MLIS 2020
CONFERENCE PROGRAM

October 25th-28th, 2020

Korea Standard Time (UTC/GMT+9:00)

ONLINE-Microsoft Teams Meeting

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Part I Conference Schedule

Sunday, October 25, 2020 *MS Teams: http://www.academicconf.com/teamslink?confname=mlis2020*	
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15:00-16:00	Ice Breaking and MS Teams Application Testing

Monday, October 26, 2020 *MS Teams: http://www.academicconf.com/teamslink?confname=mlis2020*	
The morning session will be chaired by Prof. Jon-Lark Kim, Sogang University, Korea	
10:00-10:10	**Welcome Speech** *Prof. Jong-Ha Lee, Keimyung University, Korea*
10:10-10:50	**Keynote Speech 1: Machine Learning and Artificial Intelligence for Emerging Systems and Applications: The Triumph and Tribulation** *Prof. Danda B. Rawat, Department of Electrical Engineering & Computer Science, Howard University, USA*
10:50-11:00	**BREAK**
11:00-11:40	**Keynote Speech 2: The Futuristic AI-based Data Science and Analytics with Examples** *Prof. Victor Chang, School of Computing and Digital Technologies, Teesside University, UK*
11:40-15:00	**LUNCH BREAK**
The afternoon session will be chaired by Dr. Martin Molhanec, Czech Technical University in Prague, Czech	
15:00-16:00	**Keynote Speech 3: Machine Learning and Intelligent Systems for Detecting Fake News, Hate Speech and Bots** *Prof. Paolo Rosso, Computer Science, Universitat Politècnica de València, Spain*
16:00-17:00	**Keynote Speech 4: Modeling Multi-Order Adaptive Processes by Self-Modeling Networks** *Prof. Jan Treur, Social AI Group, Vrije Universiteit Amsterdam, Netherlands*

Tuesday, October 27, 2020 *MS Teams: http://www.academicconf.com/teamslink?confname=mlis2020*	
09:00-12:35	**Oral Session 1: Machine Learning I**
12:00-14:00	**LUNCH BREAK**
14:00-18:35	**Oral Session 2: Machine Learning II**

Wednesday, October 28, 2020 *MS Teams: http://www.academicconf.com/teamslink?confname=mlis2020*	
09:00-12:50	**Oral Session 3: Intelligent System**

Part II Keynote Speeches

Keynote Speech 1: Machine Learning and Artificial Intelligence for Emerging Systems and Applications: The Triumph and Tribulation

Prof. Danda B. Rawat

Department of Electrical Engineering & Computer Science
Founder and Director, Data Science & Cybersecurity Center
Graduate Program Director, Howard-CS Graduate Programs
Director, Cybersecurity & Wireless Networking Innovations (CWiNs) Lab, Howard University, USA

Biography: Dr. Danda B. Rawat is a Full Professor in the Department of Electrical Engineering & Computer Science (EECS), Founder and Director of the Howard University Data Science and Cybersecurity Center, Director of Cyber-security and Wireless Networking Innovations (CWiNs) Research Lab, Graduate Program Director of Howard CS Graduate Programs and Director of Graduate Cybersecurity Certificate Program at Howard University, Washington, DC, USA. Dr. Rawat is engaged in research and teaching in the areas of cybersecurity, machine learning, big data analytics and wireless networking for emerging networked systems including cyber-physical systems, Internet-of-Things, multi domain battle, smart cities, software defined systems and vehicular networks. His professional career comprises more than 18 years in academia, government, and industry. He has secured over $16 million in research funding from the US National Science Foundation (NSF), US Department of Homeland Security (DHS), US National Security Agency (NSA), US Department of Energy, National Nuclear Security Administration (NNSA), DoD and DoD Research Labs, Industry (Microsoft, Intel, etc.) and private Foundations. Dr. Rawat is the recipient of NSF CAREER Award in 2016, Department of Homeland Security (DHS) Scientific Leadership Award in 2017, Researcher Exemplar Award 2019 and Graduate Faculty Exemplar Award 2019 from Howard University, the US Air Force Research Laboratory (AFRL) Summer Faculty Visiting Fellowship in 2017, Outstanding Research Faculty Award (Award for Excellence in Scholarly Activity) at GSU in 2015, the Best Paper Awards (IEEE CCNC, IEEE ICII, BWCA) and Outstanding PhD Researcher Award in 2009. He has delivered over 20 Keynotes and invited speeches at international conferences and workshops. Dr. Rawat has published over 200 scientific/technical articles and 10 books. He has been serving as an Editor/Guest Editor for over 50 international journals including the Associate Editor of IEEE Transactions of Service Computing, Editor of IEEE Internet of Things Journal, Associate Editor of IEEE Transactions of Network Science and Engineering and Technical Editors of IEEE Network. He has been in Organizing Committees for several IEEE flagship conferences such as IEEE INFOCOM, IEEE CNS, IEEE ICC, IEEE GLOBECOM and so on. He served as a technical program committee (TPC) member for several international conferences including IEEE INFOCOM, IEEE GLOBECOM, IEEE CCNC, IEEE GreenCom, IEEE ICC, IEEE WCNC and IEEE VTC conferences. He served as a Vice Chair of the Executive Committee of the IEEE Savannah Section from 2013 to 2017. Dr. Rawat received the Ph.D. degree from Old Dominion University, Norfolk, Virginia. Dr. Rawat is a Senior Member of IEEE and ACM, a member of ASEE and AAAS, and a Fellow of the Institution of Engineering and Technology (IET).

Abstract: Machine Learning (ML) algorithms and Artificial Intelligence (AI) systems have been shown to be able to create machine cognition comparable to or even better than human cognition for some applications. Machine learning algorithms are now regarded as very useful cybersecurity solutions for different emerging applications. However, because ML algorithms and AI systems can be controlled, dodged, biased, and misled through flawed learning models and input data, they need robust security features and trustworthy AI. It is very important to design and evaluate/test ML algorithms and AI systems that produce reliable, robust, trustworthy, explainable and fair/unbiased outcomes to make them acceptable by diverse users. The keynote covers applications and use cases of secure and trustworthy ML/AI and their success and pitfalls.

Keynote Speech 2: The Futuristic AI-based Data Science and Analytics with Examples

Prof. Victor Chang

School of Computing and Digital Technologies, Teesside University, UK

Biography: Prof. Victor Chang is currently a Full Professor of Data Science and Information Systems at the School of Computing, Engineering and Digital Technologies, Teesside University, Middlesbrough, UK, since September 2019. He was a Senior Associate Professor, Director of Ph.D. (June 2016- May 2018) and Director of MRes (Sep 2017 - Feb 2019) at International Business School Suzhou (IBSS), Xi'an Jiaotong-Liverpool University (XJTLU), Suzhou, China, between June 2016 and August 2019. He was also a very active and contributing key member at Research Institute of Big Data Analytics (RIBDA), XJTLU. He was an Honorary Associate Professor at University of Liverpool. Previously he was a Senior Lecturer at Leeds Beckett University, UK, between Sep 2012 and May 2016. Within 4 years, he completed Ph.D. (CS, Southampton) and PGCert (Higher Education, Fellow, Greenwich) while working for several projects at the same time. Before becoming an academic, he has achieved 97% on average in 27 IT certifications. He won a European Award on Cloud Migration in 2011, IEEE Outstanding Service Award in 2015, best papers in 2012, 2015 and 2018, the 2016 European special award and Outstanding Young Scientist 2017. He is a visiting scholar/Ph.D. examiner at several universities, an Editor-in-Chief of IJOCI & OJBD journals, former Editor of FGCS, Associate Editor of TII & Information Fusion, founding chair of two international workshops and founding Conference Chair of IoTBDS and COMPLEXIS since Year 2016. He is the founding Conference Chair for FEMIB since Year 2019. He published 3 books as sole authors and the editor of 2 books on Cloud Computing and related technologies. He gave 18 keynotes at international conferences. He is widely regarded as one of the most active and influential young scientist and expert in IoT/Data Science/Cloud/security/AI/IS, as he has experience to develop 10 different services for multiple disciplines.

Abstract: Data Science is an interdisciplinary area between computing, mathematics, statistics, analytics, methods, machine learning, data processing and domain expertise. Mastering Data Science often will need to have clear understanding about the data, which methods suitable to deal with the research challenges, extract important results and explain fully and accordingly to the goals of research or business requirements. This keynote presents the Futuristic research outputs for AI–based Data Science and Analytics services and methods that can analyze multiple disciplines including healthcare, finance, data center computing, social networks, security and weather studies. In particular, research outputs from two disciplines will be at the center of attention. The presented examples may include first, health informatics, such as the studies of genes, cancers and human bodies. Second, the financial deep learning, risk modeling and financial computation and algorithms. Third, the weather studies of South Korea over a period of time. Summary of other contributions can be discussed. Real world examples can be given and demonstrated, so that the overall work can offer the Futuristic AI-based Data Science and Analytics Services with research contributions.

Keynote Speech 3: Machine Learning and Intelligent Systems for Detecting Fake News, Hate Speech and Bots

Prof. Paolo Rosso

Professor, Computer Science, Universitat Politècnica de València, Spain

Biography: Paolo Rosso is full professor at the Universitat Politecnica de Valencia, Spain where he is also member of the PRHLT research center. His research interests focus mainly on author profiling, irony detection, fake reviews detection, plagiarism detection, and recently hate speech and fake news detection. Since 2009 he has been involved in the organization of PAN benchmark activities at CLEF and at FIRE evaluation forums, mainly on plagiarism / text reuse detection and author profiling. At SemEval he has been co-organizer of shared tasks on sentiment analysis of figurative language in Twitter (2015), and on multilingual detection of hate speech against immigrants and women in Twitter (2019). He is coordinator of the activities of FIRE and IberEval evaluation forums. He has been PI of national and international research projects funded by EC and U.S. Army Research Office. At the moment, in collaboration with Carnegie Mellon University, he is involved in a project funded by Qatar National Research Fund on author profiling for cyber-security. He serves as deputy steering committee chair for the CLEF conference and as associate editor for the Information Processing & Management journal. He has been the chair of *SEM-2015, and organization chair of CERI-2012, CLEF-2013 and EACL-2017. He is the author of 400+ papers, published in journals, book chapters, conferences and workshop proceedings.

Abstract: Social media have given the opportunity to users to publish content and express their opinions online in a fast and easy way. The ease of generating content online and the anonymity that social media provide have increased the amount of harmful content that is published. A great amount of fake news, hoaxes, hurtful comments, inaccurate reviews and offensive content is published and propagated every day in social media. Bots play also a key role in disseminating false claims and hate speech. In this keynote I will describe some of the machine learning based intelligent systems that address the problem of detecting harmful information, with special emphasis on fake news and hate speech. Moreover, I will describe some of the shared tasks that have been organized in our research community for instance at the PAN Lab, where given a Twitter feed, the aim has been to identify whether its author is a bot (2019), or s/he is keen to be a spreader of fake news (2020). At SemEval the HatEval shared task (2019) focused on identifying hate speech towards immigrants and women.

Keynote Speech 4: Modeling Multi-Order Adaptive Processes by Self-Modeling Networks

Prof. Jan Treur

Social AI Group, Vrije Universiteit Amsterdam, Netherlands

Biography: Jan Treur works as a full professor in Artificial Intelligence. He is an internationally well-recognized expert in human-directed AI and cognitive and social modelling. The research of Jan Treur during the past 10 years concerns both fundamental and application-directed aspects of human-directed AI. This covers methods and techniques for modelling and analysis of human-directed AI approaches in a number of application areas, including Cognitive and Social modelling and simulation. He has been and still is active both by author and PC member roles in practically all relevant conferences and journals in these AI and application areas. Currently his research has mostly a multidisciplinary focus and addresses Network-Oriented Modeling approaches based on adaptive temporal-causal networks to model cognitive, affective and social interactions, with two books about this published in 2016 and 2020. Applications cover multi-order adaptive network models for mental and social simulation and human-aware or socially aware AI systems and virtual agents. More can be found via https://www.researchgate.net/profile/Jan_Treur

Abstract: This talk addresses the use of self-modeling networks to model adaptive biological, mental and social processes of any order of adaptation. A self-modeling network for some base network is a network extension that represents part of the base network structure by a self-model in terms of added network nodes and connections for them. A network structure in general involves network characteristics for connectivity (connections between nodes), aggregation (combining multiple incoming impacts on a node) and timing (node state dynamics speed). By representing some of these network characteristics by a self-model using dynamic node states, these characteristics become adaptive. By iterating this construction, multi-order network adaptation is easily obtained. A dedicated software environment for self-modeling networks that has been developed supports the modeling and simulation processes. This will be illustrated for some application domains, for example, for Cognitive Neuroscience by a second-order adaptive network model to model plasticity of connections and node excitability, and metaplasticity to control such plasticity.

Part III Oral Presentations

Oral Presentation Guidelines

- Online Oral Presentation will be conducted via Microsoft Teams Meeting (Click to see how to join MLIS 2020 via Teams).
- All presenters are requested to reach the Online Session Room prior to the schedule time and complete their presentation on time.
- All presentation times are shown in Korea Standard Time (GMT+9:00).
- If a presenter is not able to show up via Teams, the session chair / conference secretary will play the pre-recorded video presentation during his/her scheduled presentation time, if listeners have questions about the presentation, please contact the conference secretary to forward the questions.
- If a presenter cannot show up on time or have problem with internet connect, the session chair has the right to rearrange his/her presentation, and let the next presentation start.
- Signed and stamped electronic presentation certificate would be issued via e-mail after presentation.

Best Oral Presentations Selection

- **Three** best video presentations will be selected based on **Votes** received on the conference website and **Effective Communications** on MS Teams online conference site.
- This award consists of a certificate and free attendance to MLIS2021.

Selection Criteria:

- ✓ Research Quality
- ✓ Presentation Performance
- ✓ Presentation Language
- ✓ PowerPoint Design
- ✓ **Effective Communications**

Selection Procedure:

- All Pre-recorded video presentation will be updated on the conference website for best oral presentation selection. Participants could select best video presentations by clicking 'vote for the Best Presentation'. Vote for the same IP would be counted only one time for each presentation;
- Pre-recorded video presentation and Real-time online video presentation will be conducted consecutively via the MS Teams Online Conference from October 27th-28th;
- One best video presentation will be selected from each session by session chair by taking comprehensive consideration on **votes** received on the conference website and **effective communication** on MS Teams online conference site;
- Results will be demonstrated on the website on Oct. 30th;

Session 1_ Machine Learning I

Session Chair: Assoc. Prof. Kavila Selvani Deepthi, Anil Neerukonda Institute of Technology and Sciences(A), India

(Please Click http://www.academicconf.com/teamslink?confname=mlis2020 to enter the conference meeting room.)

9:00-9:15	ML1150	Solving a Fuzzy Linear Equation with a Variable, Using the Expected Interval of a Fuzzy Number *Dr. Flabio Gutierrez, Universidad Nacional de Piura, Perú*
9:15-9:30	ML1195	Using Mutual Information as a Cocitation Similarity Measure *Assis. Prof. Lukun Zheng, Western Kentucky University, USA*
9:30-9:45	ML1162	A Simple Ensemble Learning Knowledge Distillation *Dr. Himel Das Gupta, Texas University, USA*
9:45-10:05	ML1169	Data-driven Test Strategy for COVID-19 Using Machine Learning: A Study in Lahore, Pakistan *Dr. Chuanli Huang, University of Science and Technology of China, China*
10:05-10:20	ML1193	On Some Mathematical Game with Reinforcement Learning *Prof. Jon-Lark Kim, Sogang University, Korea*
10:20-10:40	ML1159	Detecting Similar Versions of Software by Learning with Logistic Regression on Binary Opcode Information *Dr. Hyun-il LIM, Kyungnam University, South Korea*
10:40-10:50		**BREAK**
10:50-11:10	ML1171	A Study on the Effect of DropConnect to Control Overfitting in Designing Neural Networks *Dr. Hyun-il LIM, Kyungnam University, South Korea*
11:10-11:25	ML1167	Using Conversation Analysis for Examining Technology-Mediated Social Interactions *Dr. Matteo Farina, University of Adelaide and Flinders University, Australia*
11:25-11:40	ML1151	A Pursuit of Complexities for Macro- and Micro- Structure in Sleep *Prof. Chien-Hung Yeh, Beijing Institute of Technology, China*
11:40-11:50	ML1134	Anisotropic Diffusion with DeepLearning *Ms. Hyuntae Choi, Chung-Ang University, Korea*
11:50-12:05	ML1163	Some Security Issues on IoT Products with Home Network *Ms. Lanlan Pan, Guangdong OPPO Mobile Telecommunications Corp. Ltd., China*
12:05-12:35 (Invited)	ML1189	Machine Learning and Archaeology: How to Speed Up the Stratigraphic Identification *Dr. Ilaria Cacciari, Institute of Applied Physics "Nello Carrara" - National Research Council, Italy*

Abstracts of Session 1

ML1150 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

ML1195: Using mutual information as a cocitation similarity measure

Assist. Prof. Lukun Zheng
Department of Mathematics, Western Kentucky University, USA

Abstract. The debate regarding to which similarity measure can be used in co-citation analysis lasted for many years. The mostly debated measure is Pearson's correlation coefficient. It has been used as similarity measure in literature since the beginning of the technique in the 1980s. However, some researchers criticized using Pearson's as a similarity measure because it does not fully satisfy the mathematical conditions of a good similarity metric and (or) because it doesn't meet some natural requirements a similarity measure should satisfy. Alternative similarity measures like cosine measure and chi square measure were also proposed and studied, which resulted in more controversies and debates about which similarity measure to use in co-citation analysis. In this article, we put forth the hypothesis that the researchers with high mutual information are closely related to each other and that the mutual information can be used as a similarity measure in author co-citation analysis. Given two researchers, the mutual information between them can be calculated based on their publications and their co-citation frequencies. A mutual information proximity matrix is then constructed. This proximity matrix meets the two requirements formulated by Ahlgren *et al.* (J Am Soc Inf Sci Technol 54(6):550–560, 2003). We conduct several experimental studies for the validation of our hypothesis and the results using mutual information are compared to the results using other similarity measures.

ML1162 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

ML1169: Data-driven test strategy for COVID-19 using machine learning: a study in Lahore, Pakistan

Dr. Chuanli Huang
State Key Laboratory of Fire Science, University of Science and Technology of China, China

Abstract. Aims: We aimed at giving a preliminary analysis of the weakness of a current test strategy, and proposing a data-driven strategy that was self-adaptive to the dynamic change of pandemic. The effect of driven-data selection over time and space was also within the deep concern. Methods: A mathematical definition of test strategy were given. With the real COVID-19 test data from March to July collected in Lahore, a significance analysis of the possible features was conducted. A machine learning method based on logistic regression and priority ranking was proposed for the data-driven test strategy. With performance assessed by the area under the receiver operating characteristic curve (AUC), time series analysis and spatial cross-test were conducted. Results: The transition of risk factors accounted for the failure of the current test strategy. The proposed data-driven strategy could

enhance the positive detection rate from 2.54% to 28.18%, and the recall rate from 8.05% to 89.35% under strictly limited test capacity. Much more optimal utilization of test resources could be realized where 89.35% of total positive cases could be detected with merely 48.17% of the original test amount. The strategy showed self-adaptability with the development of pandemic, while the strategy driven by local data was proved to be more superior. Conclusions: We recommended a generalization of such a data-driven test strategy for a better response to the global developing pandemic. Besides, the construction of the COVID-19 data system should be more refined on space for local applications. Acknowledgements: National Key Research and Development Program (2018YFC0807000).

ML1193: On some mathematical game with reinforcement learning

Prof. Jon-Lark Kim
Department of Mathematics, Sogang University, Korea

Abstract. Aims: In this talk, we introduce some mathematical game, called the factorization game which is based on integer factorization concept. We apply Double Deep Q-network (Double DQN) and Monte Carlo tree search to the factorization game. We show that learning progresses through the winning rate for each learning. Methods: Reinforcement learning (RL) and Monte Carlo tree search (MCTS) are used in the factorization game(http://www.matricking.com/matrick/game/intro?idx=1). In RL, the agent learns through interaction until reaching a goal. Double DQN selects the action from the main network, and the target network evaluates only the selected action. MCTS is a search algorithm that expands and searches selected nodes according to rules. Results: In Double DQN and MCTS, we applied the factorization game of board size 4×4~ 8×8. DQN has an average winning rate of about 83% in a factorization game with a board size of 4×4. However, learning does not progress well in the factorization game with the board size of 7×7~ 8×8. In MCTS, the winning rate, which is a factorization game with a board size of 4×4 ~ 7×7, is about 80% or more. But learning is still not well progressed at a board size of 8×8. Conclusions: In the case of an 8×8 factorization game, it can be seen that learning does not proceed. To solve this problem, you need to train more MCTS through hardware that is better than current hardware. In further work, we will increase the game board size to 10×10 to proceed with learning and apply it to other reinforcement learning algorithms (ex, DPIQN).

ML1159 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

ML1171 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

ML1167 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

ML1151: A pursuit of complexities for macro- and micro- structure in sleep

Prof. Chien-Hung Yeh
Beijing Institute of Technology, China

Abstract. Sleep electrophysiological recordings present irregular patterns, whereas increasing interests raised in monitoring and prediction of sleep dynamics. Multiscale entropy estimates the degree of unpredictability of a temporal recording across time scales with great success on electrocardiograms, however might not be that effective for the fast oscillations with low signal-to-noise ratio such as electroencephalograms. To this end, our previous study showed that the higher-moment on coarse-graining procedure successfully highlights and enlarges the differences in the sleep macro-structures, either at the small scales (<0.04 sec) or the large scales (0.25-2 sec). On the other side, Lempel–Ziv complexity (LZC), as another complexity measure, estimates complexity based on the sparsity of a sequence, especially effective for the relative short sequences, however can neglect the effects of high-frequency noise in the detrending process for the multiscale computation. To this end, we proposed the generalized multiscale LZC, trimming the excessive fluctuations over a series of tailored scales, improving the discerning abilities to the phase-A subtypes of the cyclic alternating patterns. One another critical step is the visualization over entropy and/or complexity. To this end, a generalized q-complexity-entropy curve was proposed in the multiscale fashion, yielding a spectrum of entropies and complexities in curves. This work enabled us to explore chaotic oscillations, significantly discriminating all sleep stages.

ML1134 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

ML1163: Some security issues on IoT products with home network

Ms. Lanlan Pan
Guangdong OPPO Mobile Telecommunications Corp. Ltd., China

Abstract. IoT (Internet of Things) is an important area, cooperated with mobile phone and PC, build up smart home environment. Traditional home network does not focus on processing the IoT communication. We discuss about some security issues on IoT products to integrate with home network. This can be helpful to develop suitable process design for IoT products.

ML1189: Machine Learning and Archaeology: how to speed up the stratigraphic identification

Dr. Ilaria Cacciari
Institute of Applied Physics "Nello Carrara" - National Research Council, Italy

Abstract. Archaeological excavation represents one of the traditional tools for understanding the courses of the human past. Archaeologists can literally look back in time by examining an area at discrete temporal periods. However, since excavation process destroys a site forever, great care is required during the digging documentation. After a stratum has been excavated, both the floors and walls of the trench are cleaned and ready for the work of the archaeologists. They generally take photos and draw what they see in the site. In these drawings features of the stratigraphic layers and shapes of the artefacts are delineated. Although it is the traditional method run by the archaeologists, it is time-consuming, affected by human skills and a prompt digitization of the results is not straightforward. In this context, the automatized identification of archaeological stratigraphy during an excavation is warmly welcome by the archaeologist community. In this work, colour clustering algorithm k-means based has been used in order to delineate stratigraphic layers from digital images of mock-ups and real excavation sites. The main idea is that each stratigraphic layer is characterised by the same colour, the

algorithm has been written to enhance the colour similarity while keeping the colours separate one from another as much as possible. This approach combined with edge detection allows for a prompt identification of stratigraphic units. Once the layer has been identified, a statistical approach based on Haralick features has been used to characterize each stratum in terms of texture. In the future, the use of colour clustering could become a good practice for speeding up the documentation work and paving the way for the creation of an “automated archaeologist” that assists the human in the excavation.

Session 2_ Machine Learning II

Session Chair: Prof. Jon-Lark Kim, Sogang University, Korea

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14:00-14:20	ML1175	Topological Aspects of Algebras over an Integral Domain *Dr. Shai Sarussi, SEC College, Israel*
14:20-14:40 (Invited)	ML1178	Computational Model of Human Social Communication: When Should an Artificial Agent Communicate about Others? *Prof. Jerald Kralik, Korea Advanced Institute of Science and Technology, Korea*
14:40-14:55	ML1126	Internal Essence of Conceptual Normalisation *Dr. Martin Molhanec, Czech Technical University in Prague, Czech*
14:55-15:10	ML1200	Image Captioning Generation Using Multi Model Network *Assoc. Prof. Kavila Selvani Deepthi, Anil Neerukonda Institute of Technology and Sciences(A), India*
15:10-15:25	ML1192	Numerical solutions for the General Form of Distributed Order Time-Fractional Differential Equations *Dr. Tahereh Eftekhari, Iran University of Science & Technology, Iran*
15:25-15:55 (Invited)	ML1186	Application of Machine Learning techniques to the Early Detection of Dementia in Senior Adults. A Case Study *Prof. Luis Anido Rifon, University of Vigo, Spain*
15:55-16:10	ML1174	A Review on Medical Image Encryption Techniques *Dr. Manish Kumar, Birla Institute of Technology and Science, India*
16:10-16:20		**BREAK**
16:20-16:35	ML1107	Genetically Driven Optimal Selection of Opinion Spreaders in Complex Networks *Assoc. Prof. Alexandru Topirceanu, Politehnica University Timisoara, Romania*
16:35-16:50	ML1131	Instability of SRPT, SERPT and SJF Queueing Networks *Dr. Łukasz Kruk, Uniwersytet Marii Skodowskiej, Poland*
16:50-17:05	ML1196	Text Mining Through Non-negative Matrix Factorizations *Dr. Gabriella Casalino, Università degli Studi di Bari, Italy*
17:05-17:25 (Invited)	ML1198	Machine Learning in Mobile Edge Computing – Recent Trends, Opportunities and Challenges *Dr. Muhammad Asif Khan, Qatar University, Qatar*
17:25-17:40	ML1190	Exploration of an interdisciplinary scientific landscape *Dr. Juste Raimbault, University College London, UK*
17:40-17:55	ML1199	What I Have Learned from My Google Scholar and H index *Prof. Adrian Furnham, Norwegian Business School, Norway*
17:55-18:10	ML1205	Applications of Machine Learning in Climate Forecasting *Dr. Morteza Pakdaman, Climatological Research Institute (CRI), Iran*
18:10-18:35 (Invited)	ML1187	Nature-Inspired Meta-Heuristics for Optimization of Real-Time Systems *Dr. Mohit Jain, Banasthali University, India*

Abstracts of Session 2

ML1175: Topological aspects of algebras over an integral domain

Dr. Shai Sarussi
Department of Mathematics, SEC College, 84100 Be'er Sheva, Israel

Abstract. Let S be an integral domain with field of fractions F and let A be an F-algebra. An S-subalgebra R of A is called S-nice if R is lying over S and the localization of R with respect to $S \setminus \{ 0 \}$ is A. Let $\mathbb S$ be the set of all S-nice subalgebras of A. We define a notion of open sets on $\mathbb S$ which makes this set a T_0-Alexandroff space. This enables us to study the algebraic structure of $\mathbb S$ from the point of view of topology. We prove that an irreducible subset of $\mathbb S$ has a supremum with respect to the specialization order. We present equivalent conditions for an open set of $\mathbb S$ to be irreducible, and characterize the irreducible components of $\mathbb S$. We also characterize quasi-compactness of subsets of a T_0-Alexandroff topological space.

ML1178: Computational model of human social communication: when should an artificial agent communicate about others?

Prof. Jerald Kralik
Department of Bio and Brain Engineering, KAIST - Korea Advanced Institute of Science and Technology, Korea

Abstract. For AI systems to integrate with people in real-world settings, they will need to respond properly to social events with potential moral implications: such as acts of physical harm, bullying, cheating or acts of goodwill. This requires an inner sense of morality as well as mind-reading capabilities that approach human level. To date, however, no artificial system is near these capabilities. Our larger research project aims to capture the full range of human social intelligence, and to this end, our current goal is to model when, how, and why people choose to communicate social information to others—what has been called gossip—and to model this process in an artificial social agent. In this talk I present our current progress. I will describe (a) our social intelligence and communication framework, (b) our test paradigm, (c) current computational model developments, and (d) an empirical experiment we conducted to obtain novel data to test model predictions. I will then present key empirical findings together with the best fits from our model compared with two others. Our model outperformed the others by best fitting both the general patterns and specific results of the empirical data (i.e., percent choosing to communicate information about a target individual to others). Thus, our model successfully captures key aspects of human moral decision-making, helping to move toward human-like social understanding and communication in artificial systems.

ML1126: Internal essence of conceptual normalization

Dr. Martin Molhanec
Czech Technical University in Prague, Czech

Abstract. This paper argues the need for conceptual normalisation as a fact arising from the ontology of the real world. The basis of the argument lies in the simple fact that the real world is not redundant.

On this basis, the basic conceptual normal forms are formally defined. Finally, further possible developments in this important and interesting area are indicated.

ML1200: Image captioning generation using multi model network

Assoc. Prof. Kavila Selvani Deepthi
Anil Neerukonda Institute of Technology and Sciences(A), India

Abstract. In recent years, the field of Computer vision and Natural language processing has taken great leaps in tasks such as to analyze and generate text from the images and videos. Image captioning is used to generate the meaningful information from the images and it is a quite challenging task for the research community to execute the appropriate text. The main objective of this paper is to generate relevant natural language descriptions of images using deep learning techniques and then convert the text into speech using GTTS, which in turn will be helpful for the visually impaired people. In this paper, the author proposed a multi model framework by using two pre-trained neural networks i.e., Convolution neural network (VGG16) and GRU to generate caption of the image, which is closely related to the human visual system. To build a multi-model framework, the author used the MSCOCO -17 dataset and found that the model is predicted an accurate description for the given image.

ML1192: Numerical solutions for the general form of distributed order time-fractional differential equations

Dr. Tahereh Eftekhari
Iran University of Science & Technology, Iran

Abstract. The main aim of this paper is to present an efficient numerical method for solving the general form of distributed order time-fractional differential equations with the Caputo fractional derivatives. Applying the operational matrix of the Riemann-Liouville fractional integral operator for the second kind Chebyshev wavelets via collocation method in our approach provides an approximate solution by converting the problem under consideration into a system of linear or nonlinear algebraic equations which can be solved by the Newton method. Finally, three test problems are considered to confirm the reliability and effectiveness of the proposed method.

ML1186: Application of machine learning techniques to the early detection of dementia in senior adults: a case study

Prof. Luis Anido Rifon
University of Vigo, Spain

Abstract. Current figures estimate that there are 50 million people living with Alzheimer's and other dementias today. This number is projected to be upwards of 150 million by 2050. Available data show that dementia is one of the most challenging diseases in western countries, with an ageing population that requires increasing investments in health and social services. Although there is no cure for dementia so far, it is very important to detect it as early as possible in order to apply measures to slow down the progress of the disease. There are several clinical tests for the diagnosis of the different types of dementia. However, these tests are intrusive and they are often applied when symptoms are already evident, when it is too late to apply efficient prevention strategies. This speech presents a case study

where a set of conventional neuro-psychological tests were gamified, and different machine learning classification algorithms, such as Random Forest, Extra Trees, CART, SVM and logistic regression, were applied to the data generated by seniors when playing such gamified digital tests. The approach taken was to classify subjects in three different groups: healthy, mild-cognitively impaired, and participants affected by Alzheimer's disease. Conventional clinical tests were used as golden data to assess the validity of the new gamified test. The pilot study was carried out with 90 individuals, and results demonstrated that users can be correctly classified by a combination of Logistic Regression, CART and Random Forest, according to the classification metrics obtained.

ML1174: A review on medical image encryption techniques

Dr. Manish Kumar
BITS Pilani, Hyderabad Campus, India

Abstract. The last few decades have witnessed a considerable increase in the amount of digital information being shared via the internet. Digital images constitute a high amount of information stored in it as a number. Medical Images can be used to store or share information for disease diagnosis, personal images, and much more. The medical images can contain confidential information such as body parts, disease descriptions, injuries, medical history of an individual, which should be kept hidden, even from patients in some cases. Sometimes, these medical images are to be exchanged between doctors and researchers over the internet for diagnostics and study purposes, which makes them vulnerable to tampering. Adversaries are always trying to break this confidential information to blackmail or earn money or for any illegal purposes. The objective of any medical image encryption algorithm is to obtain the top quality of a noisy image in order to keep information secret. In this work, different medical image encryption techniques that provide good security are discussed.

ML1107 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

ML1131: Instability of SRPT, SERPT and SJF queueing networks

Dr. Łukasz Kruk
Uniwersytet Marii Skodowskiej, Poland

Abstract. By a stochastic network we mean a system in which customers move among stations where they receive services; there may be queueing for services, and customer routing and service times may be random. We consider multiclass networks in which stations can process more than one class of customers (jobs). Typical examples include computer and telecommunications networks, manufacturing and equipment maintenance networks, distributed processing systems or logistics and supply chains networks. A fundamental question in the theory of multiclass queueing networks is whether a given network is stable. The intuitive meaning of network stability is that the system performs well under reasonable workload: the queue lengths do not grow linearly with time and do not oscillate "wildly", there is no mutual blocking and forced idleness of the servers when work is present in the system. In this talk, we provide an example of a strictly subcritical multiclass queueing network which is unstable under the shortest remaining processing time (SRPT) service protocol. It is a reentrant line with two servers and eight customer classes. The customer service times in our system are deterministic, yielding an example of an unstable shortest remaining expected processing time (SERPT) network. Finally, our example shows also the system instability under the shortest job first

(SJF) discipline. Our results indicate that size-based service policies may not use the available resources efficiently in a multiserver network setting and in fact cause instability effects. This is in sharp contrast to their satisfactory performance for single server queues.

ML1196: Text mining through non negative matrix factorizations

Dr. Gabriella Casalino
Università degli Studi di Bari, Italy

Abstract. Aims: The aim of this talk is to discuss how Non-Negative Matrix Factorization (NMF) algorithms could be used for text analysis. Methods: Non-Negative Matrix Factorization (NMF) algorithms are dimensionality reduction techniques that are able to represent original data as linear composition of hidden factors. From the geometrical point of view these factors are the bases of the new space where the reduced data are spanned. From the semantic point of view, they are bag-of-words representing hidden topics in texts. Since the same term space is used to define the hidden topics, these methods ensure interpretability of the results. Initialization algorithms are required to enhance the convergence of NMFs. Thus, different NMF algorithms and initializations will be discussed. Particularly an initialization technique, based on subtractive clustering algorithm, will be also used to identify the optimal number of hidden topics for the given data. Results: A case study is presented. Tweets collected through Twitter API are analyzed varying NMF algorithms and initialization techniques. Topic modeling is performed and visual representation is used to show the hidden topics that are automatically extracted. Moreover, the algorithms are able to group tweets in the reduced space, based on a similarity criterium. Thus, clustering results will be discussed. Moreover, the granularity of the hidden topics is a critical factor that will also be discussed. Conclusions: In this talk a case study will show how to use NMFs as intelligent data analysis tool for Twitter data. Acknowledgements: This work has been partially supported from the Italian Ministry of Education, University and Research through the European PON project AIM (Attraction and International Mobility) nr. 1852414 activity 2, line 1.

ML1198: Machine learning in mobile edge computing – recent trends, opportunities and challenges

Prof. Muhammad Asif Khan
Qatar University, Qatar

Abstract. Both Machine Learning (ML) and edge computing are making profound impact in several domains, however when they combine, they can bring a more intriguing user experience. The intersection of both has a range of applications in several areas such as automotive (e.g. autonomous cars), healthcare (e.g. remote monitoring using wearable/implanted devices, real-time patient data analysis, remote emergency surgeries), manufacturing (e.g. predictive maintenance), retail (e.g. VR/AR-aided shopping experience) and connected homes (e.g. temperature control, smart doorbells, access control, smart lighting). In this talk, we shall explore how ML-assisted mobile edge computing are creating new possibilities and what are the associated challenges? A brief overview of cutting-edge research directions is also provided.

ML1190: Exploration of an interdisciplinary scientific landscape

Dr. Juste Raimbault
University College London, UK

Abstract. Patterns of interdisciplinarity in science can be quantified through complementary dimensions. This paper studies as a case study the scientific environment of a generalist journal in Geography, Cybergeo, in order to introduce a novel methodology combining citation network analysis and semantic analysis. We collect a large corpus of around 200,000 articles with their abstracts and the corresponding citation network that provides a first citation classification. Relevant keywords are extracted for each article through text-mining, allowing us to construct a semantic classification. We study the qualitative patterns of relations between endogenous disciplines within each classification, and finally show the complementarity of classifications and of their associated interdisciplinarity measures. The tools we develop accordingly are open and reusable for similar large-scale studies of scientific environments. Our contribution therefore provides, besides the methodology, a new way to construct open databases and study journals for which data are difficult to obtain.

ML1199: What I have learned from my Google Scholar and H index

Prof. Adrian Furnham
Department of Leadership and Organisational Behaviour, Norwegian Business School, Norway

Abstract. The academic world is a cut-throat, do-or-die, publish or perish world: and always has been. It is particularly difficult for young academics who are not always given wise advice by their superiors. I have published 95 books, 200 book chapters and 1200 peer-reviewed papers over a 40-year period. Inspecting my Google h, as one measure of impact I reflect on what I have learnt and give advice to young researchers in the field.

ML1205: Applications of machine learning in climate forecasting

Dr. Morteza Pakdaman
Climatological Research Institute (CRI), Mashhad, Iran

Abstract. Due to global warming and climate change, more accurate climate forecasting can help the managers to improve their decision-making processes. Machine learning techniques has wide variety of applications in climate forecasting as well as in studying climate change impacts. In this paper, after introducing climate models and their applicability, we will mention some applications of machine learning techniques in forecasting climate parameters. Finally, some toolkits will be introduced in order to post processing the outputs of climate models.

ML1187: Nature-inspired meta-heuristics for optimization of real-time systems

Dr. Mohit Jain
School of Automation, Banasthali University, India

Abstract. In the current competitive world, resources are depleting day by day which forces people to make maximum profit at minimal cost and resources. Mathematical modelling of these issues evolves

into maxima and minima problems, generally known as optimization problems. Several methods available to solve these optimization problems are broadly divided into two categories: classical approaches and modern metaheuristic algorithms. Classical approaches generally follow a step by step procedure and provide same solution every time for the same initial point. On the other hand, modern metaheuristic algorithms use stochastic distributions and generally do not provide same solution under same circumstances. In last few decades, a revolutionary change is observed in the field of optimization due to remarkable development of nature-inspired metaheuristic search algorithms. Thus, in this talk I will focus on few relevant topics regarding nature-inspired meta-heuristics such as (a) Why meta-heuristics? (b) Our recent developments in the field of meta-heuristics (c) Applications of designed meta-heuristics (d) Challenges in the development of meta-heuristics.

Session 3_ Intelligent System

Session Chair: Prof. Chien-Hung Yeh, Beijing Institute of Technology, China
(Please Click http://www.academicconf.com/teamslink?confname=mlis2020 to enter the conference meeting room.)

9:00-9:15	ML1109	Behavior Features for Automatic Detection of Depression from Facebook Users *Dr. Siranuch Hemtanon, Walailak University, Thailand*
9:15-9:30	ML1203	Convolutional Signature *Dr. Tomoyuki Ichiba, University of California Santa Barbara, USA*
9:30-9:45	ML1140	A Decision Support Model for Disaster Management Based on Extended DEMATEL *Dr. Kaixuan Qi, University of Science and Technology of China, China*
9:45-10:05	ML1147	Big Data System for Medical Images Analysis *Dr. Janusz Bobulski, Czestochowa University of Technology, Poland*
10:05-10:20	ML1149	AutoSynPose: Automatic Generation of Synthetic Datasets for 6D Object Pose Estimation *Dr. Heiko Engemann, University of Applied Sciences Aachen, German*
10:20-10:30		**Break**
10:30-10:45	ML1156	Deep Robot-Human Interaction with Facial Emotion Recognition Using Gated Recurrent Units & Robotic Process Automation *Mrs. Suchitra Saxena, PES University, India*
10:45-11:05	ML1160	Explainable AI: Using Shapley Value to Explain Complex Anomaly Detection ML-based Systems *Dr. Jinying Zou, Saint-Petersburg State University, Russia*
11:05-11:20	ML1170	Investigating the Relationship between Industry 4.0 and Productivity: A Conceptual Framework for Malaysian Manufacturing Firms *Dr. Simon Karl Hubert Backhaus, Putra Business School, Malaysia*
11:20-11:35	ML1137	Energy Disaggregation using Principal Component Analysis Representation *Dr. Pierre Dantas, Federal University of Amazonas (UFAM), Brazil*
11:35-11:50	ML1136	A Clinical Decision Support Tool to Detect Invasive Ductal Carcinoma in Histopathological Images using Support Vector Machines, Naïve-Bayes, and K-Nearest Neighbor Classifiers *Assoc. Prof. Ma. Sheila A. Magboo, University of the Philippines Manila, Philippines*
11:50-12:05	ML1158	An Octave Package to Perform Qualitative Analysis of Non-Linear Systems Immersed in R4 *Dr. Flabio Gutierrez, Universidad Nacional de Piura, Perú*
12:05-12:50	ML1180	Crime Base: Towards Building A Knowledge Base for Crime Entities and Their Relationships from Online Newspapers *Dr. Srinivas Karur, Siddaganga Institute of Technology Tumakuru, India*

Abstracts of Session 3

ML1109 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

ML1203: Convolutional Signature

Dr. Tomoyuki Ichiba
University of California Santa Barbara, USA

Abstract. Signature is an infinite graded sequence of statistics which characterizes geometric rough paths, particularly, finite variation processes. The truncated signature transforms and its applications have been studied successfully with machine learning in the low dimensional cases. In high dimension, it is difficult to handle exponentially growing number of features in truncated signature transform. We propose a novel neural network-based model which borrows the idea from Convolutional Neural Network to address this problem. Our model reduces the number of features efficiently in a data dependent way. Some empirical experiments are provided to support our model.

ML1140: A decision support model for disaster management based on extended DEMATEL

Dr. Kaixuan Qi
State Key Laboratory of Fire Science, University of Science and Technology of China, China

Abstract. With the frequent occurrence of various disasters, serious damage has been caused to social and economic development. Because disaster management plays an important role in controlling disasters and reducing losses. This research aims to develop a decision support model for disaster management based on expert knowledge. First, the traditional Decision-Making Trial and Evaluation Laboratory (DEMATEL) method is extended under a bipolar 2-tuple linguistic environment to model the influences among factors involved in disaster management. Then, according to the total interaction relationships derived by extended DEMATEL, the weights of influential factors are computed. Subsequently, the factors' performances are suggested to be evaluated using the bipolar 2-tuple linguistic information. After that, different emergencies are simulated in terms of the performances of factors and the interactions between them. Based on the simulation results, the overall performance values of emergencies are determined. Finally, an illustrative example is given to demonstrate the feasibility and usefulness of the proposed model. A decision support model for disaster management based on extended DEMATEL under a bipolar 2-tuple linguistic environment is developed. The results of the illustrative example show that the model has the ability to explore how influential factors and their interactions affect disaster management. The proposed decision support model could offer useful information to the decision makers in emergency management department for coping with the disaster more effectively.

ML1147 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

ML1149 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

ML1156 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

ML1160 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

ML1170: Investigating the relationship between industry 4.0 and productivity: a conceptual framework for Malaysian manufacturing firms

Dr. Simon Karl Hubert Backhaus
Putra Business School, Jalan la UPM, 43400 Serdang, Selangor, Malaysia

Abstract. Previous studies in Malaysia concerning Industry 4.0 focused mainly on cloud manufacturing, advanced robotics and intelligent manufacturing. Field studies conducted were focusing predominantly on the beverage and electrical equipment industry. Industry 4.0 is considered as a new industrial revolution. In contrast to the previous publications, the purpose of this conceptual paper is to provide a conceptual framework for further studies to be conducted in Malaysia identifying the relationship between Industry 4.0 key technologies and productivity. Wide field studies concerning Industry 4.0 and productivity of Malaysian manufacturing firms are still lacking. The paper describes briefly the key technologies of Industry 4.0 and ranks them according to the absolute frequency stated in the literature. The developed research questions concern the relationship between productivity and Industry 4.0 technologies. Productivity is a key element of competitiveness for manufacturing firms. Hence research about the relationship between Industry 4.0 technologies and productivity is essential for Malaysian manufacturing firms prior implementation of new manufacturing technologies.

ML1137 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

ML1136 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

ML1158 To avoid repeatability issue, this abstract will be available after the full paper is published in the conference proceedings.

ML1180: Crime base: Towards building a knowledge base for crime entities and their relationships from online news papers

Dr. Srinivas Karur
Department of Computer Science and Engineering, Siddaganga Institute of Technology, Tumakuru, Karnataka, India

Abstract. In the current era of internet, information related to crime is scattered across many sources namely news media, social networks, blogs, and video repositories, etc. Crime reports published in online newspapers are often considered as reliable compared to crowdsourced data like social media and contain crime information not only in the form of unstructured text but also in the form of images. Given the volume and availability of crime-related information present in online newspapers, gathering and integrating crime entities from multiple modalities and representing them as a knowledge base in machine-readable form will be useful for any law enforcement agencies to analyze and prevent criminal activities. Extant research works to generate the crime knowledge base, does not address extraction of all non-redundant entities from text and image data present in multiple newspapers. Hence, this work proposes Crime Base, an entity relationship-based system to extract and integrate crime related text and image data from online newspapers with a focus towards reducing duplicity and loss of information in the knowledge base. The proposed system uses a rule-based approach to extract the entities from text and image captions. The entities extracted from text data are correlated using contextual as-well-as semantic similarity measures and image entities are correlated using low-level and high-level image features. The proposed system also presents an integrated view of these entities and their relations in the form of a knowledge base using OWL. The system is tested for a collection of crime related articles from popular Indian online newspapers.

Part IV E-Poster Presentations

E-Poster Presentation Guidelines

- All E-Posters will be demonstrated on the official conference website.
- Participants could view and share their comments on the website. If any questions on opening the E-poster, kindly contact conference secretary for assistance.
- Signed and stamped electronic presentation certificate would be issued via e-mail after the presentation is delivered.

List of Posters

Please click paper ID to Access to the E-posters.

ML1194	The Larger the Better: A Scalable Spectral Clustering Algorithm for Cosine Similarity *Dr. Guangliang Chen, San Jose State University, USA*
ML1207	Framework to detect and recognize attack for IoT devices *Dr. Jagan Mohan Reddy, Lakireddy Bali Reddy College of Engineering, India*
ML1202	Call for Papers | SAGE Journals Featuring Data Engineering, Machine Learning, and Algorithms

Abstracts of Posters

ML1194: The larger the better: A scalable spectral clustering algorithm for cosine similarity

Prof. Guangliang Chen
San Jose State University, USA

Abstract. We propose a unified scalable computing framework for three versions of spectral clustering - Normalized Cut (Shi and Malik, 2000), the Ng-Jordan-Weiss (NJW) algorithm (2001), and Diffusion Maps (Coifman and Lafon, 2006), in the setting of cosine similarity. We assume that the input data is either sparse (e.g., as a document-term frequency matrix) or of only a few hundred dimensions (e.g., for small images or data obtained through PCA). We show that in such cases, spectral clustering can be implemented solely based on efficient operations on the data matrix such as elementwise manipulation, matrix-vector multiplication and low-rank SVD, thus entirely avoiding the weight matrix. Our algorithm is simple to implement, fast to run, accurate (especially on large data sets), and robust to outliers. We demonstrate its superior performance through extensive experiments which compare our scalable algorithm with the plain implementation on several benchmark data sets.

ML1207: Framework to detect and recognize attack for IoT devices

Dr. Jagan Mohan Reddy
Lakireddy Bali Reddy College of Engineering, Mylavaram, Andhra Pradesh, India

Abstract. With the emergence of Internet and embedded computing, Internet of Things (IoT) is currently becoming an area of interest amongst researches. IoT enable interconnection of embedded devices capable of running application like smart grid, smart traffic control, remote health monitoring etc. As the IoT devices can be connected virtually as well as physically, cyberattacks are likely to become a major threat. An attacker who have access to the on-board network connecting IoT devices or appliances can spy on people, can inject malicious code into these embedded devices creating serious security concerns. In this work, we propose a framework to monitor security threats possible on IoT devices. The framework consists of several modules like data capture, anomaly detector and alert generator. The data capture module collects the application level data, transport and network headers of the traffic that goes into the IoT device. The anomaly detector module uses a signature based approach to detect threats.

Part V Call for Papers for Peer Review Journals

SAGE

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Journals Featuring Data Engineering, Machine Learning, and Algorithms

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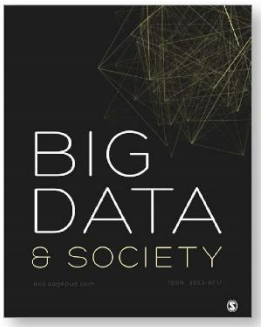

Big Data & Society

Impact Factor:4.577

Indexed In: SSCI, SCOPUS, DOAJ

Big Data & Society (BDS) is an open access peer-reviewed scholarly journal that publishes interdisciplinary work principally in the social sciences, humanities and computing and their intersections with the arts and natural sciences about the implications of Big Data for societies.

SAGE Open

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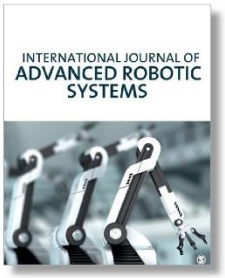
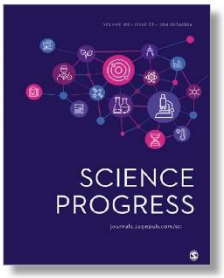
SAGE Open (SGO) is a peer-reviewed, "Gold" open access journal from SAGE that publishes original research and review articles in an interactive, open access format. Articles may span the full spectrum of the social and behavioral sciences and the humanities.



International Journal of Advanced Robotic Systems

Impact Factor:1.482

Indexed In: SCIE,SCOPUS, DOAJ,EBSCO,Ei Compendex, ProQuest



Science Progress

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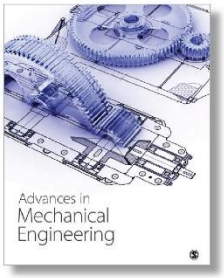

Advances in Mechanical Engineering

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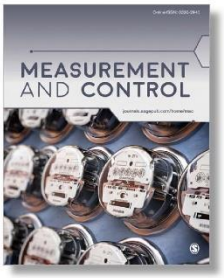

Measurement and Control

Impact Factor:1.492

Indexed In: SCIE,SCOPUS, DOAJ,Compendex,EBSCO, ProQuest,TEMA Technology & Management,CSA Technology Research Database

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Part VI Acknowledgements

On behalf of the MLIS 2020 Organizing Committee, we would like to take this opportunity to express our sincere gratitude to our participants. Without their support and contributions, we would not be able to hold the conference successfully in this special year. We would also like to express our acknowledgements to the Technical Program Committee members who have given their professional guidance and valuable advice as reviewers.

Below are the lists of the Technical Program Committee members. For those who contribute to the success of the conference organization without listing the name here, we would love to say thanks as well.

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