engineering, with a focus toward software quality and agile development technologies. Bob earned a Ph.D. and M.S. in computer science from Old Dominion University, Norfolk, Virginia, and a B.S. in computer science in 1987 from the University of Pittsburgh. Bob served 6 years as a software engineer in the US Air Force, before joining MITRE in 1993.



Mr. Joseph Prezzama, Msc., USA, MITRE Corporation, Co-Department Head for the Joint Operations Southeast, Tampa office of the MITRE Corporation, MS Software Engineering.

Mr. Joseph Prezzama, MSc. is currently the Associate Department Head for the MITRE Corporation, Tampa Operations Office. In 1996 he earned a Master of Science in Software Engineering from Monmouth University, Eatontown, New Jersey. Prior to that, he earned a Bachelor of Science in Electrical Engineering from Trenton State College, Ewing, New Jersey.

Plenary Keynote Address: Putting the “Ops” in “DevOps”: The Impact of Agile on Day 2 Operations for Large Enterprises

Abstract: Develop, test, deploy. Agile Methodologies to develop, acquire and/or manage innovation and the construction of capabilities have become the norm for many organizations. Day 2 Operations is a DevOps concept that has been around for some time, referring to the phase of the development life cycle that follows initial deployment where the real application demands exist. On Day 2, organizations begin to place stringent requirements on applications such as resilience, scale, agility, security, governance and compliance. Day 2 is when an application moves from a development project to an operational capability for the business. For large enterprises, operations can be very complex and costly, making it more important for Operational Users and Administrators to be prepared for the agile engagement with developers. In this talk we will focus on the "Ops" of DevOps as we discuss key findings and challenges operations organizations face in the era of continuous engineering. We will offer specific recommendations to empower operators in managing the effective transition and execution of capabilities into operations.

Keywords: Agile Engineering, Agile Software Development, DevOps, Modern Systems Delivery, Scrum, Scaled Agile, Continuous Engineering, Evolutionary Architecture

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Plenary Keynote Addresses – Sunday, September 13th, 2020, 1:00 PM – 3:00 PM

1:00 PM - 1:40 PM



Dr. William Muirhead, Canada, University of Ontario, Institute of Technology, founding researcher of the EILAB in the UOIT Faculty of Education. Former Associate Provost, founding academic administrator of the university.

Dr. Muirhead was the Associate Provost, Academic and Information Technology. As a founding academic administrator of the university, Bill has been responsible for developing Canada's largest Technology Enriched Learning Environment, the Teaching and Learning Center, the Academic Success Center, the Health Education Technology Research Unit and is currently a founding researcher of the EILAB in the UOIT Faculty of Education. Dr. Muirhead has overseen the development of university policies and governance structures pertaining to all aspects of undergraduate curriculum and quality assurance. Prior to the University of Ontario Institute of Technology, Bill was the founding Executive Director of the Alberta Online Consortium (AOC) and served as a senior advisor to Alberta Learning in areas of e-learning, professional development, and all aspects of policy involving online learning, virtual schooling and emerging information and communications technologies (ICT) in public and postsecondary education sectors. Dr. Muirhead's research interests included professional practices in online education; design of hybrid learning environments; policy support for developing and implementing learning object repositories; and the development and management of technological infrastructures in postsecondary institutions. An internationally recognized speaker, Bill has been the recipient of numerous awards for leadership and innovation in e-learning.



Dr. Lorayne Robertson, Canada, University of Ontario, Institute of Technology (UOIT), Former Assistant Dean in the Faculty of Education, Former Director of the Graduate Programs in Education

Dr. Lorayne Robertson, teaches graduate and undergraduate courses in digital pedagogies, equity, leadership, and policy in the Faculty of Education at the University of Ontario Institute of Technology, Canada. She specializes in online course design, program design, and quality assurance. Other research interests include investigations of the student experience and instructor role in polysynchronous online environments

with a particular focus on digital technologies and assistive technologies *at the point of instruction* in applied settings such as schools, colleges, and higher education. Dr. Robertson is a former school principal, school district superintendent, and education officer for the Ministry of Education, Ontario

Plenary Keynote Address: *Pivoting from Learning Technology for some to Learning Technology for Many during the Pandemic*

Abstract The onset of the Covid-19 global pandemic has resulted in reconsiderations regarding the safety of groups of students within physical classrooms. The closure of schools and the shift from classroom instruction to online learning has created unforeseen challenges for parents and teachers and the schooling system. The shift to computer-mediated learning has raised issues of how schools have used learning technologies for learning among diverse student populations. Schools have provided learning technologies for students with special needs, but the majority of students have not had access to these same assistive technologies (AT). The pandemic has coincided with the development of natural language processing, so that text-to-speech capability is available in multiple devices and applications. Yet, there is little evidence in policy that these tools, which are on the phones of the majority of adults, and in at-home digital assistants, are also available for students. One result of the pandemic has been the ubiquitous use of learning technologies among students. As schools pivoted to online learning, so too have students pivoted to adopting and using some AT affordances with the result that AT has become the tool for many rather than tools for the few.

1:40 PM - 2:20 PM



Dr. Peter Holowka, Canada, Werklund School of Educational Technology at the University of Calgary, West Point Grey Academy in Vancouver, British Columbia

Dr. Peter Holowka is passionate about digital transformation and technology leadership, particularly in education. His doctoral research was in cloud computing adoption and organizational leadership in K-12. His professional work and academic research aim to support teaching and learning by transforming the educational environment. He has received multiple awards for leadership and academic excellence. In 2020, he was recognized as Member of the Year by the CIO Association of Canada and currently serves as the Vice President of the Vancouver Chapter. Beginning his career as a network and web design specialist, Dr. Holowka also advises a number of independent/private schools, businesses, and not-for-profit organizations.

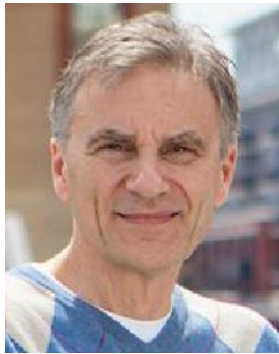
Plenary Keynote Address: *Reimagining Learning Spaces by Leveraging Cloud Computing*

Abstract – COVID-19 was a crisis that arrived suddenly and rapidly transformed how the world works, learns, and lives in 2020. Some organizations, institutions, and regions were better prepared for these changes than others. Western Canada's education systems were particularly well prepared for these changes and challenges because of their underlying IT infrastructure. Expanding upon the largest study ever conducted of IT infrastructure in K-12 in Western

Canada, this presentation will discuss the key aspects that made the rapid shift to online learning possible. This presentation will focus on the educational technology design of learning spaces going forward that can best support a variety of instructional requirements. Even before COVID-19, independent schools in Western Canada schools were shifting away from workstation computer labs towards cloud computing-based labs that leveraged students' devices and cloud computing. This presentation will explore the implications of this shift in design and how such measures can improve the learning experience for students, as well as improve access to specialized courses that have traditionally been expensive/prohibitive to offer by educational institutions.

Keywords—cloud computing, educational technology, DaaS, IT infrastructure, K-12

2:20 PM - 3:00 PM



Dr. Steven Ehrlick. Canada, Ryerson University, School of Media, Department of Radio and Television Arts, Associate Professor & Director, The Music Den

Dr. Steven Ehrlick is an Associate Professor at Ryerson University who conducts research in active learning, the fostering of learning communities in undergraduate large lectures and holistic education. He teaches undergraduate and graduate courses in business, law, media writing, media theory and research methods. Steven played a leading role the development of RTA's Sport Media B.A. degree program. He is also the lead faculty member for RTA's new BFA in Professional Music (launching Fall 2021). Steven received his PhD in curriculum studies from OISE, University of Toronto. In addition to his Juris Doctor law degree, Steven holds a Master of Arts degree in Media Production from Ryerson University. Having started his career in law, Steven has over 25 years experience practicing within the music and film industries. He was the V.P. of Legal & Business Affairs at two major record companies, BMG Music Canada and EMI Music Canada. He also worked in New York as the V.P of Business Affairs at an EMI-owned label, The Enclave, and managed the Human Resources departments at both EMI and The Enclave as well. The first ten years of Steven's career were spent in private practice. In 2002 Steven co-founded The Orange Record Label in Toronto.

Plenary Kwunote Address: *Fostering learning communities in large lectures using active learning, collaboration, flipped classrooms and individual inquiry*

Abstract: As educators in higher education, we believe in the university experience as a vital factor in the future success of our students in terms of career and lived experience. It is therefore important for students to see their university education as providing them with the skills they will use throughout their lives. Active learning, where students participate in hands-on, real-life activities, has the ability to connect student university experience with work and life experiences after graduation.

This presentation discusses the practical application of active learning in the university classroom. It introduces ongoing research investigating how a learning community approach be enacted in large undergraduate lecture courses through a scaffolded, complex curricular design that utilizes active and inquiry-based learning. By combining a traditional lecture with breakout tutorials, this curricular design included the adoption of the Fostering Communities of Learners (FCL) pedagogical model, augmented by elements from the Knowledge Community and Inquiry model. A key element of the design was the utilization of a collaborative knowledge base that facilitated deep inquiry within a collaborative learning community environment.

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Plenary Keynote Addresses – Monday, September 14th, 2020, 8:00 AM – 10:00 AM

8:00 AM – 8:40 AM



Professor T. Grandon Gill, USA, University of South Florida, College of Business, Director of the Doctorate in Business Administration, Editor-in-Chief of Informing Science, Editor of the Journal of IT Education

Dr. Grandon Gill holds an AB (cum laude) from *Harvard College* and an MBA (high distinction) and DBA from *Harvard Business School*. He is a professor and the Academic Director of the Doctor of Business Administration program at the *University of South Florida's Muma College of Business*. He was also recently elected president of the *Informing Science Institute*.

Dr. Gill has published more than 60 peer reviewed articles, more than 60 case studies, and has authored or edited 11 books relating to his research in the informing science transdiscipline and in the use of case studies for education and research. Over the past decade he has served as principal investigator on two grants from the National Science Foundation, completed a core faculty Fulbright in South Africa, and received the Gackowski award for his lifetime contributions to informing science research and the Ranulph Glanville award for his research activities.

T. Grandon Gill is a professor and academic director of the Doctor of Business Administration program at the University of South Florida's Muma College of Business. His research focus is on understanding the impacts of instructional technology on learning and on how complexity impacts informing processes. He received his A.B. degree from Harvard College and his MBA and DBA degrees from Harvard Business School. He has published more than 100 research articles and case studies, has authored or edited 10 books, has served as principal investigator on two National Science Foundation grants and completed a three-year core research Fulbright in South Africa in 2017. Most recently, Grandon was appointed the leader of a faculty working group whose mission is to help instructors adept to new ways of teaching mandated by the pandemic.

Plenary Keynote Address: *What Changes Can We Expect in Higher Education as a Result of COVID-19?*

As a result of the ongoing COVID-19 pandemic, higher education institutions have been forced to undergo drastic changes. During spring 2020—often with less than a week's notice—

instructors that had spent their entire career teaching in a classroom were required to go online. Institutions already facing tight budgets suddenly experienced drastic reductions in revenue. Students and their families already straining under the burden of student loans suddenly found themselves unemployed or under the prospect becoming that way in the not-too-distant future. Nor does the fall look much better for colleges and universities. How can they expect students to pay for dormitories when there is a good chance their courses will go online if COVID cases hit a specified benchmark? Even if classes are held face-to-face, how can instructors deliver content simultaneously to their classroom and online audiences? How about labs and internships? Can these really be accomplished effectively online? And what about college athletics, revenue from international students that cannot get visas to come to the U.S...even parking fees are not safe. The list goes on...

Perhaps what we are experiencing today is just a transitory phenomenon, and higher education will return to the status quo once the pandemic subsides. Or perhaps what we are experiencing now is one of those rare black swan events that will be the catalyst for a major transformation in higher education in the U.S. and across the globe.

The presentation will look at the forces that are driving the current situation and will attempt to distinguish those changes to the higher education landscape that are most likely to be permanent from those expected to be transitory in nature. It will base this on perspectives drawn from a variety of disciplines: economics, organizational behavior, sociology, complexity theory and informing science. While the future is elusive, and the presenter has no unique crystal ball for foretelling what will happen, it is hoped that the organizing framework developed in the presentation will help participants in higher education better assess where their industry is headed.

8:40 AM – 9:20 AM



Dr. Russell Jay Hendel, USA. Towson University, Dept. of Mathematics, doctoral program at the Spertus Institute for a degree in Jewish studies.

Russell Jay Hendel holds a doctorate in theoretical mathematics from M.I.T., an associateship from the Society of Actuaries, and is in a doctoral program at the Spertus Institute for a degree in Jewish studies. He is currently an Adjunct III faculty member at Towson University, which has recently become a Center of Actuarial Excellence. His research and publication interests include discrete number theory, actuarial science, biblical exegesis, the theory of pedagogy, applications of technology to pedagogy, and the interaction of mathematics and the arts. He regularly reviews books for the Mathematical Association of America. Dr. Russell Jay Hendel has been listed as a noteworthy Educator by Marquis Who's Who, and a member. Of the American Mathematics Society, Mathematics Association American, Mathematics Education Reform Forum, AMIT Women (friend for life)., and of Judge Long Island Mathematics Fair, Hofstra U., 1990-1992, New York Mathematics Fair, Pace U., 1990-1995. *Dr. Russell Jay Hendel teaches actuarial mathematics at Towson University's Center for Actuarial Excellence. He also hosts a website, rashiyomi.com, devoted to explaining*

Rashi and teaching Rashi methods. He resides in Baltimore, where he is co-president of the local AMIT chapter and is also a member of the AMIT President's Circle. AMIT was named the #1 educational network in Israel by the ministry of education using both quantitative and qualitative metrics for the third consecutive year.

Plenary Keynote Address: *Graphic Organizers Facilitate Solving Diverse Educational Problems*

Abstract: This talk shows how a single educational technique, graphic organizers, visual aids, facilitates both learning performance and learner satisfaction in difficult educational tasks spanning diverse subject areas. As time permits, we explore half a dozen educational areas including composition writing, programming, mathematics verbal problems, education of the mentally ill, reading comprehension of technical legal texts and possibly other areas. Independent literature from these distinct areas will be presented, reinforcing this central theme of the usefulness of visual organizers.

9:20 AM – 10:00 AM



Professor Richard Segall, USA, Arkansas State University, Department of Computer and Information Technology, Neil Griffin College of Business

Dr. Richard S. Segall is Professor of Computer & Information Technology at Arkansas State University in Jonesboro, AR where he also teaches in the College of Engineering & Computer Science Master of Engineering Management (MEM) Program and on the faculty of the Environmental Sciences Program. He is also Affiliated Faculty at University of Arkansas at Little Rock (UALR) where he serves on thesis committees. He has previously served on the faculty of Texas Tech University, University of Louisville, University of New Hampshire, University of Massachusetts-Lowell, and West Virginia University. His publications have appeared in journals including *International Journal of Information Technology and Decision Making (IJITDM)*, *International Journal of Information and Decision Sciences (IJIDS)*, *Applied Mathematical Modelling (AMM)*, *Kybernetes: International Journal of Cybernetics, Systems and Management Science*, *Journal of the Operational Research Society (JORS)* and *Journal of Systemics, Cybernetics and Informatics (JSCI)*.

He has book chapters in *Encyclopedia of Data Warehousing and Mining*, *Handbook of Computational Intelligence in Manufacturing and Production Management*, *Handbook of Research on Text and Web Mining Technologies*, *Encyclopedia of Information Science & Technology*, and *Encyclopedia of Business Analytics & Optimization*. He has edited 4 published books: Open Source Software for Statistical Analysis of Big Data published by IGI Global in 2020, Handbook of Big Data Storage and Visualization Techniques (2 volumes) published by IGI Global in 2018, Research and Applications in Global Supercomputing published by IGI

Global in 2015, and *Visual Analytics and Interactive Technologies: Data, Text and Web Mining Applications* published by IGI Global in 2011.

He was a member of the Arkansas Center for Plant-Powered-Production (P3) from 2008 to 2016, and is currently on the Editorial Board of the *International Journal of Data Mining, Modelling and Management* (IJDMMM) and *International Journal of Data Science* (IJDS), and served as Local Arrangements Chair of the 2010 MidSouth Computational Biology & Bioinformatics Society (MCBIOS) Conference. His research interests include data mining, text mining, web mining, database management, Big Data, and mathematical modeling. His research has been funded by National Research Council (NRC), U.S. Air Force (USAF), National Aeronautical and Space Administration (NASA), Arkansas Biosciences Institute (ABI), and Arkansas Science & Technology Authority (ASTA).

He is recipient of Session Best Paper awards at the 2008, 2009, 2010, 2011, 2013 and 2016 World Multi-Conference on Systemics, Cybernetics and Informatics (WMSCI) Conferences, and Faculty Award for Excellence in Research in 2015 and 2019 by Neil Griffin College of Business at Arkansas State University.

Plenary Keynote Address: *Applications of Artificial Intelligence to COVID-19*

Abstract: Artificial Intelligence (AI) is the science of making intelligence machines that can perceive visual items, recognize voice, and make decisions and predictions, and more. Artificial Intelligence is composed of techniques that includes machine learning, computer vision, fuzzy logic, neural networks and other.

This presentation will first present an overview of what is Artificial Intelligence, and then discuss the focus on how different types of Artificial Intelligence (AI) can and are being used to model the COVID-19 pandemic that is a world-wide issue.

Both neural networks and machine learning can and are being used for countless applications for diagnosing, forecasting, statistical predictions, and detection of COVID-19 cases. The timeline of these and other rapidly developing applications of AI (Artificial Intelligence) to COVID-19 will be discussed.

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Plenary Keynote Addresses – Monday September 14th, 2020, 1:00 PM – 3:00 PM

1:00 PM - 1:40 PM



Dr. Luigi Serra, Italy, Cagliari, National Research Council of Italy, Institute of History of Mediterranean Europe, Technical Collaborator of Research Institutes and CTO at CNR ISEM (Istituto di Storia dell'Europa Mediterranea).

Dr. Luigi Serra, after a Scientific High School diploma taken at the Lyceum Galileo Galilèi in Macomér, he graduated in Computer Engineering at the Politecnico di Torino. Since 1998 has worked several years in the private sector as a teacher for private companies and public bodies, freelance consultant and IT technician. Amateur Radio (IW0UWN), passionate about music, piano and guitar, photography, electronics and DIY. In 2006, lead as Project Manager the “Banda Larga” (Broadband) project for the renewal of the University of Sassari computers’ network; since 2008, by a public selection, has become Senior Network and Security Administrator as technical employee at the same University of Sassari. In 2009 he has been the University technical contact person for the "ICT4University – Wi-Fi SUD" ministerial project; in 2012 he took care of the planning of the interconnection of the University of Sassari network to the optical fiber of the Municipality of Sassari, with Cisco ASR 10G REP technology. In 2014, winner of the public competition has moved to the ASL 8, the public regional healthcare body in Cagliari. From here, after a brief and stimulating experience working as Senior Network and Security System Engineer, in 2015, after a public competition, he has joined the National Research Council of Italy at the Institute of History of Mediterranean Europe in Cagliari. In this new context, as CTO and ICT manager, he manages the IT infrastructure and supports the different aspects of the research and cultural heritage, dedicating himself to Digital Humanities and Digital Heritage, contributing actively to the "Humanistic Transfer", as he usually likes to define it, exploiting innovative IT and technological solutions for the Humanities. He has spoken at several international conferences among which LAC+2016 Uppsala, FortMed 2016 Firenze, GARR Conference 2016 Firenze, FortMed 2017 Alicante, JADH2017 Tokyo, FortMed 2018 Torino, GARR Conference 2018 Cagliari, AIPH 2019 Caserta. From 2018, until present, he is member of the EADH (European Association for Digital Humanities), part of the ADHO (Alliance of Digital Humanities Organizations). He has been peer reviewer for the DH2019 and DH2020 conferences. In 2020 has achieved the specialization as Digital Strategy Manager by the Mu.SA (Museum Sector Alliance) funded by the Erasmus+ Programme of the European Union. He is currently member of the IIS.

Plenary Keynote Address: *The Humanistic Transfer* as a novel approach for a multidisciplinary convergence

This plenary keynote address will be about the transversal role of Informatics in the Human Sciences field, where there are many challenges to face, to keep an intersection and relationships between hard and soft sciences. The author will propose a speech based on his experience, as IT Engineer, in the History Institute, where he actually works, giving some food for thought on what he had called, with a neologism, a "*Humanistic Transfer*" using analogical thinking based on "technological transfer". It could be interesting and potentially important to start a dialog (including Dialectics) on this topic with participants in the conference. The speaker will present, as an example, his peer reviewed paper on an ancient Sardinian and Mediterranean traditional hand game, and as a case study oriented to a practical application of the role of technicians into Humanities. The speaker will also report on some other contributions he has devised on the enhancement of cultural heritage with innovative technological solutions.

Keywords: Humanistic Transfer, Digital Humanities, Soft Sciences, Hard Sciences, Cultural Heritage, Virtual Reality, Artificial Intelligence

1:40 PM - 2:20 PM



Fr. Dr. Joseph R. Laracy, USA, Seton Hall University, Department of Systematic Theology & Department of Mathematics and Computer Science

Father Laracy is a priest of the Roman Catholic Archdiocese of Newark and assistant professor at Seton Hall University. He earned a doctorate from the Pontifical Gregorian University in Rome. Within the field of systemics, Laracy is interested in systems theory (e.g., cybernetics), applied dynamical systems (e.g., modeling with differential equations), and systems engineering (e.g., safety & security engineering). Laracy's principal theological interests are in the intersection of faith & reason and theology & science. A significant part of his research and teaching is focused on placing the Catholic Intellectual Tradition, especially theology, in dialogue with the sciences: formal science (e.g., logic & mathematics), natural science (e.g., astrophysics & evolutionary biology), applied science/engineering (e.g., cybernetics), and medicine (e.g., psychiatry). Laracy's early career interests as a graduate student at the Complex Systems Research Laboratory at MIT concentrated on uncertainty and dynamics in large-scale, complex engineering systems. He looked at key sources of uncertainty, ways to model and quantify uncertainty, and ways to maintain properties such as safety and security as systems change over time. His work was supported by a NASA Ames Research Center Grant (Model-Based Hazard Analysis Research) and an NSF Grant (A Socio-Technical Approach to Internet Security). As an undergraduate engineering student at the University of Illinois, he pursued research to develop a scalable RSA cryptographic co-processor supported by an NSF VIGRE Grant, worked on a software pattern-based fly-by-wire aircraft control system, and served as a teaching assistant for a course on the Physics of Nuclear Weapons, Warfare, and Arms Control. In the course of his studies, he held engineering positions

with Lucent Technologies (Wireless Terminal Interoperability Laboratory), Ball Aerospace and Technologies (NASA Deep Impact Mission), and Light Source Energy Services.

Plenary Keynote Address: *Reconceiving Cybernetics in Light of Thomistic Realism*

Abstract: Since its origins in the early twentieth century as a transdisciplinary approach connecting the fields of electrical and computer engineering, mechanical engineering, dynamical systems theory, logic modeling, neuroscience, and other disciplines, cybernetics has greatly expanded in scope, addressing salient issues in philosophy. Contemporary second-order cybernetics research engages issues in cognitive science, epistemology, the philosophy of science, metaphysics, ethics, and other fields. Working from the perspective of Thomistic realism, as represented by Étienne Gilson and Stanley L. Jaki, this keynote address presents both a metaphysical and epistemological analysis of cybernetics and attempts to recover some of cybernetics' key insights and practices in light of new first principles.

2:20 PM – 3:00 PM



Professor Mark M. Budnik, USA, Valparaiso University, Electrical and Computer Engineering, Paul H. Brandt Professor in Engineering, Houghton College. Electrical Engineering, Irwin Chair of Engineering.

Professor Budnik joined Valpo's faculty in 2006 after a 16-year career in the semiconductor field, culminating as a principal engineer and director at Hitachi Semiconductor. He also serves as the Houghton College Irwin Chair of Engineering and Electrical Engineering Program Director.

Mark received his bachelor of science degree in electrical engineering from the University of Illinois and his master of science and doctoral degrees in electrical engineering from Purdue University. Prior to joining the academic ranks in 2006, he worked in the electronics industry, culminating as a Principal Engineer and Director of White Goods and Motor Control at Hitachi Semiconductor. Dr. Mark Budnik is the author of a score of book chapters and many peer reviewed articles.

Since entering academia, Mark has won a number of prestigious local, regional, and national teaching awards, including Disney's inaugural Inspiring Brilliance Award and the 2019 ASEE National Outstanding Teaching Medal. Since 2016, he has worked with Disney Parks to host Reimagine Engineering, a new pedagogical conference focused on student and faculty development in engineering design.

Plenary Keynote Address: *The Pedagogical Importance of Building Increasingly Complex Models: From Back-of-the-Envelope Calculations to System Scaffolding*

Abstract: Engineering is generally considered to be a cyclical process. While the number of steps vary, they generally include: 1) Identifying a problem, 2) Identifying applicable

requirements and constraints, 3) Brainstorming, 4) Selecting an approach, 5) Specifying your approach, and 6) Building increasingly complex models. While much attention has been focused on teaching undergraduate and graduate students this engineering process, it is the final step, building increasingly complex models, that is most often overlooked.

In most primary and secondary schools, students are trained to exactly solve small problems to quickly find the correct answer. In truth, most engineering courses at the undergraduate and graduate levels do the same. Therefore, there is a stark need for teaching students how to approach large problems in a step-like manner. An exactly correct solution is not always needed, and based upon problem complexity, may not even be feasible.

To that end, we have developed a curriculum to formally introduce students to building increasingly complex models of their engineering solutions. Beginning with back-of-the-envelope calculations, we include both familiar and unorthodox tools including works of fiction, outlining, flowcharts, pixelation, and analogies to address a variety of real-world problems. The curriculum culminates with an algorithmic problem too complex to directly solve. Instead, students must develop a scaffold approach to model both the problem itself and their proposed system solution(s).

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Décima Novena Conferencia Iberoamericana en Sistemas, Cibernética e Informática: CISC 2020

Plenary Keynote Addresses – Tuesday, September 15th, 2020, 8:00 AM – 10:00 AM

8:00 AM – 8:40 AM



Dr. Mario LaManna, Italy/USA, Evoelectronics (Italy), and Selex-SI (USA), Senior Scientist and Project Leader, Projects in the fields of defense and security.

Dr. Mario LaManna received the degree in Electronic Engineering (summa cum laude) from the University of Pisa, Italy. He is working with EVOELECTRONICS in Rome, Italy as Senior Scientist and Project Leader. He has taken part in a number of projects in the fields of defense and security. He is leader of a number of international cooperative projects and has participated in more than 100 international conferences

as paper author, session chairman and forum moderator. He is a Member of the IEEE and IIIS and a CapTech Expert of the EDA IAP02 (Sensor Systems).

Plenary Keynote Address: *A Man-Machine Synergy Integrated Approach for Homeland Protection*

Abstract: A Homeland Protection system is a complex system or, according to a multidisciplinary terminology, a system of systems. Examples of Homeland Protection systems are: communication systems, transportation systems, energy grids, border control systems, vessel traffic systems, civilian emergency systems, security systems, etc. A system of systems is made of individual elements with multi-faceted interconnections with each other and with the external environment. Such systems cannot be studied by a simple decomposition into a number of small parts or units, as they present patterns and outcomes, which are not present in individual elements. An advanced security system for Homeland Protection is constituted of a set of sensory elements, enhanced by artificial intelligence, and on human agent/intelligence elements, cooperating with each other. From the examination of some case studies, we demonstrate that a man-machine synergy integrated approach is particularly suited to enhance the security level in Homeland Protection tasks.

8:40 AM – 9:20 AM



Professor Mohammad Ilyas, USA, Florida Atlantic University, College of Engineering and Computer Science, Former Dean of the College of Engineering and Computer Science, Member of Global Engineering Deans Council.

Dr. Mohammad Ilyas has been with Florida Atlantic University's College of Engineering and Computer Science since 1983. He has served there in various academic and administrative capacities, including Dean of the College from 2011 to 2017.

He has earned four academic degrees from four different countries; BSc in Electrical Engineering from Pakistan, MS in Electrical Engineering from Iran, PhD in Electrical Engineering from Canada, and PhD in Educational Leadership from USA.

Dr. Ilyas has over 215 publications, including one book, 26 handbooks, and over 190 research articles. He is a life senior member of IEEE, member of Global Engineering Deans Council, and was on Fulbright Specialist list from 2017-2020.

Plenary Keynote Address: *Drones at Our Service*

Abstract: Drones, also known as Unmanned Aerial Vehicles (UAV), have been of interest for many decades. They can fly autonomously (without having a pilot on board) or with someone controlling them remotely. Earlier development of drones was primarily for the purpose of military applications. Size and price of drones have dramatically changed over the past few decades leading to the development of many innovative applications for civil use.

Drones are being developed to provide a wide variety of services that are expected to profoundly impact the way of our life. These services include healthcare, agriculture, energy, disaster recovery, fighting crime, emergency response, entertainment, journalism, and many more. This talk will capture the current state of drones and their emerging (civil) applications in our service.

9:20 AM – 10:00 AM



Professor Sukjin Kang, South Korea, Korea Aerospace University, Faculty of Business School. Head of College of Liberal Studies. Director of Interdisciplinary Studies in KAU, Director of Korean Society for Teaching English Literature, Director of The English Language and Literature Association of Korea

Dr. **Sukjin Kang** is the Secretary for Research and Planning of The English Language and Literature Association of Korea (ELLAK): “an academic organization consisting of over 2000 members who have specialized in English linguistics, English education, English literature and culture, American literature and culture, and other

literatures written in English. Members are holders of doctoral degrees from foreign institutions (over 80%) as well as Korean institutions of higher learning and teach at colleges and universities across Korea. Members are engaged in continuous research and take part in varied cultural and social activities in and out of their fields of specialization.” This makes ELLAK an important hub for Inter-Disciplinary and inter-cultural Communication. Consequently, it is a source of creative analogies, especially because disciplines have been conceived, perceived, and explained as academic cultures.

Plenary Keynote Address: *Cybernetics as Art*

Abstract: Cybernetics as art as well as science, will be explored in this presentation. The purpose of this presentation is to reorient cybernetics as art by exploring the overlapping areas of art and cybernetics. Cybernetics will be represented with the semantics of art. Cybernetics is not only a science, but also art in which beauty and delight are fully generated and realized. Though art and cybernetics have been regarded as separated fields, to trace their convergence brings about insight and delight. Aesthetics of cybernetics are found in harmony and joyfulness with increasing choice and creativity. Cybernetics is based upon rhythm, change, mutual respect and love, all of which can be found in artistic masterpieces. With the advance of the second order cybernetics, art significantly contributes to its development by suggesting an integrated vision which goes beyond the boundary of a technical control theory. Art in cybernetics emerges particularly where integration is necessary. Producing novelty itself generates excitement and delight. In addition, science with aesthetics offers the highest delight in learning, generating wonder and pleasure by connecting different beings and uniting them into harmony in a graceful way.

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Plenary Keynote Addresses – Tuesday, September 15th, 2020, 1:00 PM – 3:00 PM

1:00 PM - 1:40 PM



Professor Wen-Chen Hu, USA, University of North Dakota, School of Electrical Engineering & Computer Science, Editor-in-chief, International Journal of Handheld Computing Research (IJHCR), 2010-2017

Wen-Chen Hu received a BE, an ME, an MS, and a PhD, all in Computer Science, from Tamkang University, Taiwan, the National Central University, Taiwan, the University of Iowa, Iowa City, and the University of Florida, Gainesville, in 1984, 1986, 1993, and 1998, respectively. He is currently an associate professor in the School of Electrical Engineering and Computer Science of the University of North Dakota, Grand Forks. He was an assistant professor in the Department of Computer Science and Software Engineering at the Auburn University, Alabama, for years. He is the general chairs of about 20 international conferences such as the 2018 International Conference on Engineering, Technology, and Applied Science (ICETA 2018), and associate editors of several journals like Journal of Information Technology Research (JITR). In addition, he has acted more than 100 positions as editors and editorial advisory/review board members of international journals/books, and track/session chairs and program committee members of international conferences. He has also won a couple of awards of the best papers, best reviewers, and community services. Dr. Hu has been teaching for more than 20 years at the US universities and over 10 different computer/IT-related courses, and advising/consulting more than 100 graduate students. He has published over 100 articles in refereed journals, conference proceedings, books, and encyclopedias, edited more than 10 books and conference proceedings, was the editor-in-chief of the International Journal of Handheld Computing Research (IJHCR) from 2010 to 2017, and solely authored a book entitled “*Internet-enabled handheld devices, computing, and programming: mobile commerce and personal data applications.*” He is a member of ACM (Association of the Computing Machinery). His current research interests include handheld/mobile/smartphone/spatial computing, location-based services, web-enabled information system such as search engines and web mining, electronic and mobile commerce systems, and web technologies.

Plenary Keynote Address: “Opportunities and Challenges from the Milestones of Information Technologies (IT)”

Abstract: Every milestone in IT history radically changes the human lives, and creates many opportunities and challenges for people. For example, the WWW (World Wide Web) helped the

dotcom boom, which has created millions of jobs and numerous business and research opportunities. The milestones of IT history are divided into two sets: software/infrastructure and hardware, where the former set includes the following milestones: (1) FORTRAN, (2) UNIX, (3) DOS (Disk Operating System), (4) WWW, (5) iOS, and (6) ?. Moreover, the milestones of computer hardware history include: (1) ENIVAC, (2) IBM System/360, (3) Apple II, (4) Nokia feature phones, (5) iPhone, and (6) ?. This talk will give an overview of the opportunities and challenges from the past milestones of IT. From the previous experience, the speaker will propose the possible next IT milestones, and introduce the opportunities and challenges from them.

1:40 PM - 2:20 PM



Dr. Madhumita Banerjee, USA, University of Wisconsin-Parkside, Sociology Department. Assistant Professor and Director, Sociology Online Degree Completion Program.

Dr. Madhumita (Mita) Banerjee is an Assistant Professor of Sociology at the University of Wisconsin - Parkside. She teaches courses in Social Inequality, Public Health, Sociology of Education, Statistics, and Research Methods at the undergraduate level and Data Visualization courses in the Applied Professional Studies Master's program (MAPS). Her current research interest lies in gaining insight into factors that motivate and deter underserved and underrepresented students in choosing online courses and the areas of improvement necessary to enhance their online learning experience.

Plenary Keynote Address: *Interventions to Improve Cognitive Presence and Student Performance in the age of Covid-19*

Abstract: In the present situation with the COVID-19 pandemic, as most universities continue to offer predominantly online versions of courses, stronger emphasis is needed for improving student learning in a virtual environment. The Community of Inquiry (CoI) framework is well known for teaching and learning. CoI includes three dimensions: social, teaching and cognitive presence in the online classroom. In this presentation and the related paper, strategies to improve teaching and cognitive presence are discussed. Both qualitative and quantitative results of student performance are analyzed and presented prior to implementation of these strategies intended to enhance cognitive presence. Examples of competencies and learning goals that students require to master from technology, statistics, and social science courses are examined. For some of these competencies, qualitative results are presented along with quantitative data based on statistical analysis. In this presentation and the related paper, the objective is to present simple yet effective strategies, that can promote student learning of complex concepts

2:20 PM - 3:00 PM



Dr. Tilia Stingl De Vasconcelos, Business Consultant, Austria, Member of the European Society for Education and Communication, Previously, University of Applied Sciences Austria, Information Management and Cross Cultural Communication.

Dr. Tilia Stingl de Vasconcelos Guedes is currently an autonomous Organizational Consultant and a former lecturer at Universities of Applied Sciences in Austria (academia nova GmbH, FH-Wiener Neustadt) in the area of Business Administration and Change Management. Tilia has bachelor's and master's degrees in Computer Science and Business Administration from the Vienna University of Technology, is post-graduated in Magazine Journalism and earned her doctorate in Communication Science from the University of Vienna, working in the field of Knowledge Management and Organizational Communication. She has also worked in the financial sector and later in management consulting. Today her research interests are in the field of organizational communication and systemic approaches.



Mag. Philipp Belcredi, Comparative-Systemic Intervention, Austria.

Mag. Philipp Belcredi, MBA, is a biologist and economist (master's degree from University of Vienna, Austria). He played professional ice hockey during college and was an internationally successful regatta sailor. Philipp earned an MBA from the University of Economics and Business Administration HEC, Lausanne, Switzerland, with a focus on strategy and marketing. He did long-term training at SySt Institute Munich (Germany) and other systemic formations such as hypnotherapy with Gunther Schmidt at the Milton Erickson Institute of Heidelberg, Germany. Philipp has several years of experience as a project manager, manager, and CEO (OMV, Compass Group, Pewag). He works as a management consultant for companies and organizations in challenging strategic development- and change processes. Philipp has developed and introduced a number of practical applications and methods to organizations he has worked with, based on second-order cybernetics and system theories.

Plenary Keynote Address: *Constructive Dialogs: Systemic Interdependencies of Associating and Disassociating Communication*

Abstract: If you have ever tried to follow a discussion on a controversial topic on any social media platform such as Facebook or Twitter, you may have experienced that even the smallest deviation from majority opinions will probably lead to some kind of exclusion of this person from the ongoing discussion.

Terms like cancel culture, online bashing, twitter storm, etc. also describe this kind of disassociating communication. However, every ostracism decreases the size of the remaining in-group, to the point that society could end up fragmented into multitude of small social systems.

On one hand, usually, a democratic society in which a dialog is only possible in smaller units tend to be far more complex and therefore far less capable of acting than a society that favors a broader discourse. But on the other hand, social interaction that allows and incorporates many different opinions, views, propositions and conclusions seems to require a large effort. For an open-minded discourse to succeed, our communication must temporarily transcend both the content level (first-order dialog) and the meta-level (second-order dialog) to reach the level of contextualization.

In this keynote we take use the viewpoint of social systems theory to explore two questions: What are the consequences of our not taking responsibility for the quality of our dialogs? And: Which approaches do distinction-based methods offer to solve the issues linked to the disassociating communication that society is currently facing?

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Plenary Keynote Addresses – Wednesday September 15th, 2020, 8:00 AM – 4:40 PM

8:00 AM – 8:40 AM



Dr. Carol Woody, Carnegie Mellon University, USA, Software Engineering Institute, The Community Emergency Response Team (CERT) coauthor of the book *Cyber Security Engineering: A Practical Approach for Systems and Software Assurance*

Dr. Carol Woody is principal researcher for the CERT division of the Software Engineering Institute at Carnegie Mellon University. Her research focuses on building capabilities and competencies for measuring, managing, and sustaining cybersecurity for highly complex networked systems and systems of systems. Dr. Woody has successfully implemented technology solutions for such diverse domains as defense, government, banking, mining, manufacturing and finance. She has coauthored a book *Cyber Security Engineering: A Practical Approach for Systems and Software Assurance* published by Pearson Education as part of the SEI Series in Software Engineering. The CERT Cybersecurity Engineering and Software Assurance Professional Certificate, released in March 2018, is based on the research she led. Dr. Woody holds a B.S. in mathematics from the William & Mary University, an M.B.A. with distinction from Wake Forest University, and a Ph.D. in information systems from NOVA Southeastern University.

Plenary Keynote Address: *Growing Need for Cybersecurity Engineering*

Abstract: When systems were predominately hardware, components were built to specification and systems engineering defined how each component fit into the overall system to provide the needed functionality. In today's context, functionality is predominantly provided by software which is assembled from reusable components carried forward from legacy systems, available for purchase from third parties or downloaded from open source libraries. These systems are built more quickly and cheaply and provide greater flexibility and extensive interconnectivity, but they are also highly complex and increasingly vulnerability to cyber-attack. Preparing for today's operational context requires cybersecurity engineering expertise to minimize the cyber-risk. This presentation will describe the importance of cybersecurity engineering and the value it brings to system acquisition and development.

8:40 AM – 9:20 AM



Professor T. Grandon Gill, USA, University of South Florida, College of Business, Director of the Doctorate in Business Administration, Editor-in-Chief of Informing Science , Editor of the Journal of IT Education

Dr. T. Grandon Gill is a professor and academic director of the Doctor of Business Administration program at the University of South Florida's Muma College of Business. His research focus is on understanding the impacts of instructional technology on learning and on how complexity impacts informing processes. He received his A.B. degree from Harvard College and his MBA and DBA degrees from Harvard Business School.

He has published more than 100 research articles and case studies, has authored or edited 10 books, has served as principal investigator on two National Science Foundation grants and completed a three-year core research Fulbright in South Africa in 2017.

Most recently, Grandon was appointed the leader of a faculty working group whose mission is to help instructors adapt to new ways of teaching mandated by the pandemic.

Plenary Keynote Speaker: *Design in an Age of Complexity*

Over the past 15 years, a branch of information systems research referred to as design science research (DSR) has gained increasing acceptance. The purpose of DSR is *not* to treat design as something that can be accomplished through a mechanical process. Rather, it is to: a) encourage practice-focus research that leads to the development of useful artifacts, and b) to capture insights into the design process that may prove valuable to subsequent designers.

As important question in DSR has always been assessing the value of the artifacts being produced in the process. Early DSR particularly focused on the “usefulness” of each artifact examined, a logical choice given the intention of offering value to practice. More recent research, however, has proposed that the evolutionary concept of “fitness” might be a more appropriate choice to determine the value of an artifact. Intriguingly, the concept of fitness comes in two forms: 1) the ability of an entity to survive, and 2) its ability to reproduce. Both can be employed in assessing a design.

The presentation will review the concept of fitness. Particular attention will be paid to the relationship of fitness to various forms of complexity. Drawing upon his past research, the presenter will argue that as problem environments grow in extrinsic complexity—that is, complexity that derives from the environment itself and its interaction with the artifact—it becomes critically important to consider that artifact’s wholistic fitness, as opposed to judging it based upon its immediate usefulness.

9:20 AM – 10:00 AM



Dr. Eliana Stavrou, Cyprus, University of Central Lancashire, Course Leader of the MSc Cybersecurity programme, member of the expert advisory panel at the Global Cybersecurity Capacity Centre, at Oxford University (UK)

Dr. Eliana Stavrou holds a PhD in Cybersecurity (2014), an MSc in Advanced Information Technologies (2006) and a BSc in Computer Science (2003) from the University of Cyprus. She is the founder of the Applied Cybersecurity Research Lab at UCLan Cyprus with a focus on contacting applied research on cybersecurity capacity building, cyber situational awareness and cybersecurity education and training. She is coordinating and delivering training workshops on specialized cybersecurity topics across primary, secondary, higher and vocational level education. She is also a member of the expert advisory panel at the Global Cybersecurity Capacity Centre, at Oxford University (UK) and a mentor at the Doctoral School of the European Security and Defence College. She has been involved in a number of national and European R&D network design and security-related projects (e.g. 2BeConnected, IDEALVis, SKINIKO, DITIS, e-Minder, PKI pilot, etc.).

Plenary Keynote Address: *Back to basics: Towards building societal resilience against a cyber pandemic*

Abstract: Cybersecurity experts have long been discussing the potential of a cyber pandemic leading to a massive disruption of ICT infrastructures with a devastating societal impact. Even though we have not faced yet the full potential of a cyber pandemic, the recent convirus-19 pandemic demonstrated how a cyber pandemic can look like at its initial stages. Unfortunately, citizens proved to be unprepared to handle the convirus-19 threat landscape and how fast cyber-attacks escalated at a global scale targeting individuals, governments, and corporations, all at once. This clearly demonstrates that society at a global scale is not adequately prepared to defend against a cyber pandemic, even though the efforts of the cybersecurity community. Cybersecurity awareness and training efforts have been among the top recommendations given as part of a national or corporate cybersecurity strategy to promote a cyber hygiene and enhance protection against cyber-attacks on an individual, a corporate or a national level. It is time though to take a step back to reconsider how people learn and redesign our cybersecurity awareness strategy to effectively build citizens' cyber skills and knowledge, leading to robust cyber resilient societies, capable of defending and withstanding a future cyber pandemic.

10:00 AM – 10:40 AM



Professor Renata Maria Abrantes Baracho, Federal University of Minas Gerais, Brazil, – Universidade Federal de Minas Gerais – UFMG,

Professor Renata Baracho is graduated in architecture and Urbanism, UFMG, Brazil; Major in Computer Science, PUC; MSc in Computer Science, UFMG; PhD in Information Science UFMG, Brazil with PDEE at The Pennsylvania State University, USA; Visiting Scholar/Pos doc at the University of South Florida, USF, USA.

She is Associate Professor of Architecture School and Information Science School, UFMG – Universidade Federal de Minas Gerais, Belo Horizonte, Minas Gerais, Brazil. Professor in the Graduate Program in Built Environment and Sustainable Heritage – PACPS, UFMG and the Graduate Program Knowledge Organization and Management – PPGGOC, UFMG; President of the National Association for Research in Information Science - Brazil (2014-2016). Founding Partner of TARGA Inc., Autodesk Technology Provider and Reseller, Brazil (1992-2010).

Her research interests are where Architecture, Urbanism, Computer Science and Information Science, overlap. Smart Cities, Smart Building, Smart Life, Building Information Modeling / BIM, Information Systems, Information Modeling, Information Retrieval and Representation, Knowledge Organization System/KOS, seeking improvements in the quality of life.

Plenary Keynote Address: *Smart Cities, Smart Buildings, Smart Life: Where Is the Smart?*

Abstract : Challenge: Cities planning with technology vs. Technology in Cities. Smart Cities studies and how this can bring improvements to the quality of life of the citizen is the main focus. It presents the discussion: planning of cities with technology versus the application of technology in cities, Cities with technology vs. Technology in Cities. Smart Cities is an interdisciplinary theme by nature providing benefits to society, in the sectors of health, safety, urban mobility, energy, public administration, governance among others. Therefore it is an interdisciplinary theme involving people, researches and professionals from different areas of knowledge. It presents with two main pillars: the growing movement of people to cities, the challenges inherent in the growth of metropolis and the search for solutions for urban planning using new technologies; information systems, internet, Building Information Modeling – BIM, demand for quality information in real time and the search for innovative solutions for the collection, treatment, organization, retrieval, availability and visualization of information. The ability to monitor and analyze real-time information is a differential to maximizing effectiveness and productivity in different fields. The importance of urban planning, construction and operation of smart cities is highlighted through the integration of information systems from different sectors of the city. It would allow us to relate key human needs to available resources and to work towards a sustainable planet.

10:40 AM – 11:20 AM



Dr. Tilia Stingl De Vasconcelos, Business Consultant, Austria, Member of the European Society for Education and Communication, Previously, University of Applied Sciences Austria, Information Management and Cross Cultural Communication.

Dr. Tilia Stingl de Vasconcelos Guedes is currently an autonomous Organizational Consultant and a former lecturer at Universities of Applied Sciences in Austria (academia nova GmbH, FH-Wiener Neustadt) in the area of Business Administration and Change Management. Tilia has bachelor's and master's degrees in Computer Science and Business Administration from the Vienna University of Technology, is post-graduated in Magazine Journalism and earned her doctorate in Communication Science from the University of Vienna, working in the field of Knowledge Management and Organizational Communication. She has also worked in the financial sector and later in management consulting. Today her research interests are in the field of organizational communication and systemic approaches.

Plenary Keynote Address: *Human Communication: Coupling Social Systems Theory and Consciousness*

Abstract: In the context of Luhmann's social systems theory, complexity means "commitment to select." Thus, complexity can be found wherever an observer distinguish a reality, where there are so many elements that not every element can be in a relation to every other element—therefore, these relations must be selective. Such a reality must also exhibit an unpredictable dynamic. Consequently, when we perceive complexity, we are looking into the future, wherefrom no one has ever been able to return or to reveal which decision in the present would have been the right one.

When we consciously perceive a complex event occurring in societal reality, we are asked to select under uncertainty. If this selection takes place within society, then it does so exclusively through communication. Observation and communication are also circular processes. Thus, the question we discuss here is: "Which possibilities does society offer for shaping our conscience?" While we follow our path to possible answers to this question, we will find ourselves wandering the border between social and psychic systems.

11:20 AM – 12:00 M



Dr. Scott Foote, Phenomenati, Computer & Network Security, USA, Founder, Director, and Chief information security officer

Scott Foote is an experienced cybersecurity executive, designing security into digital transformation initiatives for his clients. With more than 30 years of technology leadership experience in cybersecurity and the broader software industry, Scott has an acute ability to understand and map organizational needs to security models, architectures, solutions, and technologies. His primary area of expertise has been information security since the late 1980s; however, Scott's technical experience ranges from operating system kernel technologies, to the gamut of filesystem / database and info storage, to network engineering, to packaged commercial applications such as SCADA, B2B and CRM solutions; from on-premise to cloud deployments. An influential leader and communicator, Scott has authored several thought pieces on cybersecurity from the original "Risk Formula" (in the 90s), to "Risk-Based Authentication/Authorization" and the Cyber Situation Awareness "SA" model of "Network, Mission, and Threat" (in the 00s), to the recent "SOC Taxonomy" and "25 Shadows on the CISO's Wall". Scott holds a number of industry certifications (CISSP, CCSP, CISM, CISA, CRISC, CDPSE) is a frequent speaker at industry events, is a member of several industry consortia, sits on a number of advisory boards and has been a member of the board of directors for a number of both hi-tech and non-technical organizations.

Plenary Keynote Address, *Taxonomy of a SOC – Building an Enterprise-scale Cyber Security Operations Center*

Abstract: This is a familiar topic area with Cyber Security practitioners of all experience levels – What are the core capabilities we need to start investing in (either on-premise or via a managed security service provider) as we mature and evolve Cyber Security Operations for our organization? Of course, the answer is always – It depends. Cyber Security is a very broad set of challenges, and the term "Cyber Security Operations" can mean different things to different people. You first need to create some clarity regarding the overall vision your organization has for Cyber Security Operations; including what specific Services and SLAs are expected. From these Services, you can derive the set of core capabilities you'll need and when, including some prioritization for which should be acquired first.

Other critical business areas such as MRP, SCM, ERP, CRM, etc. have matured over decades to converge on "taxonomies" or "reference models" that describes a vision and the superset of supporting capabilities required to perform their specific disciplines. Convergence on such a capability reference model for Cyber Security Operations has yet to materialize. This presentation will present a "SOC Taxonomy" that summarizes the top 20 capabilities often found in more mature Cyber Security Operations Centers or (C)SOCs, grouping them by the 7 challenges every cyber security operations effort ultimately needs to address:

1. Knowledge of one's own cyber infrastructure
2. Knowledge of the threats emerging in cyberspace

3. Management of Access Controls
4. Monitoring and Detection
5. Informed Incident Response
6. Investigation, and
7. Visibility through advanced reporting

The intent is to provide a capability model that brings order to chaos, and can inform your own investment strategy – identifying, evaluating, and selecting specific capabilities to build out your organization’s Cyber Security Operations; either on-premise or via a managed security service provider.

12:00 AM – 12:40 M



Dr. Bruce E. Peoples, Innovations LLC, USA, Founder and CEO, Formerly at Université Paris 8, France, Laboratoire Paragraphe , Chair Emeritus of an ISO/IEC Standards Committee, Generated over 50 Invention Disclosures, 15 Patent Applications and 11 Patent Awards

Dr. Bruce E. Peoples has over 27 years experience in researching and developing advanced complex training, performance, decision, and production support systems and has architected several advanced, “self learning” systems. His research activities led to the filing of over 50 Invention Disclosures and 15 Patent Applications. His inventions include the development of a cutting edge BCI system that controls the flight of an unmanned aerial vehicle using only thoughts. Dr. Peoples also designed and led development of the first paperless learning media production system that mass-produced digital “modular” information objects, also known as Sharable Content Objects (SCOs) that could be used standalone, as aggregations, or in Performance Support Systems and Decision Support Systems, in any delivery environment, without changing “module” code. In recognition of his past research, Dr. Peoples was awarded a Raytheon 2006 Excellence in Technology award. Dr. Peoples has been active in several International Standards Committees, developing the standards necessary for implementing “next gen” Information Communication Technologies on a global scale. He is Chair Emeritus of an ISO/IEC Standard Committee, ISO/IEC JTC1 SC 36 *Information Technology for Learning, Education and Training*. Dr. Peoples was awarded BS and MS degrees from Clarion University of Pennsylvania, and a PhD degree from Université Paris 8 Saint-Denis, France.

Plenary Keynote Address, *Engineered Intelligence*

Abstract: The term “Artificial Intelligence” was coined by Dr. John McCarthy in 1955. The 1956 Dartmouth Summer Research Project on Artificial Intelligence adopted the term for labeling a new discipline, *Artificial Intelligence*. Back then, as in modern times, Artificial Intelligence has been associated with functions and traits associated Human Intelligence. There is nothing wrong with describing "Artificial Intelligence" using "human function/traits" equivalences. Mankind has done this type of communication for eons by way of metaphors and

analogies. Metaphors and analogies help tremendously when words for objects and concepts in disciplines do not exist or are emerging. As with other evolution of vocabularies to describe objects and concepts for disciplines in the past, present, and future, one must keep in mind etymology. It seems that metaphors and analogies are a part of the etymological process. What is being emerging in today's modern era is not an intelligence that is "artificial". What is emerging is an actual "intelligence" of its own whose functions/traits are not human at all. It is no longer accurate to equate what is considered the current "Artificial Intelligence" paradigm to "Human Intelligence". They are quite different, and what we are beginning to understand is a form of *real* intelligence is being created which is not *artificial*. As part of the etymological process, this keynote will introduce "Engineered Intelligence"... intelligence *engineered* by a human or "system(s)", where the resultant engineered system can acquire, process, create, and apply data, information, knowledge, or wisdom in differing contexts....in a way that uses "generated" intelligence.

2:00 AM – 2:40 AM



Dr. Jeremy Horne, USA, President-emeritus of the Southwest Area Division, American Association for the Advancement of Science (AAAS)

Dr. Jeremy Horne is President-emeritus of the Southwest Area Division of the American Association for the Advancement of Science (AAAS). He currently is writing a book explicating a philosophical system based on his research and writing in the areas of logic as the language of innate order in the universe, an ongoing 40-year project.

His areas of specialization are binary logic (with course work in symbolic logic, philosophy of computers, set theory, ontology, dynamic validation, social and political philosophy, political economy, history of philosophy, and philosophy of education. His ongoing research interests are in the philosophy of organicity, recursion in three-dimensional binary space, autonomous hybrid systems, the ontology of number and time, and states of life and consciousness. Present work is writing a book describing the philosophical system embracing explanations of cosmological and quantum semantics of binary logic, consciousness studies, paradoxes, systems theory, and organicity.

Dr. Horne taught many courses in philosophy (including his specialty logic), political science, and technology, having delivered many presentations on the philosophy of scientific methods for the American Association for the Advancement of Science (AAAS), the IIS, and quantum mind conferences. He has been a peer reviewer for various journals about the structure and process in binary space, consciousness studies, systems theory, and philosophy of science. For "bread and butter" work, he was a documentation systems developer for the White Sands Missile Range in New Mexico, a culmination of some twenty years' work in the field of documentation. His recent publications include a book *Philosophical Perceptions on Logic and Order*, chapters of several books released by IGI Global Press, and a "kernel" chapter, "Philosophical foundations

of the Death and Anti-Death discussion", appearing in the Vol. 15, *Death And Anti-Death* set of anthologies by Ria Press (2017).

He is searchable under his name, the more academic entries appearing by using the academic degree suffix. His document repository may be accessed at <https://sites.google.com/site/yourmindshomepage/>.

Plenary Keynote Address: *The organicity of interdisciplinary*

Abstract: An upcoming special edition of *The Journal on Systemics, Cybernetics and Informatics (JSCI)*, subtitled "Rigor and Inter-Disciplinary Communication" will contain my arguing the inherent organicity of "interdisciplinary". My object in this presentation is to interrelate "rigor", "Inter-Disciplinary", and "Communication" in the context of organic systems but within a larger philosophical system. "Organic" encompasses "interdisciplinary", the latter meaning interconnectedness with its attendant interdependence. To disentangle this sentence requires our apprehension of fundamentals underpinning the world in which we live. Peering outward and retracting with introspection describe becoming aware of the infinite and the infinitesimal, both objects of inquiry and processes. Descartes arguably is the most pivotal philosopher with his early-modern rendition of Aristotle's subdivision through his *Categories*. That is, you know something by subdividing it. Projection – introspection, and subdividing – reconstruction occur because of a whole, and the whole occurs because of the former. Something exists because of what it is not, the most fundamental law, the unity of opposites, the law of the singularity birthing our universe, the same singularity embodying the physicists' superposition, the entity bespeaking organicity, itself, the same also embodying "interdisciplinary". Perforce, humans as a product of the Universal process internalize interdisciplinary by living it. Our attempts to replicate ourselves as living beings through cybernetics and artificial intelligence make it impossible to communicate without these inherent characteristics.

Fostering Inter-Disciplinary Communication

12:40 PM – 1:20 PM

Health Benefits of Intermittent Fasting

Dr. Shula Shazman

The Open University of Israel Department of Mathematics and Computer Science

Intermittent fasting (IF) is the cycling between periods of eating and fasting. The main types of IF are: complete alternate-day fasting; time-restricted feeding (eating within specific time frames such as the most prevalent 16:8 fast, with 16 hours of fasting and 8 hours for eating); religious fasting such as the Ramadan (occurs one month per year, with eating taking place only after nightfall). IF can be effective in reducing metabolic disorders and age-related diseases by bringing about changes in metabolic parameters associated with type 2 diabetes. Questions do remain, however, about the effects of the different types of IF as a function of the age at which fasting begins, gender and severity of type 2 diabetes. In this paper, we describe a machine learning approach to selecting the best type of IF to improve health in type 2 diabetes. For the purposes of this research, the health outcomes of interest are changes in fasting glucose and insulin. The different types of intermittent fast offer promising non-pharmacological approaches to improving health at the population level, with multiple public health benefits.

1:20 PM – 2:00 PM

Protecting voters from social media manipulation during election campaigns, by using behavioural science theory to strengthen campaign legislation

Gerard Creaner, Sinead Creaner, and Colm Creaner

GetReskilled Cork, Ireland

Abstract

The major debate in US Presidential Elections since 1788 has been about who is entitled to vote. In this age of digitalisation the dangers of voter manipulation through social media has become a more significant problem than has previously been the case. This paper suggests the upcoming Presidential election discussions in the USA need to move from the question of who is eligible to vote, to one of how to protect the voters from internal or external manipulation during the campaign when they make their decision on who to vote for.

The data set has been gathered from an analysis of all 58-US Presidential elections to date (1788-2016), where the numbers of voters has increased from 400,000 to 131million. Then the performance of all the winning Presidents were compared using a growth-share matrix, with respect to how Effective they were in getting things done during their time in office and the Wisdom of what they did, in striving towards a more perfect union for the USA on their watch. This indicated that only 1-in-4 Presidents over the last 220-years has demonstrated a “winning performance” whilst in office. If

social media manipulation of voters could possibly lower this ratio over the next 220-years, then Governments need to consider strengthening campaign legislation. This led to the key research question being examined.

The methodology for comparison with respect to the research question draws heavily on Bereday's model of comparative styles and their predispositions (Bereday, 1964).

The analytical lens of behavioural science theories suggest some explanations as to how the decision making abilities of otherwise capable citizens can be influenced, unbeknownst to themselves. Likewise, heuristics and cognitive biases have been examined to provide an underpinning theoretical framework for possible changes to current campaign legislation to be strengthened to better protect the electorate.

Keywords: (4-keywords) Political Science, Behavioural Science, Decision-Making, Campaign Law

2:40 PM – 3:20 PM

Environmental Sustainability: A study on the impact of information systems on game-based learning and gamification

Mariana Henriques and Jesualdo Fernandes
ISEG - Lisbon School of Economics & Management

Abstract

In a world that experiences constant technological evolution, we still face certain backlashes of human attitudes, such as pollution, which undermine the planet's environmental sustainability. An enhanced awareness to environmental issues can lead to behavioral change capable of educating the citizens of our planet from their very early age.

Children grow up surrounded by technology and that has been known to lead to novel teaching methods and strategies. Game-based teaching strategies appear rather effective in motivating and contributing to students' care for environmental sustainability.

The research project had the double objective of studying the applicability of gamification to education and increase the awareness of children to environmental issues.

To achieve these goals, a sample of 75 children of an elementary school were exposed to a game-based learning process and then 35 of those children were also exposed to a gamified process.

We found that game-based learning processes are able to increase children's awareness of environmental sustainability, and that gamified processes guarantee their changes in behavior and sensitivity. Therefore, it is possible to educate children about environmental sustainability via this research findings.

3:20 PM – 4:00 PM

(In Spanish)

Nuevas tecnologías en el proceso de la educación digital y el derecho a la educación en tiempos de Pandemia (SARS-CoV-2)

Wilber Jiménez Mendoza

Universidad Nacional Micaela Bastidas de Apurímac

Resumen

El objetivo de la investigación fue analizar el impacto del SARS-CoV-2 en la educación universitaria de la UTEA a partir de las medidas tomadas por el gobierno del Perú respecto del uso de las “nuevas” tecnologías en el proceso de la educación digital y el derecho a la educación; considerándose que el acceso a la conectividad sobre todo en el área rural de Apurímac es bastante difícil.

La metodología usada en el estudio fue comparativo, histórico-hermenéutico con enfoque educativo.

Se ha seleccionado tres zonas de intervención, dos filiales (Cusco y Andahuaylas) y una sede central (Abancay) de la Universidad Tecnológica de los Andes (UTEA) y que tienen diferentes grupos socioeconómicos predominantes de estudiantes, según datos de dirección de Planificación de la UTEA, se tomó una muestra de 1,557 encuestas de una población estudiantil universitaria de 10,178, y 51 encuestas a los docentes ordinarios. La estructura del instrumento constó de 12 preguntas y una escala de cinco niveles, el instrumento fue validado por expertos del área psicológica y de especialistas en estadística no paramétrica.

Los resultados muestran que el 41% de los estudiantes dicen que este servicio del uso de la plataforma Moodle es regular y un 16% consideran que es pésimo. Los docentes responden estar solo regularmente satisfechos en un 41%, e insatisfechos en un 16% debiéndose resolver estas brechas en la prestación y calidad del servicio.

4:00 PM – 4:40 PM

Investigating how task type and task domain affect user evaluation of webpage usefulness

Ning Sa and Xiaojun (Jenny) Yuan

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In a user-centered lab experiment with 24 participants, we investigated how the users evaluated the webpage usefulness when searching on two different types of tasks (fact-finding and decision-making) in two different domains (health and travel). The participants were asked to

search on 4 pre-defined tasks. In a semi-structured interview after each search task, the recorded search process was played back to the participants. The participants were asked to 1) explain why they selected certain results from the Search Engine Results Pages; and 2) evaluate the usefulness of each clicked webpage; and 3) talk about why the page was evaluated as such. Our results showed that the credibility of the information source was addressed more in health domain tasks than in travel domain tasks. When searching on health tasks, the participants found the webpages from the trusted sources more useful and tended to look for a second opinion to confirm the information they already found. When searching on decision-making tasks, the participants preferred the webpages that contained more comprehensive information. At the same time, due to the difference in the amount of information, the participants mentioned the importance of information organization more frequently in decision-making tasks than in fact-finding tasks.