

CONFERENCE PROGRAM

ICISE 2020
2020 the 5th International Conference on
Information Systems Engineering

ICBDM 2020
2020 International Conference on
Big Data in Management

November 20-22, 2020

Time Zone: UTC/GMT+0

ONLINE CONFERENCE

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中国科学院上海生命科学信息中心
Shanghai Information Center for Life Sciences, CAS

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Zoom Function Guidelines



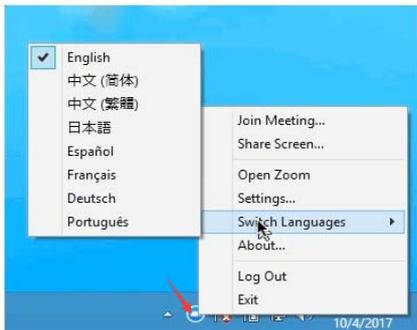
1. Download Zoom

<https://zoom.us/download>

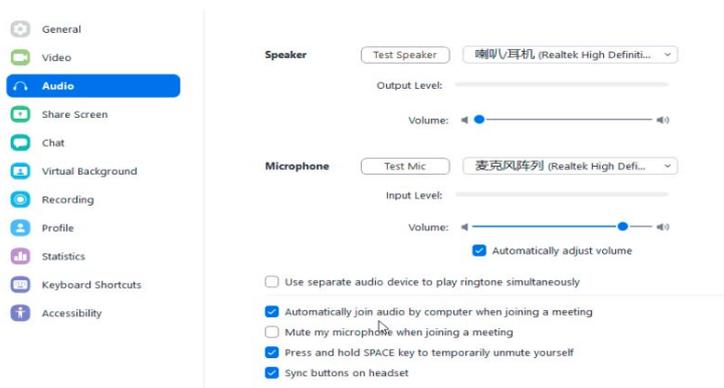
2. Sign up an account



3. Language Setting

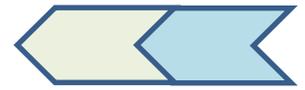


4. Software Test

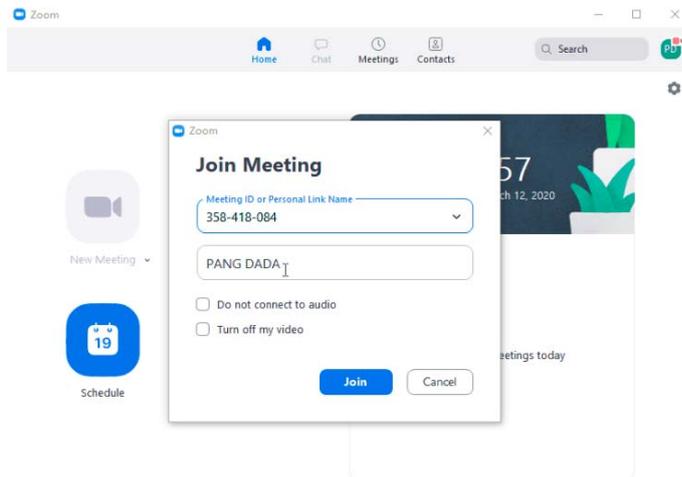




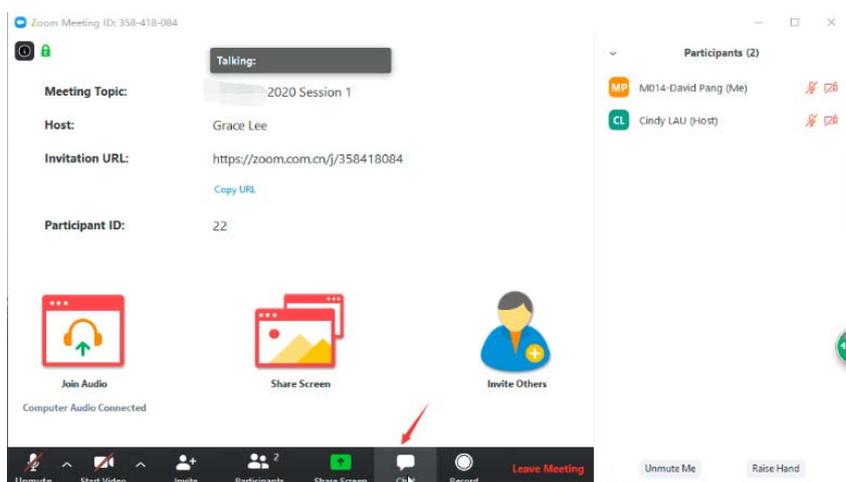
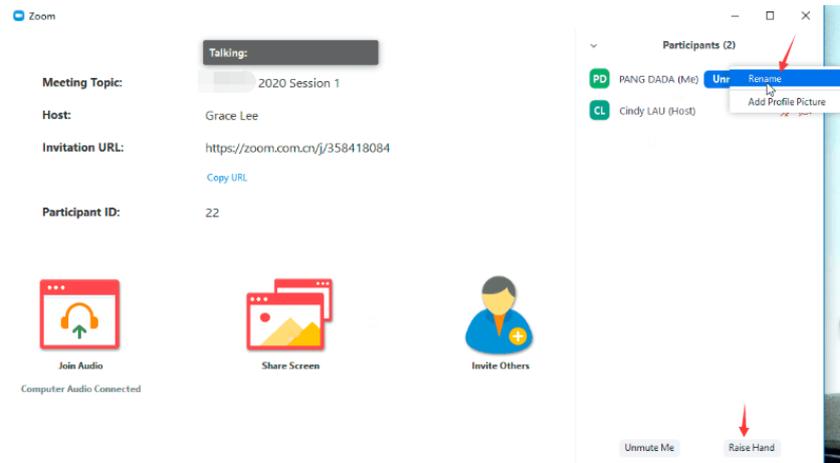
Zoom Function Guidelines

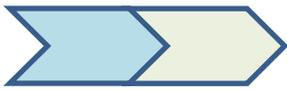


5. Join in the conference (Paper ID + Name)

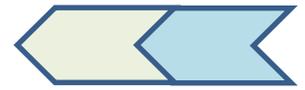


6. Rename & Raise hand function & Chat function.

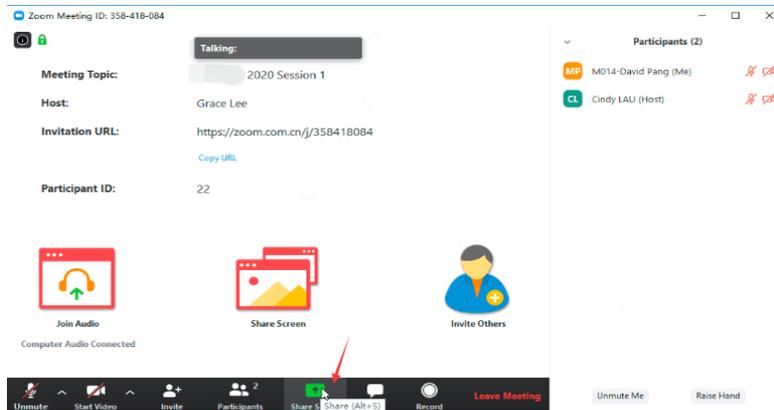




Zoom Function Guidelines



7. Share Screen



8. Share Computer Sound



Attention:

Time Zone: London Time (UTC/GMT+0)

Equipment Needed

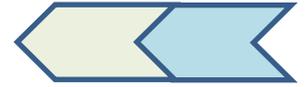
1. A computer with an internet connection (wired connection recommended)
2. USB plug-in headset with a microphone (recommended for optimal audio quality)
3. Webcam (optional): built-in or USB plug-in

Environment Requirement

1. Quiet Location
2. Stable Internet Connection
3. Proper lighting



Zoom Function Guidelines



Join the Test Session before the Formal Session

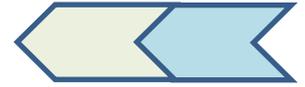
The presentation should be within 12 minutes, 3 minutes for Q&A, in total. Each presentation should be limited in 15 minutes.

Presentation Recording and Broadcasting

The photograph(s) or video or audio recording(s) will be taken by conference organizer. It will be used in for conference program purpose. The photograph(s) or video or audio recording(s) will be destroyed after the conference, it cannot be distributed to or shared with anyone, it shall not be used for commercial nor illegal purpose. Each presentation will be recorded, if you don't want it, please inform our staff ahead of time. Do not record other presenters' presentation nor distribute it to or share with anyone unless the presenter gives written consent of agree. Failure to do so will be considered a serious academic violation subject to disciplinary/ lawful action.



Keynote Speakers



Prof. Steven Furnell

University of Nottingham, United Kingdom

Fellow, British Computer Society | Senior Member, IEEE

Time: 9:10-9:55, November 21, 2020 (London Time, UTC/GMT+0)

Meeting ID: 612 8060 3399

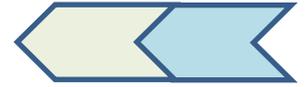
Speech Title: Cyber Security – Who We Need and How to Recognise Them

Abstract: Whatever our use of information technology and information systems, there is now an inescapable need to attend to the security and protection of the data and devices involved. However, this creates a resultant need for appropriate professionals to support the task. But what do they look like and how can we find them? Cyber security is a broad issue, and the topic space can be defined in many different ways. Equally, there are a myriad of related qualifications and certifications that practitioners may hold, which can signify very different knowledge and skills. This talk examines the challenges facing organisations in understanding their security needs and recognising the related expertise to help address them. It also highlights the need for a breadth of skills in order to match the breadth of the challenge.

Biography: Steven Furnell is a professor of cyber security at the University of Nottingham. He is also an Adjunct Professor with Edith Cowan University in Western Australia and an Honorary Professor with Nelson Mandela University in South Africa. His research interests include usability of security and privacy, security management and culture, and technologies for user authentication and intrusion detection. He has authored over 330 papers in refereed international journals and conference proceedings, as well as books including *Cybercrime: Vandalizing the Information Society* and *Computer Insecurity: Risking the System*. Prof. Furnell is the current Chair of Technical Committee 11 (security and privacy) within the International Federation for Information Processing, and a member of related working groups on security management, security education, and human aspects of security. He is also a board member of the Chartered Institute of Information Security and chairs the academic partnership committee.



Keynote Speakers



Prof. Walter Brenner

University of St. Gallen, Switzerland

Swiss academic, Director of the Institute of Information Management, Australia

Time: 10:10-10:55, November 21, 2020 (London Time, UTC/GMT+0)

Meeting ID: 612 8060 3399

Speech Title: Design Thinking for Requirements Engineering

Abstract: The keynote will show that Design Thinking is a very useful method to extend the toolbox of Requirements Engineering. Additionally, it will be shown how Requirements Engineering and Design Thinking can be integrated to foster human-centric software engineering. We all know examples of various hard-to-use software systems developed by software engineers around the world. A major reason for this problem is that these software systems have been engineered without intensive contact to the users. Human-centric software engineering helps to improve the situation.

Design thinking is a method for developing human-centric solutions. It is a rather qualitative method that follows the rule «innovation is made by people for people». Or, applied to the software world: «software is made by people for people».

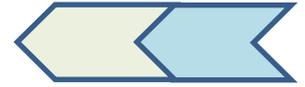
In the first part of my keynote I will explain some basics of Design Thinking with concrete examples from projects. In the second part I will demonstrate on the basis of an artifact model that Design Thinking can be integrated into Requirements Engineering. This keynote is based on an article published in a special issue of IEEE software on Design Thinking in the March/April issue of 2020.

Biography: Professor Brenner joined St.Gallen University in 2001 as a professor after having held the Chair of Information Systems at the University of Essen (Germany) for two years, and at Freiberg University of Mining and Technology (Germany) for 7 years. Currently, Professor Brenner acts as Director of the Institute of Information Management. In addition, he is Head of the Department of Computer Science. From 2010 – 2012 he was Dean of the School of Management also at the University of St.Gallen. His research focuses on Industrialisation of Information Management, Management of IT service providers and Innovation and Technology Management. He authored and/or edited more than 30 books as well as more than 300 scientific publications.

Professor Brenner received a Graduate Degree in business Administration (lic. oec.) and a Doctorate (Dr. oec.) from the University of St.Gallen. Prior to joining academia Professor Brenner worked as Head of Application Development with Alusuisse-Lonza AG (Switzerland).



Keynote Speakers



Dr. Yu-Wang Chen

Alliance Manchester Business School, The University of Manchester, UK

Time: 10:55-11:40, November 21, 2020 (London Time, UTC/GMT+0)

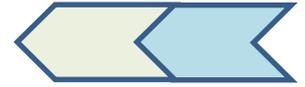
Meeting ID: 612 8060 3399

Speech Title: Decision Analytics Using Data-Driven Modelling and Evidential Reasoning

Abstract: Decision analytics allow individuals and organizations to transform data and combine evidence to support informed decision making. However, most real-world decision making problems are often characterized by multiple sources of data and different types of information. In this talk, I will briefly introduce data-driven modelling and evidential reasoning in the context of decision analytics under uncertainties, where the evidential reasoning methodology constitutes a conjunctive probabilistic reasoning process generalised from Dempster's rule and Bayesian inference. A set of examples and real-world applications will be presented for the illustration of leveraging data-driven modelling and evidential reasoning for business decision making.

Biography: Dr. Yu-Wang Chen is currently Senior Lecturer in Decision Sciences in the University of Manchester. Prior to his current appointment, he was a Postdoctoral Research Associate, and then appointed as a Lecturer in 2011 at the Decision and Cognitive Sciences (DCS) research centre of Manchester Business School, The University of Manchester, and a Postdoctoral Research Fellow at the Department of Computer Science, Hong Kong Baptist University. He received the PhD degree in Control and System Engineering from Shanghai Jiao Tong University in 2008. His research interests are mainly in the areas of Decision and System Sciences, Operational Research and Data Analytics. He has published over 40 research articles in leading journals, such as European Journal of Operational Research, Computers & Operation Research, Information Sciences, Knowledge-Based Systems and IEEE T-SMC, 2 book chapters and 20 publications in conference proceedings. He has completed as PI/Co-I several research projects funded by ERC, EPSRC, NSFC, etc. He acted as Associate Editor of the Decision Analytics Journal (Springer) and Editorial Board Member of Complexity, Web Intelligence: An International Journal and International Journal of Productivity and Performance Management (Emerald).

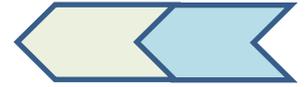
Program Overview



November 20, 2020 Friday London Time: UTC/GMT+0 Presentation Tests			
9:00-9:45	Keynote Speakers Test	Meeting ID: 612 8060 3399	
9:00-9:35	Session 1 Test	Meeting ID: 632 3483 9297	
10:00-10:35	Session 2 Test	Meeting ID: 612 8060 3399	
9:50-10:20	Session 3 Test	Meeting ID: 632 3483 9297	
10:35-11:05	Session 4 Test	Meeting ID: 632 3483 9297	
November 21, 2020 Saturday London Time: UTC/GMT+0 Formal Presentation Sessions			
Keynote Speeches: Meeting ID: 612 8060 3399			
9:00-9:10	Opening Remarks	Dr. Yu-Wang Chen , The University of Manchester, UK	
9:10-9:55	Keynote Speech 1	Prof. Steven Furnell , University of Nottingham, United Kingdom Title: <i>Cyber Security – Who We Need and How to Recognise Them</i>	
9:55-10:10	Break		
10:10-10:55	Keynote Speech 2	Prof. Walter Brenner , University of St. Gallen, Switzerland Title: <i>Design Thinking for Requirements Engineering</i>	
10:55-11:40	Keynote Speech 3	Dr. Yu-Wang Chen , The University of Manchester, UK Title: <i>Decision Analytics Using Data-Driven Modelling and Evidential Reasoning</i>	
Parallel Sessions			
13:30-15:15	Session 1	Data Clustering and Data Calculation	Meeting ID: 632 3483 9297
13:30-15:15	Session 2	Big Data and Key Technologies	Meeting ID: 612 8060 3399
November 22, 2020 Sunday London Time: UTC/GMT+0 Formal Sessions & Keynote Speeches Replay			
9:00-10:30	Session 3	Information System and Management	Meeting ID: 632 3483 9297
10:45-12:15	Session 4	Modern Information Theory and Technology	Meeting ID: 632 3483 9297
14:00-16:25	Keynote Speeches Replay	Meeting ID: 612 8060 3399	



Presentation Timetable



(London Time, UTC/GMT +0)

November 20, 2020 Keynote Speeches Test Session		November 21, 2020 Keynote Speeches Formal Sessions	
Meeting ID: 612 8060 3399			
9:00-9:15	Prof. Steven Furnell	9:10-9:55	Prof. Steven Furnell
9:15-9:30	Prof. Walter Brenner	10:10-10:55	Prof. Walter Brenner
9:30-9:45	Dr. Yu-Wang Chen	10:55-11:40	Dr. Yu-Wang Chen
November 20, 2020 Test Presentation Sessions		November 21, 2020 Formal Presentation Sessions	
Test Session 1: 632 3483 9297		Formal Session 1: 632 3483 9297	
9:00-9:05	SD20-203	13:30-13:45	SD20-203
9:05-9:10	SD20-222	13:45-14:00	SD20-222
9:10-9:15	SD20-206	14:00-14:15	SD20-206
9:15-9:20	SD20-426	14:15-14:30	SD20-426
9:20-9:25	SD20-422	14:30-14:45	SD20-422
9:25-9:30	SD20-405	14:45-15:00	SD20-405
9:30-9:35	SD20-213-2	15:00-15:15	SD20-213-2
Test Session 2: 612 8060 3399		Formal Session 2: 612 8060 3399	
10:00-10:05	SD20-207	13:30-13:45	SD20-207
10:05-10:10	SD20-210E	13:45-14:00	SD20-210E
10:10-10:15	SD20-214	14:00-14:15	SD20-214
10:15-10:20	SD20-216	14:15-14:30	SD20-216
10:20-10:25	SD20-213	14:30-14:45	SD20-213
10:25-10:30	SD20-217	14:45-15:00	SD20-217
10:30-10:35	SD20-215	15:00-15:15	SD20-215



Presentation Timetable



Test Session 3: 632 3483 9297		November 22, 2020 Formal Presentation Sessions	
		Formal Session 3: 632 3483 9297	
9:50-9:55	SD20-224	9:00-9:15	SD20-224
9:55-10:00	SD20-418	9:15-9:30	SD20-418
10:00-10:05	SD20-423	9:30-9:45	SD20-423
10:05-10:10	SD20-417	9:45-10:00	SD20-417
10:10-10:15	TN006	10:00-10:15	TN006
10:15-10:20	SD20-424	10:15-10:30	SD20-424
Test Session 4: 632 3483 9297		Formal Session 4: 632 3483 9297	
10:35-10:40	SD20-212	10:45-11:00	SD20-212
10:40-10:45	SD20-225	11:00-11:15	SD20-225
10:45-10:50	SD20-416	10:15-11:30	SD20-416
10:50-10:55	SD20-415	11:30-11:45	SD20-415
10:55-11:00	SD20-427	11:45-12:00	SD20-427
11:00-11:05	SD20-410	12:00-12:15	SD20-410



Session 1



Topic: Data Clustering and Data Calculation

Session Chair: Dr. Yu-Wang Chen, *The University of Manchester, UK*

Time: 13:30-15:15, November 21, 2020 (London Time, UTC/GMT+0)

Meeting ID: 632 3483 9297 <https://zoom.com.cn/j/63234839297>

-7 papers, 15 minutes for each paper, including Q&A;

-Authors are required to join your whole session and enter the meeting room 10 minutes earlier before the session starts.

<p>SD20-203 13:30-13:45</p>		<p>Presenter: Shashwat Mehta From: Manipal Institute of Technology, India</p>
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Title: *Analysis of Min-max Algorithm and PSO Algorithm for Data Clustering*

Authors: Shashwat Mehta, Manmohan Singh and Rajendra Pamula

Abstract: This paper propounded the approach of PSO (Particle Swarm Optimization) to cluster data. It has helped us to advent the use of PSO in finding the centroids of a cluster specification by the users. It then looked into two sections of PSO where the first part is using K-means clustering for seeding initial swarm and the second chunk uses PSO to sift the cluster formation by K-means. Unlike previous papers, our evaluation has been extended to some new datasets. Also the use and application of PSO is very pertinent in many sectors (Banking, Telecommunication, E-commerce, IT Industry, Hospital) as this algorithm provides comprehensive approach to a particular problem with its properties such as Fast convergence rate, minute amount of parameters and easy implementation without any computational complexities. But it faces certain fallacy and catastrophic results when the algorithm tries to learn on its parameters such as initial weight(w), acceleration coefficient ($r1$ and $r2$) and to avoid that it needs to be incorporated with some other unsupervised and efficient Machine Learning algorithm that is Min-max K-mean. This paper proposed an idea to get the initial cluster inputs from Min-Max K mean algorithm and to use that factor on the improved PSO algorithm where the stress to find the Gbest does not rely only on the initial parameters and the Particle's Best position (XJ) can iteratively learned and enhanced their performance.



Session 1



SD20-222 13:45-14:00		Presenter: Jeroen Baijens From: Universidad Autónoma de Occidente, México
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Title: *Data Analytics Project Methodologies: Which One to Choose?*

Authors: Jeroen Baijens, Remko Helms and Rob Kusters

Abstract: Developments in big data have led to an increase in data analytics projects conducted by organizations. Such projects aim to create value by improving decision making or enhancing business processes. However, many data analytics projects still fail to deliver the expected value. The use of process models or methodologies is recommended to increase the success rate of these projects. Nevertheless, organizations are hardly using them because they are considered too rigid and hard to implement. The existing methodologies often do not fit the specific project characteristics. Therefore, this research suggests grouping different project characteristics to identify the most appropriate project methodology for a specific type of project. More specifically, this research provides a structured description that helps to determine what type of project methodology works for different types of data analytics projects. The results of six different case studies show that continuous projects would benefit from an iterative methodology.

SD20-206 14:00-14:15		Presenter: Yuqing Yang From: Northwestern Polytechnical University, China
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Title: *Temporal Convolutional Network for Pork Price Prediction*

Authors: Yuqing Yang, Yuxin Zhao and Shuang Lai

Abstract: With the continuous economic development, China's pork consumption and demand market are expanding. But in recent years, due to the rising cost of raising pigs and the environmental protection policies in animal husbandry, China's domestic pork production has been restricted. It is not difficult to see that the domestic pork price volatility has always existed and had a profound impact on household consumption. Therefore, a prediction model for pork prices is essential, which can be used by governments, enterprises or residents to grasp the information in the pork market. Therefore, a prediction model for pork prices is essential. In this paper, a pork price prediction model is proposed, which is based on the Temporal Convolution Network (TCN). The experimental data are from China's National Agricultural Product Price Database. We select the daily pork price of Yunyang Vegetable Wholesale Market in Jingyang County, Shaanxi Province from Feb.1st, 2017 to Jan.31st, 2020. Experimental results show that based on grasping a large amount of effective historical information, TCN model effectively improves the accuracy of short-term prediction, and has better performance and practical significance in pork price prediction.



Session 1



SD20-426 14:15-14:30		Presenter: Willie Hui Huang From: Amazon Web Services
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Title: *Performance Evaluation and Application of Computation Based Low-cost Homogeneous Machine Learning Model Algorithm for Image Classification*

Authors: Willie Hui Huang

Abstract: The image classification machine learning model was trained with the intention to predict the category of the input image. While multiple state-of-the-art ensemble model methodologies are openly available, this paper evaluates the performance of a low-cost, simple algorithm that would integrate seamlessly into modern production-grade cloud-based applications. The homogeneous models, trained with the full instead of subsets of data, contains varying hyper-parameters and neural layers from one another. These models' inferences will be processed by the new algorithm, which is loosely based on conditional probability theories. The final output will be evaluated.

SD20-422 14:30-14:45		Presenter: Adam Dziomdziora From: Lodz University of Technology, Poland
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Title: *Quantifying the Bullwhip Effect in Networked Structures with Nontrivial Topologies*

Authors: Adam Dziomdziora, Przemyslaw Ignaciuk

Abstract: The paper analyzes the formation of the bullwhip effect (BE) in logistic systems organized in a networked structure, as a major threat to upholding stability in the face of non-negligible goods transport delay and uncertainty of demand. As opposed to the majority of earlier works, which considered serial connections, here, more complex – networked – topologies are investigated. The popular Order-Up-To (OUT) policy is selected as the method governing the goods flow. Taking into account the fact that in the networked structures the classic indicators do not allow one to properly quantify the BE formation, new measures have been introduced. It occurs that, unlike in the serial configuration, in the networked structures, the OUT policy triggers the BE even in the nominal operating conditions. The BE intensity depends on the type of demand, with the Poisson distribution leading to the largest order-to-demand variance increase. The number of connections and the graph density have been recognized as the principal factors behind the BE formation in networked systems.



Session 1



SD20-405 14:45-15:00		Presenter: Jinyun Xue From: Jiangxi Normal University, China
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Title: *Methodology and Platform of IS Code Generation*

Authors: Jinyun Xue, Qinghong Yang, Qimin Hu, Zhuo Cheng, Zhen You, Wuping Xie

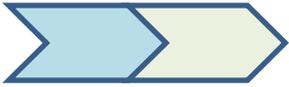
Abstract: Computer software is key part of information system (IS). One of the main targets of Model-Driven Software Engineering (MDSE) is the increase in productivity and reliability offered by automatically generating code from models. However, the practical adoption of code generation remains relatively slow and limited to niche applications. A potential is to develop automated code generation and automatic model transformation. To answer the challenge, this paper proposes, based on the practicable formal methods (PAR method), the methodology for implementing formal model-driven engineering (FMDE), then to develop platform of code generation based on FMDE, called PAR Platform. We call PAR method and PAR platform as PAR. PAR consists of requirement modeling language SNL (meta-model), algorithm modeling language Radl, abstract program modeling language Apla, a set of rules for the model transformation and a set of automatic transformation tools. The tools can implement several transformations from requirement to algorithm models, then to abstract program models and finally to executable programs. The goal of the transformations is to generate executable program. There are two kinds of applications of PAR platform. One is automatic generation of many nontrivial algorithms and programs. Another is, according to FMDE, development of several safety-critical information systems.

SD20-213-2 15:00-15:15		Presenter: Lokmane HEZLA From: Peoples' Friendship university of Russia, Russia
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Title: *The Role of Organizational Failure Mode, Effects & Amp; Analysis (FMEA) in Risk Management and Its Impact on the Company's Performance*

Authors: Lokmane HEZLA, Avdotin Vldimer Petrovech, Plyuschicov Vadim Gennaddievich, Sambros Natalia Borisovna, Nadjla HEZLA, Derouiche Laid

Abstract: The defects in the institutions, both on the national and global sectors, are usually shown in the performance and quality of the product, as institutions that have a weak risk management system are vulnerable to increased errors and points of failure. Thus, the weaker the risk management system, the lower the performance and the negative results increase in the institution. Undoubtedly all institutions are striving to have a strong risk management system with good performance. We have relied in our study on a chain strategy in collecting accurate



Session 1



information through a field experiment to prove the relationship between risk management and the performance of the institution, which has allowed us to discover that the most important reasons for the decline in performance in the institution are due to the failure points in the administration and some officials. These defects have a direct and indirect impact on the performance of the institution. Based on the relationship between risk management and performance, this paper emphasizes on strengthening risk management in companies through the use of the organization FMEA method in order to improve the performance of the organization and obtain positive results in various sectors of the institution with minimal loss and less time.

Best Presentation Award & Session Group Photo



Session 2



Topic: Big Data and Key Technologies

Session Chair: Prof. Walter Brenner, University of St. Gallen, Switzerland

Time: 13:30-15:15, November 21, 2020 (London Time, UTC/GMT+0)

Meeting ID: 612 8060 3399 <https://zoom.com.cn/j/61280603399>

-7 papers, 15 minutes for each paper, including Q&A;

-Authors are required to join your whole session and enter the meeting room 10 minutes earlier before the session starts.

SD20-207 13:30-13:45	Presenter: Wecka Imam Yudhistyra From: Suranaree University of Technology, Thailand
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Title: *Implementation of Big Data Analytic: Customers Analyzing using an Association Rule Modeling in a Gold, Silver, and Precious Metal Trading Company in Indonesia*

Authors: Wecka Imam Yudhistyra, I-soon Raungratanaamporn and Vatanavongs Ratanavaraha

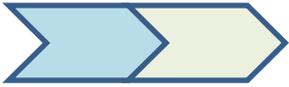
Abstract: The underlying reason for this manuscript is to implement big data analytics to find meaningful patterns and offer useful insights from a large amount of big data available. Since many companies are still struggling to optimize big data to support their business, it is essential to minimize the gap between a large amount of data available now and the skills to analyze it. In addition, there is also a deficiency in related publications in scientific journals regarding the implementation of Big Data Analytics (BDA), which makes this manuscript significant. In addition, BDA is a new interesting thing (particularly in a developing country like Indonesia or other ASEAN countries), it is hard to be implemented, and this manuscript tries to resolve most of that complex problem of practice including the critical issue and leverages it in ways that could positively influence the organization's decision-making process. Finally, the results of this manuscript are some recommendations for companies in conducting big data analytics.

SD20-210E 13:45-14:00	Presenter: Yuren Zhou From: Wuhan University, China
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Title: *Evaluation the Impact of Beijing Medical Reform on the Costs and Service Volume of different Levels of Healthcare Facilities*

Authors: Yuren Zhou

Abstract: To evaluate the mechanism and impact of the comprehensive Beijing Medical Reform in 2017 on the total service volume, cost for per patient and the proportion of drug costs of medical institutions at all levels, we analyze the data from 2015 to 2018 of the changes of the total service volume, cost for per patient and the proportion of drug cost before and after



Session 2



the reform for the primary hospitals, secondary hospitals, tertiary hospitals and the community health service centers in Beijing. We find that after the comprehensive reform, the number of outpatient and emergency services and inpatient services in tertiary hospitals decreased by 9.10% in 2017, after deducting natural decline factors, it decreased by 13.70% compared with the same period of 2016. The primary hospitals and secondary hospitals decreased respectively 2.21% and 12.81%, while the community health service centers increased by 8.10% compared to 2016. The average cost of outpatients and inpatients in the secondary and tertiary hospitals and community health service centers had decreased compared to the historical period. Among them, the tertiary hospitals in 2018 have decreased by 6.63% and 1.64% compared with 2017 respectively, the secondary hospitals were 8.13% and 1.66%, and the community health service centers were 1.34% and 8.70%. According to the proportion of drug expenses, except for primary hospitals, other medical service institutions have shown a downward trend for three consecutive years. Our conclusion is: After the comprehensive reform in Beijing, adjustments to fees and services effectively controlled the excessive increase in the proportion of drug costs and the cost for per patients, and realized the effective diversion of service volumes from tertiary hospitals to primary healthcare institutions.

SD20-214 14:00-14:15	Presenter: Jiezi Yang From: Shanghai University of International Business and Economics, China
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Title: *Data Privacy of Enterprises in the Era of Big data. Evidence from China*

Authors: Zijie Yang, Feng Liu, Yaqiong Chi and Caiyun Fan

Abstract: The development of science and technology brings about the explosive growth of data volume, which provides great convenience for the operation of enterprises. The advent of the era of big data also makes enterprises more vulnerable to the risk of data privacy leakage when conducting cross-border trade transmission. This paper conducts an investigation into this phenomenon. Affected by the epidemic, cloud interview was used to conduct in-depth communication with nine enterprises of different types. After classifying them, about 30% of enterprises in each category were selected for empirical research through questionnaires. The results show that all the nine enterprises have a weak understanding of the existing laws related to data privacy protection at home and abroad. Based on this, this paper puts forward corresponding suggestions for enterprises and government departments after the simulation experiment, which has certain reference value for relevant enterprises in China in the formulation of privacy policies and strategies.



Session 2



SD20-216 14:15-14:30		Presenter: Alessio Faccia From: Universidad Autónoma de Occidente, México
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Title: *Big Data Analyses and New Technology Applications in Sport Management, An Overview*

Authors: Leonardo Jose Mataruna-Dos-Santos, Alessio Faccia, Hussein Muñoz Helú and Mohammed Sayeed Khan

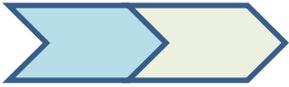
Abstract: Technology has profoundly changed our lives, especially in the past two decades. The introduction of the internet and PCs, first of all, cell phones and later smartphones, has changed our daily habits, leading us to be always connected for many hours of the day. Changes that have affected all fields, not least sporting activity, always focused on performance maximization. Technology in sport has made great strides, allowing both amateurs and even more professionals to use innovative technical solutions that can improve performance: first of all during training and then, consequently, in official competitions. Innovations both in the field of materials, but above all in terms of tools for verifying correct training through the collection of a large number of data, turned into carefully analysed useful information. There are sports that have benefited most from these new technologies, based on their particular characteristics. This research focused on a systematic analysis of the most important technologies that are currently allowing great progress in sports performance and in the impartiality of competitions through the analysis of the collected data. In particular, the research highlighted three particular areas of interest: a) video assistant data collectors; b) Wearable technologies; c) Scouting tech-based techniques.

SD20-213 14:30-14:45		Presenter: Haoran Sun From: Jinan Foreign language school, China
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Title: *Research on Credit Risk Assessment of Online Network Credit Based on GBDT*

Authors: Haoran Sun, Boyang Wang

Abstract: As an innovative business model in the Internet + finance field, online loans are still immature at home and abroad, and there are few studies on quantitative models of personal credit risk assessment applied to. Based on the loan data released by the Lending club online loan platform, this paper builds a online loan credit risk assessment indicator system, innovatively introduces the "loan / annual income" debt yield indicator, and builds a gradient-based decision tree (GBDT) -based online loan personal credit risk assessment model, used to predict the default rate of borrowers. Finally, empirical research shows that the gradient prediction tree model has good prediction accuracy, and the prediction accuracy rate for the



Session 2



borrower is actually not overdue and the forecast is not overdue (true classification) is as high as 87.31%, and the borrower is actually overdue and predicted overdue (The true-negative category) has a prediction accuracy of 79.88 %.

SD20-217 14:45-15:00		Presenter: Alessio Faccia From: Universidad Autónoma de Occidente, México
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Title: *Tackling Big Data and Black Swans through Fractal Approach and Quantum Technology*

Authors: Alessio Faccia, Leonardo Jose Mataruna-Dos-Santos, Hussein Muñoz Helú and Andressa Fontes Guimaraes-Mataruna

Abstract: Since the dawn of time, man has always tried to predict the future. Inserted in an environmental context, the knowledge of the variables that influenced his life allowed him to reap daily benefits and ultimately ensured his survival. Weather forecasts, bets on sports results, financial analysis, estimation of life span probabilities, to name just a few examples, are based on increasingly accurate estimates thanks to increasingly efficient statistical techniques and detection tools. Risk and uncertainty, however, although increasingly limited, represent an essential variable of any future event. The possibility of measuring and preventing (even if close to their occurrence) unlikely, but potentially catastrophic events, can determine extraordinary competitive advantages or even just guarantee the survival of a business or human existence. Unlikely events, but catastrophic, are the so-called “black swans”, and represent the nightmare of those who rely on the Gaussian approach, since, even if they fall into the tails of the bell, they represent a non-negligible threat. Studies on the black swan, especially after the events linked to the outbreak of the COVID-19 pandemic, have brought to light the so-called fractal approach that comes closest to the occurrence of most natural events. The analysis of big data, focused on the identification of the black swan, can follow different paths, in any case, the "normal" Gauss curve, as demonstrated, does not lend itself to this type of analysis, therefore most of the statistical tools which are based on this are not suitable for these analyses. This research highlights and tries to demonstrate how the fractal approach, combined with quantum technology, could really represent a great advance in the reliability of future predictions and the detection of black swans.



Session 2



SD20-215 15:00-15:15		Presenter: Yaqiong Chi From: Shanghai University of International Business and Economics, China
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Title: *Data Privacy Maturity Assessment Practice of Digital Transformation Enterprises under the COVID-19 --- Taking an Industrial Company in Xiamen as An Example*

Authors: Yaqiong Chi, Zijie Yang, Feng Liu and Jiayin Qi

Abstract: The Internet under the COVID-19 has brought more revolutionary changes to global trade and data flows. It tears apart national boundaries and further promotes exchanges and trade on a global scale. In this context, data privacy issues have been paid more attention, especially in the context of the epidemic situation, trade data privacy relying on digital transformation enterprises needs to be regulated and controlled. Taking an industrial company in Xiamen as an example, this article conducts online and offline research on companies through literature research and expert interviews, and refers to the Intel privacy maturity model, and constructs 12 indicators in three areas: platform risks, corporate behaviors, and external threats, so as to apply the data privacy maturity of an industrial enterprise in Xiamen. Empirical evidence shows that the maturity of data privacy of this enterprise is in the intermediate stage of institutionalization, and the overall maturity needs to be further developed in the field of adjusting enterprise behavior and preventing external threats. This evaluation system has good applicability to the data privacy issues of digital transformation companies under the epidemic, and can provide reference for the development of corporate data privacy maturity in the domestic manufacturing industry.

Best Presentation Award & Session Group Photo



Session 3



Topic: Information System and Management

Session Chair: To Be Added

Time: 9:00-10:30, November 22, 2020 (London Time, UTC/GMT+0)

Meeting ID: 632 3483 9297 <https://zoom.com.cn/j/63234839297>

-6 papers, 15 minutes for each paper, including Q&A;

-Authors are required to join your whole session and enter the meeting room 10 minutes earlier before the session starts

SD20-224 9:00-9:15	Presenter: Tianyu Wan From: Wuhan University of Technology, China
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Title: *Research on Information Extraction of Municipal Solid Waste Crisis using BERT-LSTM-CRF*

Authors: Tianyu Wan, Wenhui Wang and Hui Zhou

Abstract: There is much research on the phenomenon of municipal solid waste (MSW) and its improvement measures, and the method of information extraction be adopted to obtain the potential knowledge of MSW from the existing relevant research literature. Due to the complexity and diversity of the MSW, unsupervised training of target texts can be achieved through information data based on manual annotation. According to the characteristics of the BERT language model, a common method in natural language processing(NLP), the pre-trained BERT(Bidirectional Encoder Representation from Transformers) model with LSTM-CRF(Long Short Term Memory-Conditional Random Field) architecture is used in the information extraction of MSW crisis to extract entities and relationships between entities from natural language texts. By the method of calculating and evaluating the extraction effect, it provided technical support for further study of its crisis conversion.

SD20-418 9:15-9:30		Presenter: Manar Majthoub From: Applied Science Private University, Jordan
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Title: *Non-Functional Requirements Classification for Aligning Business with Information Systems*

Authors: Manar Manaf Majthoub, Yousra Hani Odeh, Mohammad Hijjawi

Abstract: Non-Functional Requirements (NFR) are defined as the desired quality requirements, such as availability, that restrict software product being developed where some external



Session 3



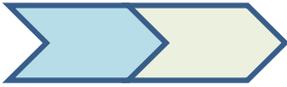
restrictions may apply. Since information systems have been introduced, organizations in the business world align their functional activities with systems without paying attention to quality-based alignment. Few research works have been conducted in order to classify and integrate the NFR with business or system models. But these classifications and integrations are only confined to either the business side or the system side, which in turn have caused in having a gap in mapping the classifications between the two sides. Because business models and system models mutually affect each other in many ways, their NFR integration and classification should be aligned with each other. Having a NFR alignment-based classification between business and information systems contributes to assist the stakeholders in reflecting the quality requirements at the business side for a particular task on the related tasks integrated with NFRs at the systems side. Also having an alignment-oriented classification contributes to trace quality/NFR-based changes from the business organization to its systems and vice versa. In this research, we propose a NFR classification for aligning quality requirements in business with their NFRs in information systems. The work in business side is represented through business process models designed using Business Process Model and Notation (BPMN) where the use case models represents the system side in this research. The proposed classification is demonstrated in both business and systems using the academic advising and registration case study at Applied Science University in Jordan.

SD20-423 9:30-9:45		Presenter: Zineb Britel From: Mohammadia School of engineers EMI, Mohammed V University
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Title: *Change Readiness Assessment for the Implementation of Building Information Modeling within a Construction Project Management Company*

Authors: Zineb Britel, Abdelghani Cherkaoui

Abstract: Building information modeling offers several opportunities for the Architecture, Engineering and Construction industry. Since the human factor plays a central role in the adoption of this intelligent 3D model-based process, ensuring the readiness for change of the relevant stakeholders is essential for its successful implementation. The aim of this study is to assess the change readiness for the implementation of building information modeling within a construction project management company in Morocco. The proposed assessment framework is based on the Fuzzy Analytic Hierarchy Process and the use of linguistic variables to conduct the evaluation. Thus, taking the uncertainty of the respondents into consideration. Not only does the proposed approach provide the readiness maturity level of the company but it also helps in the establishment of an improvement roadmap.



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<p>SD20-417 9:45-10:00</p>		<p>Presenter: Dr. Nadeem Ahmad From: The University of Sialkot, Pakistan</p>
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Title: *Usability Analysis of Educational Information Systems from Student’s Perspective*

Authors: Dr. Nadeem Ahmad Ch., Irum Feroz, Arsalan Anjum

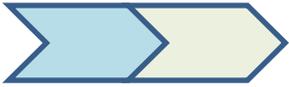
Abstract: The COVID-19 is declared as a world emergency and it is widespread in countries and territories which affected around 91% students worldwide that they are unable to attend their educational institutions physically where the numbers are unprecedented and implications are massive. The continuity in teaching and learning while ensuring the protection and safety of students and staff, brought new challenges in this epidemic. Institutes around the globe started online education and students were motivated to become part of E-Learning through educational information systems. This study is investigating the impact of online teaching, educational information systems, learning outcomes from students’ perspective. By using the user Centered Design methodology, around two hundred students and 30 faculty members from five different countries of Europe and Asia were involved in this research. Their feedback was taken through questionnaires, interviews and focus group methods. A comprehensive questionnaire, containing six different questions regarding understanding about educational information systems and another six questions related to students-instructor interaction, were asked from students. The instructors were interviewed about their previous exposure or training for designing online courses. The results showed that students' satisfaction on online teaching varied country wise while course objectives are not being fulfilled as per their perception. The students showed their concern that online activities are not much engaging, showed less satisfaction in lab work while in some cases felt stressed, overburdened and they found insufficient technical support being offered by their institute. The study is unique as it covered vast factors impacting online teaching and the results provide guidelines for all stakeholders, policy makers, educators and management.

<p>TN006 10:00-10:15</p>		<p>Presenter: Alexander Sean R. Quieta From: De La Salle University, Philippines</p>
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Title: *Management Information System for the Philippine Coast Guard K9*

Authors: Michelle Renee D. Ching, Mikaela Patricia M. Galindez, Antoinette Nadine A. Bernal, Ian Patrick R. Eugenio, Alexander Sean R. Quieta

Abstract: Government law-enforcement over the history have used police dogs as partner to solve crimes that would otherwise be difficult for an average police officer. Dogs, known as a man’s best friend, have fulfilled this role remarkably because of their noses that are highly



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sensitive in detecting smells, even going so far as detecting objects under running water. Unfortunately, not all dogs are suited to be a police dog, also known as K9s. This research aims to help the Philippine Coast Guard K9 (PCGK9) in managing their K9 assets efficiently and effectively throughout the K9s entire life cycle. The main objective of this project is to design, develop, and implement a Management Information System specifically created for the needs of PCGK9. The system developed known as K9MIS mainly focused on monitoring the K9 assets of the organization and their performance. It also includes the management of inventory assets as well as transactional processes. And lastly, the system generates different reports that consist of the consolidated data, which will then be used for managerial decisions.

<p>SD20-424 10:15-10:30</p>		<p>Presenter: Liang Ma From: School of Information Science and Engineering, Shandong University, China</p>
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Title: *Improved Adaptive Clutter Removal Algorithm for Indoor Localization using IR-UWB Radar*

Authors: Liang Ma, Lu Wang, Hongyu Xu, Hongjun Wang

Abstract: In order to locate human targets in highly cluttered indoor environments accurately with impulse radio ultra-wideband (IR-UWB) radar, environmental clutter need to be removed first to reveal the signal reflected from the target. In this paper, we approach the problem with new signal processing procedures. An efficient adaptive clutter removal algorithm based on adaptive variance estimation is proposed to estimate the dynamic clutter in in-door environment. Test results with experimental data in an in-door environment with moving and non-moving targets verified that the proposed method can improve the ranging accuracy of both types of targets.

Best Presentation Award & Session Group Photo



Session 4



Topic: Modern Information Theory and Technology

Session Chair: Prof. Alessio Faccia, Universidad Autónoma de Occidente, México

Time: 10:45-12:15, November 22, 2020 (London Time, UTC/GMT+0)

Meeting ID: 632 3483 9297 <https://zoom.com.cn/j/63234839297>

-6 papers, 15 minutes for each paper, including Q&A;

-Authors are required to join your whole session and enter the meeting room 10 minutes earlier before the session starts

SD20-212 10:45-11:00	Presenter: Xiyin Chen From: Hunan University of Chinese Medicine, China
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Title: *Analysis of the Impact of COVID-19 Outbreak on China*

Authors: Xiyin Chen

Abstract: This study used the method of review to analyze the economic, tourism, health and social impacts of the first three PHEIC outbreaks, so as to identify the impact of COVID-19 epidemic on China in 2020 and put forward policy suggestions in response to the challenges. This study's main research subjects are the 2009 H1N1 outbreak, 2014 Ebola outbreak in West Africa, and 2016 ZIKV outbreak. The literature retrieval of the three PHEIC impacts and the related grey literature were reviewed. The comprehensive analysis of this review indicates that COVID-19 outbreak in China may cause impacts on consumption, import and export, and manufacturing. For a short time, from the demand side and supply side, the COVID-19 affects tourism industry in China. However, if the government attaches considerable importance to the tourism industry, which will lead to the development of new digital technology such as online travel industry. It harms people's psychological health and physical health, and produces unhealthy psychological emotions such as stress, discrimination, fear and a series of physiological and drug sequelae. Meanwhile, it leads to the decline of social trust, the decrease of educational opportunities, the augment of employment pressure, the potential "coaxing" of prices and other harms, thus causing a series of pressures on China's economy, tourism, health and society. It is urgent for Chinese government to put forward effective policies, which are aimed for short term and long term impact separately. While addressing the damage caused by COVID-19 outbreak in China, we should seize the opportunity to promote the reform and innovation of China's health system.



Session 4



SD20-225 11:00-11:15		Presenter: Jiali Kang From: Wuhan University of Technology, China
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Title: *MAS-SEIR-II Simulation on COVID-19 in China*

Authors: Jiali Kang, Nan Huang and Xingxing Liu

Abstract: The spread of COVID-19 around the world has profoundly affected the process of world development, making significant changes in people's behavior, government operations, and business operations. The spread of COVID-19 is a complex process, closely related to isolation patterns, population risk perception, geospatial and other factors, and simulation of the spread of covid-19 under the prevention and control policy is an important method to test the effectiveness of prevention and control measures. Using the MAS-SEIR-II model to carry out scenario analysis, the results show that establishing a cubicle hospital for rapid isolation of susceptible populations, flattening grassroots prevention and control organizations, and establishing a modern emergency logistics system are effective prevention and control measures.

SD20-416 11:15-11:30		Presenter: Philipp Martin Wuddi From: Technical University of Munich, Germany
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Title: *Key Figure Systems – Backbone of Intelligent Solutions in Future Logistics*

Authors: Philipp Martin Wuddi, Johannes Fottner

Abstract: Supply logistics in production and trading are subject to different types of deviations and problems. In order to control these, the implementation of a knowledge management system that suggests solutions automatically is goal of a research project at Technical University of Munich (TUM). This paper shows, which steps are necessary to build such a system. An example for supply logistics in general are tugger train systems. The design of the described steps aims to allow a transfer from tugger train systems to other logistical systems. First, this paper describes the idea of a knowledge management system and the why a key figure system is needed. The explained method starts with the display of necessary data analysis as one of two major chapters. Since the deviations in tugger train systems are divergent, real live data of tugger train systems are examined for deviations and problems. Holidays and their impact on human factors in supply logistics represent a short excursus in addition to the data analysis. Using the results from the data analysis, it is possible to develop a key figure system, starting with the definition of a key figure for every type of problem. After that, the key figures and especially their correlations are subject to validation, correction and documentation. This methodical process is the second major part. A short outline of future steps ends the paper.



Session 4



SD20-415 11:30-11:45		Presenter: Veronica Lutalo Nabbosa From: Institute of Digital Business - Johannes Kepler University Linzi, Austria
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Title: *Societal and Ethical Issues of Digitalization*

Authors: Veronica Lutalo Nabbosa, Claudia Kaar

Abstract: The paper intends to analyze two timely trends: Digitalization and associated Digital Ethics, both of which are deepening their roots globally. Data is thought to be the cornerstone of these trends: where once firms were overwhelmed by large quantities of unused structured and unstructured data, they are increasingly adapting their operations and value creation models, guided both by new digital tools and the data themselves. Website cookies, mobile applications, and surveillance cameras, as well as data from third-party vendors, have thus become the new “digital oil”, as firms exploit process and customer data in pursuit of digitalization. Established firms’ core business models have shifted in response to data availability: Apple Pay and Google Pay (operating systems), AliPay (e-commerce), and Lufthansa’s Miles & More purchase enabled loyalty card (travel) emerged from old, established businesses. Still, other firms are partially or wholly digitizing existing business processes in order to respond to the challenges posed by digitalization. Banks, for instance, are using fingerprint and facial recognition to make their services more convenient and to improve security. These developments are not only visible among competitive private sector firms: the public sector is also becoming digitalized, not only to promote efficiency but also to promote transparency and accountability. However, customers and citizens are waking up to the fact that their information is being collected by both private and public entities, and have begun to demand control and transparency. Governments and other regulating bodies (ISO, ACM, and IEEE, among others) are taking a more proactive role in responding to these demands. This paper will delve into the tensions inherent in digitalization, zooming in on digital ethics, shifts in societal values, utilitarian benefits and risks, the future of digitalization, the role of technology in digital ethics, and other themes which could impact all society stakeholders and raises question about ethical issues in several topics.

SD20-427 11:45-12:00		Presenter: Giovanni Liboni From: Safran Tech, France
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Title: *CoSim20: An Integrated Development Environment for Accurate and Efficient Distributed Co- Simulations*

Authors: Giovanni Liboni, Julien Deantoni

Abstract: The development of Cyber-Physical Systems involves several disciplines and



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stakeholders, which use heterogeneous models and formalisms to specify the system and make early validation and verification. In order to understand the behavior emerging from the heterogeneous models, a collaborative simulation (co-simulation) can be used. To make it happen, the system engineer must define a correct coordination of the different executable models, which can be distributed over different enterprises. This is an important but difficult (and error prone) task that cannot be done without information about the behavioral semantics of each model. In this paper, we introduce an integrated development environment which allows 1) to import different executable models (named simulation units), 2) to graphically connect them with rich connectors and 3) to generate a dedicated, accurate and efficient distributed co-simulation. The framework is based on Eclipse EMF for the modeling part and on ØMQ for the deployment. It is named CoSim20

SD20-410 12:00-12:15		Presenter: Parth Sane From: Rochester Institute of Technology, USA
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Title: *Is the OWASP Top 10 List Comprehensive Enough for Writing Secure Code?*

Author: Parth Sane

Abstract: The OWASP Top 10 is a list that is published by the Open Web Application Security Project (OWASP). The general purpose is to serve as a watchlist for bugs to avoid while writing code. This paper compares how many of those weaknesses as described in the top ten list are actually reported in vulnerabilities listed in the National Vulnerability Database (NVD). That way it makes it possible to empirically show whether the OWASP Top 10 list is comprehensive enough or not, for code weaknesses that have been found in the past decade.

Best Presentation Award & Session Group Photo



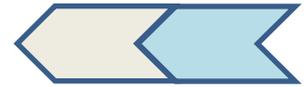
Listeners



Joshua Fuller		California Baptist University, United States
Frederick Twum Yeboah		University of Roehampton, United Kingdom



Keynote Speeches Replay



Time: November 22, 2020 (London Time: UTC/GMT+0)

Meeting ID: 612 8060 3399 <https://zoom.com.cn/j/61280603399>

14:00-16:25	Keynote Speeches Replay
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