Beijing Time
(GMT+8)

Virtual Conference

September 25-27, 2020

Conference Program

The 2nd World Symposium on Software Engineering

(WSSE 2020)

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WELCOME ADDRESS

We are pleased to welcome you to The 2nd World Symposium on Software Engineering (WSSE 2020), with workshops of The 2nd International Conference on Education and Service Sciences (ICESS 2020), The 2nd International Conference on Knowledge and Information Management (ICKIM 2020), The 2nd International Conference on System Reliability and Safety Engineering (SRSE 2020) and The 2nd International Conference on Digital Media and Information Processing (DMIP 2020), which is going to be held during September 25-27, 2020. Since COVID-19 broke out, considering the safety and health of all participants, the conference committees decided to hold this event online via ZOOM.

Here on behalf of the Organizing Committees, we would like to convey our appreciation of your participations during this unprecedented time. Additionally, we would like to deliver our great thanks to the committee members who give significant support to the conference, to attendees who make effort to present in the conference and to all stuff who are working hard to run the conference as usual or even better.

We hope this event would provide unique opportunity for all participants with fruitful discussion about teaching design and classroom teaching, aviation engineering and system security, higher education and student management, information system design and management, software and data engineering, digital image processing and application, communication and information system, knowledge representation and knowledge engineering, fault location and reliability analysis, and education and learning model, etc.

Let us enjoy this great event!

WSSE Conference Committees
September, 2020

CONFERENCE COMMITTEES

General Co-Chairs

Kang Zhang, University of Texas at Dallas, USA

Yulin Wang, Wuhan University, China

Program Co-Chairs

Jianhong Zhou, University of Electronic Science and Technology of China, China

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CONFERENCE COMMITTEES

TPC Members

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Noor Hazlini bt Hj Borhan, Universiti Malaysia Sarawak, Malaysia

Zhiliang Zhu, Northeastern University, China

Wernhuar Tarng, National Tsing Hua University, Taiwan

Chalumuru Suresh , VNR VJIET, India

Yang Cao, Nanjing Normal University, China

Bo Ren, Air Force Engineering University, China

Presentation Guideline

Beijing Time

- The conference is arranged based on **Beijing Time (GMT +8)**.
- Please carefully check your presentation time, and join the conference 15 minutes in advance.

Network

- Stable WIFI or Wired network.
- Equipment be with enough battery or connected with chargers.
- If your network is not good, please send us presentation videos within 10 Minutes as a back-up.

ZOOM Usage

- Download the APP ZOOM on zoom.us or www.zoom.com.cn (China only).
- Learn to use ZOOM via : http://wsse.org/zoom.html
- **ROOM A ID: 689 0570 1608**
- **ROOM B ID: 692 9917 7272**
- **ZOOM quick link: Page 60**

Names in ZOOM

- Authors, please rename like Session Number+Paper ID+Name as you join the room. E.g.: **S1+WS1001+Lairyn Xu**.
- For KN or SC, please rename like KN/SC+ Name. E.g.: **KN+Lairyn Xu/SC+Lairyn Xu**

Presentation

- Stay online during Keynote & Invited speeches and your own sessions.
- English only during the conference.
- Certificates & receipts will be emailed to you after the conference

Skills

- Turn on your Audio and start your Video.
- Use headsets/Earphones to enhance the audio effect and avoid the speaker echo or howling.
- Stay in a quite place without noise.
- Join **TEST DAY** on **September 25.**

PROGRAM OVERVIEW

Friday, September 25, 2020 (Test day)			Saturday, September 26, 2020			Sunday, September 27, 2020		
Test Time	Room A ID: 689 0570 1608	Room B ID: 692 9917 7272	Time	ROOM A ID: 689 0570 1608	ROOM B ID: 692 9917 7272	Time	ROOM A ID: 689 0570 1608	ROOM B ID: 692 9917 7272
			9:30-9:35	Opening Address				
			9:35-10:20	Keynote Speech Ⅰ				
10:30-11:30	Keynote Speakers & Conference Committees	Session 1 & Session 2	10:25-11:10	Keynote Speech Ⅱ		10:30-12:00	Session 5 Software and Data Engineering	Session 6 Digital Image Processing and Application
			11:10-11:25	Morning Break				
11:30-14:00	Lunch Break		11:25-12:10	Keynote Speech Ⅲ		12:00-13:30	Lunch Break	
			12:10-13:30	Lunch Break				
14:00-15:00	Session 3 & Session 4	Session 5 & Session 6	13:30-15:15	Session 1 Teaching Design and Classroom Teaching	Session 2 Aviation Engineering and System Security	13:30-15:00	Session 7 Communication and Information System	Session 8 Knowledge Representation and Knowledge Engineering
15:00-15:30	Afternoon Break		15:15-15:30	Afternoon Break		15:00-15:30	Afternoon Break	
15:30-16:30	Session 7 & Session 8	Session 9 & Session 10	15:30-17:00	Session 3 Higher Education and Student Management	Session 4 Information System Design and Management	15:30-17:15	Session 9 Fault Location and Reliability Analysis	Session 10 Education and Learning Model

SPEAKERS PROFILES - Keynote Speech I

Title: Engineering Scalable Software Systems

Short Bio.:

Dr. Gul Agha is Professor Emeritus and Research Professor of Computer Science at the University of Illinois at Urbana-Champaign, and CEO of Embedor Technologies. Agha is a Fellow of the ACM, and Fellow of the IEEE. He was a recepient of the 2019 ACM SigSoft Impact Paper Award. Dr. Agha served as Editor-in-Chief of IEEE Concurrency: Parallel, Distributed and Mobile Computing (1994-98), and of ACM Computing Surveys (2000-07). Dr. Agha is best known for his formalization of the Actor model which has been realized in industrial programming languages and frameworks such as Erlang, Scala/Akka, and Orleans. Agha and his research group developed Concolic Testing for programs with memory and concurrency. Concolic testing has been incorporated in industrial software testing tools such as KLEE, Microsoft SAGE, and S2E. Dr. Agha developed methods for Statistical Model Checking (SMC). SMC has been applied to biological systems and cyberphysical systems. Dr. Agha research also led to Euclidean model checking, a method to reason about the evolution of probability distributions. Other research contributions include methods to harness computational learning for program verification; logical methods for automated decentralized, predictive runtime verification of programs; and distributed algorithms for wireless sensor networks (WSNs). Dr. Agha co-founded Embedor Technologies which is applying WSNs to continually monitor the structural health of bridges, buildings and railroad tracks. Embedor's technology was used to monitor the world largest Ferris wheel during construction.

Prof. Gul A Agha

National University of Illinois at Urbana-Champaign, USA
(IEEE Fellow & ACM Fellow)

SPEAKERS PROFILES - Keynote Speech I

Title: Engineering Scalable Software Systems

Abstract.:

Ensuring the correctness of concurrent programs is notoriously difficult because the execution of such programs may take one of an exponentially large number of possible paths, each with a different result. My research has focused on addressing this problem for over three decades. We have developed a programming language paradigm, and by improved methods for ensuring the correctness of programs. Our work on defining and implementing Actor languages provides a foundation for complex, scalable software. Actor languages and frameworks have been widely adopted in industry to build large-scale applications such as Twitter, Halo game engine, and FaceBook chat servers. Testing concurrent programs is more efficient (and thus can be more thorough) if we can avoid the program executing redundant or irrelevant paths. I will describe how concolic testing and targeted test generation to improve testing of actor programs.

Prof. Gul A Agha

National University of Illinois at Urbana-Champaign, USA
(IEEE Fellow & ACM Fellow)

SPEAKERS PROFILES – Keynote Speech II

Title: A Reusable Approach to Software Development of Adaptive User Interfaces

Short Bio.:

Prof. Yonglei Tao is a professor in the School of Computing and Information Systems at Grand Valley State University, Michigan, USA. He received his Ph.D. in Computer Science from the University of Iowa. His research interests includes tool support for usability evaluation, software design methods, and computer science education.

Abstract.:

Adaptive user interfaces are an alternative to the traditional one-size-fits-all user interfaces. They have the ability to adapt their structures, appearances, and behavior to a variety of objectives, aiming to provide highly usable applications for people with different needs and in different contexts of use. Successful design and development of adaptive user interfaces are one of the major research directions in the areas of human computer interaction and software engineering. Navigation defines possible paths that users can take through an application to access certain information or functionality.

Prof. Yonglei Tao

Grand Valley State University, Allendale, USA

SPEAKERS PROFILES - Keynote Speech II

Title: A Reusable Approach to Software Development of Adaptive User Interfaces

Its efficiency has a great impact on user experience. Adaptive navigation guides users to their specific objectives by altering the normal way an application allows to navigate and therefore provides better user experience. Knowledge about activities that the user performs at runtime is crucial for adaptation decision making. It not only serves as a basis for evaluating relevance of the available information (such as user status, usage patterns, and context of use), but also facilitates reasoning about user needs. However, implementation of the user activity tracking capability often relies on intimate knowledge of the target application, which makes its development and maintenance rather difficult especially when the user interface and its adaptation logic evolve.

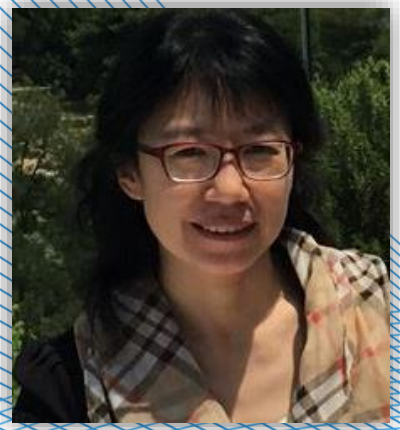
We propose a reusable approach to the development of the user activity tracking capability. Vital to achieve its reusability is to use aspect-oriented instrumentation to capture user interface events and model-based analysis to identify user tasks from event traces. A proof-of-concept experiment shows that this approach provides a feasible solution to reusable software support for adaptive user interfaces at the task level.

Prof. Yonglei Tao

Grand Valley State University, Allendale, USA

SPEAKERS PROFILES - Keynote Speech III

Title: A Meta-method for Modeling Software-sensitive Integrated System Based on Domain-specific Requirements



Short Bio.:

Prof. Li Zhang is PH.D. full Professor, Vice Dean of Software College, director of Software Engineering Institute, at Beihang University. Member of Software Engineering Teaching Steering Committee of the Ministry of Education, National engineering education accreditation specialist, Vice chair of Education Committee in CCF(China Computer Federation), Committee member of Software Engineering in CCF. She received her B.Degree (1989), M.S. degree (1992) and Ph.D. degree (1996) from the Department of Computer Science and Engineering, Beihang University in China. She took part in and was responsible for several national scientific founded projects, nature science foundation of China(NSFC) supported projects, national high technology founded projects and National basic research program and cooperation project with America and Europe. She has established a research team working closely with software engineering, business process/system modeling, model driven engineering, visual modeling language and requirement engineering. She has published over 100 papers research papers in the field of software engineering, requirement engineering, model driving engineering, empirical software, and etc.

Abstract.:

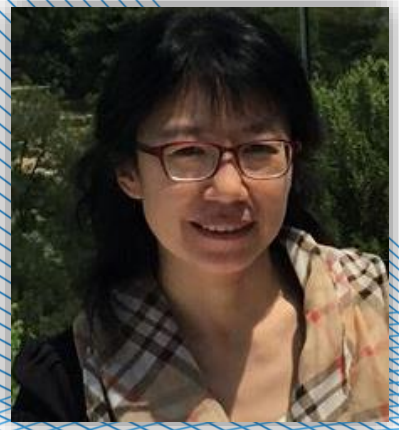
The Architecture of an integrated system is the set of structures which comprise components or sub-systems, relations

Prof. Li Zhang

Beihang University, China

SPEAKERS PROFILES - Keynote Speech III

Title: A Meta-method for Modeling Software-sensitive Integrated System Based on Domain-specific Requirements



among them, and properties of them. Modeling architecture of an integrated system allow you to reason about the system and manage changes as the system evolves. Hence, research on Integrated System Architecture Modeling Methods (ISAMMs) is very important.

To address the challenges of deriving ISAMMs for specific domain requirements (e.g., defining what should be described using which views and with which Architecture Modeling Language (AML)), we propose a generic and systematic method for ISAMM designer to derive an ISAMM in a particular domain.
The proposed meta-method clearly defines the concepts related to domain-oriented system architecture modeling, and their relationships (e.g., modeling goals, conceptual models of domain-specific architecture, architecture viewpoints, etc.). It gives how the architecture modeling method is defined and what it encompasses, and provides a detailed process to guide the modeling method designer in a step-by-step manner.
To validate the applicability of our meta-method, we apply it to integrated hardware system domain and define a system architecture modeling method. The modeling method supports the design and analyze process of the integrated hardware system, which provides multiple views and concerns that are of interest to business people, designers, and managers at all levels of the system developing process. Through discussions with experts in integrated hardware system domain, they agree that the method is suitable for describing the architecture of a hardware device during its developing process.

Prof. Li Zhang

Beihang University, China

CONFERENCE PROGRAM

TEST DAY - Friday, September 25, 2020

TEST

Friday, September 25, 2020		
Time	Room A ID: 689 0570 1608	Room B ID: 692 9917 7272
10:30-10:40	**Prof. Yulin Wang** Wuhan University, China	**Session 1 & Session 2** WS1028, WS1031-A, WS1015, WS1004, WS1005, WS1021, WS3008 WS403, WS404,, WS405, WS406, WS410, WS4201
10:40-10:50	**Prof. Gul A Agha** National University of Illinois at Urbana-Champaign, USA	
10:50-11:00	**Prof. Yonglei Tao** Grand Valley State University, Allendale, USA	
11:00-11:10	**Prof. Li Zhang** Beihang University, China	
Lunch Break		
14:00-15:00	**Session 3 & Session 4** WS1003, WS1008, WS1012-A, WS1013, WS1017, WS1025 WS2017, WS3002, WS3003, WS1007, WS1026, WS2016	**Session 5 & Session 6** WS2011, WS2012, WS502, WS1020, WS2003 ,WS24001 WS1022, WS2002, WS2004, WS4301, WS509, WS510
15:30-16:30	**Session 7 & Session 8** WS2001, WS2005, WS2009, WS2014, WS2006, WS2007 WS2015, WS3004, WS3005, WS3006, WS3009, WS505	**Session 9 & Session 10** WS401, WS402, WS407, WS408, WS411, WS412 WS1009, WS1014, WS1018, WS1023, WS1024, WS1032, WS2013

CONFERENCE PROGRAM

DAY 1- Saturday, September 26, 2020

9:30-12:10
Keynote Speeches

ROOM A ID: 689 0570 1608		
9:30-9:35	Opening Address	**Prof. Yulin Wang**, Wuhan University, China
9:35-10:20	Keynote Speech I	**Prof. Gul A Agha**, University of Illinois at Urbana-Champaign, USA 'Engineering Scalable Software Systems'
10:25-11:10	Keynote Speech II	**Prof. Yonglei Tao**, Grand Valley State University, Allendale, USA 'Topic: A Reusable Approach to Software Development of Adaptive User Interfaces'
11:10-11:25	Morning Break	
11:25-12:10	Keynote Speech III	**Prof. Li Zhang**, Beihang University, China 'A Meta-method for Modeling Software-sensitive Integrated System Based on Domain-specific Requirements'

CONFERENCE PROGRAM

DAY 1- Saturday, September 26, 2020

13:30-15:15
Session 1

Time	ROOM A ID: 689 0570 1608 | Topic: Teaching Design and Classroom Teaching Session Chair:	
13:30-13:45	WS1028	How Gamification Impacts Students' Engagement and Language Learning Beliefs in Pre-Class Learning of Flipped EFL Courses: A Theoretical Analysis **Ms. Hua Yin**, Yang Chen Harbin Institute of Technology, China
13:45-14:00	WS1031-A	What is the Difficulty of Blended Instruction Design? ——An Analysis of Blended Instruction Design Planning in University X **Ms. Lingling Xu** Zhejiang University, China
14:00-14:15	WS1015	The Concept of Moral and Aesthetic Education in a Modern Foreign Language Classroom **Ms. Anna Bobunova**, Natallia Zhabo, Marina Avdonina RUDN University, Russia
14:15-14:30	WS1004	Analysis of Value Orientation Framework of Junior High Chinese Textbooks **Ms. Xiushan He**, Florence Kuek SEGI University, Malaysia
14:30-14:45	WS1005	Rethinking on the Teaching Method of Programming Course in Applied Universities under Higher Education **Assoc. Prof. Yanling Zhou**, Man Gu, Chi Zhang Hefei University, China
14:45-15:00	WS1021	The Conceptual Construction and Teaching Strategies of Loanwords in Mandarin **Asst. Prof. Jinghan Zeng** Beijing Normal University, China
15:00-15:15	WS3008	The Practice Exploration of "Flipped Classroom" Mode Based on Micro Lesson in Rope Skipping Teaching **Mr. Wenbao Li** Jilin Sports University, China

CONFERENCE PROGRAM

DAY 1- Saturday, September 26, 2020

13:30-15:00
Session 2

Time	Room B ID: 692 9917 7272 | Topic: Aviation Engineering and System Security Session Chair:	
13:30-13:45	WS406	Error Analysis and Interval Prediction of Aviation Safety Prediction Based on Uncertainty **Dr. Bo Ren**, Hang Zeng, Zhuoguo Miao, Shanshan Li, Jieli Cui Air Force Engineering University, China
13:45-14:00	WS403	Storage Reliability Evaluation Based on Competing Risks of Degradation Failure and Random Failure for Missiles **Mr. Renqing Li**, Jin Li, Jiale Lu, Liying Peng, Yan Song, Yi Wang, Xinjie Chen CEPREI Laboratory, China
14:00-14:15	WS404	The Reliability Analysis of a Complex Electromechanical System from a Complex Network Perspective Jinzhu Liu, **Prof. Yanhui Wang**, Yucheng Hao Beijing Jiaotong University, China
14:15-14:30	WS405	Research on Safety Analysis of HWP in Aerial Refueling Based on STPA Method **Prof. Lijie Cui**, Jiping Cong, Haoran Chen, Bo Ren Air Force Engineering University, China
14:30-14:45	WS4201	Quantitative Analysis and Research on Emergency Linkage System Performance Based on Stochastic Petri Net **Mr. Jingcong Zhu**, Xiaoguang Zhu, Lei Guan China Academy of Safety Science and Technology, China
14:45-15:00	WS410	Cognitive Load Measurement and Impact Analysis on Performance in Dual-task Situations **Ms. Mingjun He**, Jianbin Guo, Shengkui Zeng Beihang University, China

CONFERENCE PROGRAM

DAY 1- Saturday, September 26, 2020

15:30-17:00
Session 3

Time	ROOM A ID: 689 0570 1608 | Topic: Higher Education and Student Management Session Chair: Dr. Nai Yeen Gavin Lai, The University of Nottingham Ningbo, China	
15:30-15:45	WS1003	Analyzing Students' Behavior in Blended Learning Environment for Programming Education **Ms. Jiwen Luo**, Tao Wang National University of Defense Technology, China
15:45-16:00	WS1008	An Analysis Scheme to Interpret Students' Cognitive Process in Error Finding Test **Mr. Lianzhen Liu**, Wei Liu, Xinyu Li, Jing Xu, Wenqing Cheng Huazhong University of Science and Technology, China
16:00-16:15	WS1012-A	Emergency Safety Education: Local Practice and Path Exploration in Colleges **Dr. Xian Guo**, Yi Wang Beijing Sport University, China
16:15-16:30	WS1013	Virtual Reality (VR) in Engineering Education and Training: A bibliometric analysis **Dr. Nai Yeen Gavin Lai**, Kok Hoong Wong, Lih Jiun Yu, Hooi Siang Kang The University of Nottingham Ningbo, China
16:30-16:45	WS1017	An Experimental Study on the Influence of Competition Teaching Method on High School Students' Core Accomplishment in Basketball Physical Education Yang Sanjun, **Dr. Jiang Runfa**, Wang Yuchen China University of Mining and Tecnology (Beijing), China
16:45-17:00	WS1025	Research on the Blended Experiential Learning Mode of Business Administration Talents in Universities **Prof. Li Yongzhou**, Zhu Yinghuan, Fang Teng Wuhan University of Science and Technology, China

CONFERENCE PROGRAM

DAY 1- Saturday, September 26, 2020

15:30-17:00
Session 4

Time	Room B ID: 692 9917 7272 | Topic: Information System Design and Management Session Chair: Prof. Hesmeralda Rojas, Universidad Nacional Micaela Bastidas de Apurímac, Perú	
15:30-15:45	WS2017	A Granular Conceptual Model to Define Requirements for Evaluating the Functional Completeness of a Pharmacy Information System Walter J. Huayllani, **Prof. Hesmeralda Rojas** Universidad Nacional Micaela Bastidas de Apurímac, Perú
15:45-16:00	WS3002	Research on the Construction of Pathological Knowledge Management System Based on Web **Mr. Zhang Haitao**, Ou Shu, Wang Hailan, Xu Jieping Guilin University of Electronic Technology, China
16:00-16:15	WS3003	Study on the Dilemma, Influence and Countermeasures of Overall Budget Performance Management in Health Care System Under the Background of Epidemic-- Based on DEA Model **Prof. Bin Liu**, Wenchang Tan Jiangxi Science and Technology Normal University, China
16:15-16:30	WS1007	Open Up-Vote Assessment for Creative Coding: Model and Quality **Mr. Yuecheng Wang**, Tian Song Beijing Institute of Technology, China
16:30-16:45	WS1026	Critical Service Recovery Scheme During COVID-19 Pandemic: An Analysis from Online Text Comments **Asst. Prof. Dr. Praowpan Tansitpong** NIDA Business School, Thailand
16:45-17:00	WS2016	A Survey of Incorporating Affective Computing for Human-System Co-adaptation **Mr. Mohammed Naji Alharbi**, Shihong Huang Florida Atlantic University, USA

CONFERENCE PROGRAM

DAY 2-Sunday, September 27, 2020

10:30-12:00
Session 5

Time	ROOM A ID: 689 0570 1608 | Topic: Software and Data Engineering Session Chair:	
10:30-10:45	WS2011	Research on Subway Collision Animation Based on ANSYS Data **Ms. Li Wu**, Shaodi Dong, Yang Cao Nanjing Normal University, China
10:45-11:00	WS2012	Software Development Process Modeling with Patterns **Ms. Asma Hachemi** USTHB, Algeria
11:00-11:15	WS502	Elderly-Oriented Design of User Interface of Agedness Internet Products Based on Synesthesia Thinking **Mr. Zongliang Bao**, Ping Wu, Guang Feng Xinjiang Institute of Technology, China
11:15-11:30	WS1020	Design and Application of Virtual Training System for Computer Hardware Assembly **Mrs. Yanping Tong**, Fu Xie, Xiangwei Zheng, Yi Wei Shandong Normal University, China
11:30-11:45	WS2003	A Semantic-based Multi-Agent Dynamic Interaction Model **Mr. Siming Chen**, Liang Xiao, Mo Cheng Hubei University of Technology, China
11:45-12:00	WS24001	Quadratic Difference Set -Based Quorum Generation Algorithm in Distributed System **Dr. Peng Wu**, Xiong Ning, Jiqiang Liu, Jie Meng, Jinzhao Wu Beijing Jiaotong University, China

CONFERENCE PROGRAM

DAY 2-Sunday, September 27, 2020

10:30-12:00
Session 6

Time	Room B ID: 692 9917 7272 | Topic: Digital Image Processing and Application Session Chair:	
10:30-10:45	WS1022	Children's Emotion Recognition Based on Convolutional Neural Network **Mr. Wenxing Zhou**, Yi Sun Chengdu Jinniu District Oragn in the Second Kindergarten, China
10:45-11:00	WS2002	Intelligent Safety Monitoring and Early Warning System for Construction Site **Mr. Zheyuan Hu**, Jun Cai, Huiwei Wang, Dehao Zhang, Yang Liu, Xin Li, YanLong Li, Fengyan Zhao, Hongjun Zhang Beihang University, China
11:00-11:15	WS2004	The Application of Edge Computing in High-Definition Maps Distribution **Mr. Rongbo Zhang**, Kaiyu Cai National University of Defense Technology, China
11:15-11:30	WS4301	A MBSE Based Flight Scenario Identification Approach for Civil Aircraft Certification Test **Mr. Xuan Zhang**, Xiaojian Ding, Kaiwei Wang CEPREI, China
11:30-11:45	WS509	Art Deco Building Data Collection and Protection of Nanjing Based on 3D Digital Modeling Technology -Taking the Site of China & South Sea Bank Ltd for Example **Prof. Yang Cao**, QinYou Zhou Nanjing Normal University, China
11:45-12:00	WS510	A Visual Content Protection Evaluation Method for CS Coding Images Jixin Liu, **Ms. Min Jin** , Guang Han, Sun Ning, Xiaofei Li Nanjing University of Posts and Telecommunications, China

CONFERENCE PROGRAM

DAY 2-Sunday, September 27, 2020

13:30-15:00
Session 7

Time	ROOM A ID: 689 0570 1608 | Topic: Communication and Information System Session Chair:	
13:30-13:45	WS2006	Mechanism of Parked Domains Recognition Based on Authoritative DNS Servers **Dr. Peng Yang**, Chao Shan, Dongan Wang, Lei Su, Juan Li, Xinxin Wan, Xin Wan National Computer Network Emergency Response Technical Team Coordination Center of China, China
13:45-14:00	WS2005	Block Gauss-Seidel Method for Signal Detection in Uplink Massive MIMO Systems **Ms. Qianqian Ye**, Zhizhong zhang, Xiao fang Min, Bingguang Deng, Jinyan Li, Lei Zhang Chongqing University of Posts and Telecommunications, China
14:00-14:15	WS2014	Design and Implementation of Preprocessing Scheme for Massive SQL Interactive Instructions in Power Business **Mr. Xiaogang Wei** NARI Group Corporation/State Grid Electric Power Research Institute, China
14:15-14:30	WS2001	Alternative Effort-optimal Model-based Strategy for State Machine Testing of IoT Systems **Mr. Vaclav Rechtberger**, Miroslav Bures, Bestoun S. Ahmed Czech Technical University in Prague, Czech Republic
14:30-14:45	WS2007	Naruto: DNS Covert Channels Detection Based on Stacking Model **Dr. Peng Yang**, Xinxin Wan, Guang Shi, Hao Qu, Juan Li, Lixin Yang National Computer Network Emergency Response Technical Team Coordination Center of China, China
14:45-15:00	WS2009	ARQ Algorithm Optimization of Radio Link Control Layer in 5G System **Mrs. Yu Cheng**, Fang Cheng, Bingguang Deng, Jinyan Li, Chengli Mei Chongqing University of Posts and Telecommunications, China

CONFERENCE PROGRAM

DAY 2-Sunday, September 27, 2020

13:30-15:00
Session 8

Time	Room B ID: 692 9917 7272 | Topic: Knowledge Representation and Knowledge Engineering Session Chair:	
13:30-13:45	WS2015	Research on Perception of Calligraphy Time Sequence Based on Markov Chain **Assoc. Prof. Ruimin Lyu,** Lilin Mei, Hongcha Xing, Lei Meng Jiangnan University, China
13:45-14:00	WS3004	Prediction Model of Microblog Retweeting Based on Naive Bayesian **Mr. Haoyuan Su**, Hengmin Zhu, Jing Wei Nanjing University of Posts and Telecommunications, China
14:00-14:15	WS3005	Formal Description of Manufacturing Process Based on Domain Ontology Construction **Mr. Huang Fei**, Chen Youling, Xu Dongsheng Chongqing University, China
14:15-14:30	WS3006	A Knowledge-based Express Model of Operational Plan Containing Uncertainties **Dr. Xin Jin**, Xinnian Wang, Yan Yu Nanjing Research Institute of Electronic Engineering, China
14:30-14:45	WS3009	Research on Recognition of Key Innovation Conflicts of College Students Based on Matter-field Model **Prof. Zhang Yimin**, Sheng Guojun, Deng Shan Dalian Neusoft University of Information, China
14:45-15:00	WS505	Research on the Application of 3d Technology in the Protection and Inheritance of Intangible Cultural Heritage ——Take Pizhou for Example **Ms. Xue Chen** Nanjing Normal University, China

CONFERENCE PROGRAM

DAY 2-Sunday, September 27, 2020

15:30-17:00
Session 9

Time	ROOM A ID: 689 0570 1608 | Topic: Fault Location and Reliability Analysis Session Chair: Dr. Xinli Xiong, NUDT, China	
15:30-15:45	WS412	Components Interaction Safety Analysis Method Based on STAMP and Formal Verification **Mr. Nan Ye**, Jianguo Zhang, Jie Wu Beihang University, China
15:45-16:00	WS401	Research on Quantitative Evaluation Technology of Highly Accelerated Life Test **Ms. Limei Xie**, Yonghua Hua, Zhenrong Shen Reliability Engineer Center of CEPREI, China
16:00-16:15	WS402	Failure Analysis of Subsea Control System Based on Fuzzy-Topsis Method **Mr. Mingyang Yue**, Xin Zuo China University of Petroleum, China
16:15-16:30	WS407	Directional Markov Chain Monte Carlo Algorithm for Fast Dynamic Reliability Assessment **Dr. Jinling Wang** Zibo Vocational Institute, China
16:30-16:45	WS408	Simulation Model for Cascading Failure in Complex Network: A Cellular Automata Approach Jun Zhang, **Dr. Xinli Xiong**, Yongjie Wang, Jingye Zhang NUDT, China
16:45-17:00	WS411	Research on Human-Machine Dynamic Trust Based on Alarm Sequence **Mr. Zhenping Lu**, Jianbin Guo, Shengkui Zeng, Qirui Mao Beihang University, China

CONFERENCE PROGRAM

DAY 2-Sunday, September 27, 2020

15:30-17:15
Session 10

Time	Room B ID: 692 9917 7272 | Topic: Education and Learning Model Session Chair: Prof. Xiaona Xia, Qufu Normal University, China	
15:30-15:45	WS1009	Hybrid Audio-video Recording System for PBL Lecture in Round Sitting Classroom **Prof. Ao Ku**, Wei Xu, Jintao Zou, Wenqi Liu, Wei Liu Huazhong University of Science and Technology, China
15:45-16:00	WS1014	Design and Application of the Virtual Simulation Teaching System for Grouting Fire Prevention and Extinguishment **Assoc. Prof. Bo Tan**, Yanling Liu, Kaixuan Wang China University of Mining and Technology (Beijing), China
16:00-16:15	WS1023	Online and Offline Teaching Mode of C Language Programming Chuandong Song, Haifeng Wang, **Prof. Bin Yang**, Wei Zhang Zaozhuang University, China
16:15-16:30	WS1024	A Rapid Visual Effect Preview Generation System for the Virtual Simulation Teaching **Assoc. Prof. Yang Yu** , Jiexiao Tang Hefei Normal University, China
16:30-16:45	WS1032	Protection of Ethnic Language of Ethnic Minority Students in Schools Ha Thi Kim Linh, Nguyen Thi Tinh, **Mr. Huynh Tan Hoi** Ho Chi Minh City Open University, Vietnam
16:45-17:00	WS1018	Research on the Course Design of Basic Basketball Teaching Intelligent in Colleges and Universities Sanjun Yang, **Ms. Hongyu Ran**, Yu Gao China University of Mining and Technology (Beijing), China
17:00-17:15	WS2013	Exploration and Practice on the Construction of Teaching Staff for A Plan for Educating and Training Outstanding Engineers Based on Engineering Education Accreditation **Mr. Guoyan Luan**, Kong Li, Chen Li Jilin Institute of Chemical Technology, China

ABSTRACTS

DAY 1- Saturday, September 26, 2020

13:30-15:15
Session 1

WS1028	How Gamification Impacts Students' Engagement and Language Learning Beliefs in Pre-Class Learning of Flipped EFL Courses: A Theoretical Analysis **Ms. Hua Yin**, Yang Chen Harbin Institute of Technology, China

Students' inadequate engagement in pre-class learning is one of the causal factors that impede effective flipped learning. One possible solution can be the implementation of gamification in pre-class learning activities since motivating effects of game design elements in education have been discovered by previous empirical research. In the specific context of flipped EFL courses, student engagement in pre-class learning activities may interact with their language learning beliefs. Based on a theoretical analysis, this study proposes a conceptual model elaborating that the use of gamification in pre-class learning of flipped EFL courses may enhance students' engagement in terms of behavior, emotion, cognition, and agency and their positive beliefs about language learning. Limitations and future research recommendations are presented in the end.

WS1031-A	What is the Difficulty of Blended Instruction Design? ——An Analysis of Blended Instruction Design Planning in University X **Ms. Lingling Xu** Zhejiang University, China

The development of ICT advanced society has created an authentic environment for blended instruction while it is also calling for blended instruction reform. It is necessary to deeply understand the blended instruction from the dimension of paradigm transformation, which aims to achieve the higher order goal of cultivating students' problemsolving expert thinking through blended instruction. However, blended instruction is still in its infancy currently, and blended instruction design is unfamiliar to most teachers. Good instruction is guaranteed by good instruction design. In order to evaluate the quality of the existing blended instruction design planning, we firstly developed and identified a scale of the quality of blended instruction design which included 5 dimensions and 20 indicators. Then using the scale, we evaluated 32 blended instruction design of X University and found the weaknesses, difficulties and differences in the blended instruction design through mixed method, which included text analysis, empirical investigation and Wright Map analysis. On this basis, we proposed that blended instruction design should (1) have backward design thinking as well as the macro and micro vision of target design; (2) form the awareness of whole process, which means teachers can allocate learning tasks and content reasonably according to expected learning results, and consider the use of online and offline teaching advantages, and pay attention to the connection of various learning stages, also should promote the professionalization of teachers and encourage team teaching to meet the various needs of students; (3) build scaffolds for learning, which means teachers need to foresee the learning difficulties and potential of students, and provide corresponding support during blended instruction, also provide different scaffold according to the different situations of students.

WS1015	The Concept of Moral and Aesthetic Education in a Modern Foreign Language Classroom **Ms. Anna Bobunova**, Natallia Zhabo, Marina Avdonina RUDN University, Russia

The development of ICT advanced society has created an authentic environment for blended instruction while it is also calling for blended instruction reform. It is necessary to deeply understand the blended instruction from the dimension of paradigm transformation, which aims to achieve the higher order goal of cultivating students' problemsolving expert thinking through blended instruction. However, blended instruction is still in its infancy currently, and blended instruction design is unfamiliar to most teachers. Good instruction is guaranteed by good instruction design. In order to evaluate the quality of the existing blended instruction design planning, we firstly developed and identified a scale of the quality of blended instruction design which included 5 dimensions and 20 indicators. Then using the scale, we evaluated 32 blended instruction design of X University and found the weaknesses, difficulties and differences in the blended instruction design through mixed method, which included text analysis, empirical investigation and Wright Map analysis. On this basis, we proposed that blended instruction design should (1) have backward design thinking as well as the macro and micro vision of target design; (2) form the awareness of whole process,which means teachers can allocate learning tasks and content reasonably according to expected learning results, and consider the use of online and offline teaching advantages, and pay attention to the connection of various learning stages, also should promote the professionalization of teachers and encourage team teaching to meet the various needs of students; (3) build scaffolds for learning, which means teachers need to foresee the learning difficulties and potential of students, and provide corresponding support during blended instruction, also provide different scaffold according to the different situations of students.

ABSTRACTS

DAY 1- Saturday, September 26, 2020

13:30-15:15
Session 1

WS1004	Analysis of Value Orientation Framework of Junior High Chinese Textbooks **Ms. Xiushan He**, Florence Kuek SEGI University, Malaysia

In this paper, we describe the analysis framework of moral value orientation of the junior high textbook edited by Education Ministry, starting from three dimensions of "man and himself," "man and society" and "man and nature" The textbook will be classified and compared to the textbook themes following this framework. Besides, the author tests the reliability of theme classification, including inter-rater reliability and intra-rater reliability. At the same time, the theme of moral value orientation is displayed by the characters. The paper will also construct the analysis framework of a character image and discuss the characters in textbooks from the aspects of "natural attributes" and "social attributes." The conclusions are as follows: under the theme classification of moral value orientation, attention has been paid to the cultivation of students' morality, aesthetic, and taste of nature, but there is a lack of such topics as thrift, innovation, and environmental protection. Moreover, the interpretation of the moral value theme lacks contemporaneity. Furthermore, there are some problems in the image building of the textbook, such as the imbalance between men and women, the singularization of the image of the same subject, and the lack of characterization in the dimension of "man and nature." However, on the whole, it has met the requirements of the "the Standard of Chinese Curriculum in Compulsory Education (2011 edition)", "Handbook for Implementing Guidelines on Moral Education in Primary and Secondary Schools" and "Code for Primary and Secondary School Students (revised in 2015)". Accordingly, the author puts forward some suggestions from the following three aspects, namely, the selection of the textbook, the selection of extracurricular reading, and teachers' instruction.

ABSTRACTS

DAY 1- Saturday, September 26, 2020

13:30-15:15
Session 1

WS1005	Rethinking on the Teaching Method of Programming Course in Applied Universities under Higher Education **Assoc. Prof. Yanling Zhou**, Man Gu, Chi Zhang Hefei University, China

The teaching method is the unity of the teaching method and the learning method. In the applied college education, more emphasis is placed on the self-learning method of the students. The most direct way to respect students is to change the teaching methods of teachers so that students learn to learn and work in the process of receiving knowledge, so that they can be confident, act and be able to learn actively. Establish a student-centered learning model, with the cultivation of professional abilities as an important goal, change the role of teachers, return the stage of learning to students, let students do middle school, and truly allow students to cultivate all aspects of comprehensive capabilities in the process. This article is based on the computer professional programming course "programming language I" as an example to rethink the teaching method. The difference between the new teaching method and the traditional teaching method is elaborated in detail from two aspects: classroom theory teaching and experimental practice teaching and the feasibility of the new teaching method are discussed from multiple angles. The new teaching method can fully arouse the enthusiasm of teachers 'teaching and students' learning, and realize deep learning of knowledge through experimental courses. At the same time, the new teaching methods have played a positive role in fostering students' learning initiative, teamwork spirit, language expression ability, problem analysis and problem solving skills. Under the new teaching method, the student group cultivated can better meet the current society's demand for talents.

WS1021	The Conceptual Construction and Teaching Strategies of Loanwords in Mandarin **Asst. Prof. Jinghan Zeng** Beijing Normal University, China

Taking loanwords in Mandarin as examples, this paper uses Conceptual Blending Theory to illustrate the parataxis feature on lexical conceptual construction of Chinese vocabulary and construct strategies to help language learners understand Chinese loanwords from the perspective of Cognitive Semantics. This paper explains the definition, classification, and attribution of loanwords in the first part. It introduces the existing models analyzing loanwords such as Memetics. and discusses the advantages and disadvantages in the analysis of loanwords' formation mechanism. Secondly, the theoretical models of cognitive semantics and Conceptual blending theory are summarized. Finally, it analyzes and explains the rationale and integration mechanism of different types of loanwords in Mandarin and reproduces the process and mechanism of loanwords. Some strategies for teaching loanwords and other new words in the Chinese vocabulary can be constructed to help students understand and learn the words more efficiently.

ABSTRACTS

DAY 1- Saturday, September 26, 2020

13:30-15:15
Session 1

WS3008	The Practice Exploration of “Flipped Classroom” Mode Based on Micro Lesson in Rope Skipping Teaching **Mr. Wenbao Li** Jilin Sports University, China

Flipped classroom is different from traditional teaching mode. It is a new teaching mode with micro lessons as the core, it is a kind of advocate students autonomous learning, communicate with teachers and students to discuss in class and teachers to guide the review, to promote knowledge internalization and expand classroom teaching mode.In order to improve the teaching effect of skipping class in college, based on the current situation of skipping class in college, this paper puts forward the micro-course teaching mode of flipped class, and takes "double-rope interactive skipping" as an example to explore the micro-course teaching of flipped class.

ABSTRACTS

DAY 1- Saturday, September 26, 2020

13:30-15:00
Session 2

WS406	Error Analysis and Interval Prediction of Aviation Safety Prediction Based on Uncertainty **Dr. Bo Ren**, Hang Zeng, Zhuoguo Miao, Shanshan Li, Jieli Cui Air Force Engineering University, China

Aviation safety prediction is mostly deterministic prediction, which ignores the influence of various uncertainties on the prediction results. In order to quantitatively measure the contributions of the uncertainty of forecast error to the prediction of aviation safety, a novel method, which can obtain the prediction of aviation safety interval considering the uncertainty of error, the properties of which are also discussed. Meanwhile,This method aim at determining the area contains between aviation safety forecast reliability, which better understand be predicted quantity change in the future of the uncertainty and risk. Then, Taking aviation safety data of civil aviation from 1994 to 2015 as an example, the results show that the proposed aviation safety interval prediction can provide aviation safety prediction curve and variation range of this curve, which is more conducive to modeling uncertainty of aviation safety.

WS403	Storage Reliability Evaluation Based on Competing Risks of Degradation Failure and Random Failure for Missiles **Mr. Renqing Li**, Jin Li, Jiale Lu, Liying Peng, Yan Song, Yi Wang, Xinjie Chen CEPREI Laboratory, China

Storage reliability is an important technical index of missiles. And missile failures as the competition results of multi-components degradation failure and random failure, which is utilized to construct storage reliability evaluation model in this paper. The Mahalanobis distance is introduced to evaluate healthy states of missiles. Then Inverse Gaussian process is selected in healthy states degradation modeling. With an assumption that the probability of random failure depends on the degradation of healthy states of missiles, a storage reliability evaluation model of missiles is constructed. A numerical example with a set of missiles in storage is introduced to illustrate the rationality and engineering applicability of the method proposed in this paper.

WS404	The Reliability Analysis of a Complex Electromechanical System from a Complex Network Perspective Jinzhu Liu, **Prof. Yanhui Wang**, Yucheng Hao Beijing Jiaotong University, China

Due to the interdependent relationship and the serious impact of the failure propagation, assessing the reliability of a complex electromechanical system has been attracted a lot of attention. Due to this, we abstract a complex electromechanical system with the mechanical connection, the electrical connection and the information connection as an interdependent network composed of three kinds of networks. By carrying out the simulation on the urban rail transit train, attack strategies regarding the degree, the betweenness, and the random removal are compared. Additionally, we explore the effectiveness of attacking different networks. According to the simulation result, it is found that the failures of nodes in the mechanical network have a more serious impact on the reliability of the urban rail transit train. Moreover, less broken nodes in the electrical network and the information network do not significantly affect their corresponding networks. When the number of attacked nodes increases to a certain value, the reliability of electrical and information networks is reduced.

WS405	Research on Safety Analysis of HWP in Aerial Refueling Based on STPA Method **Prof. Lijie Cui**, Jiping Cong, Haoran Chen, Bo Ren Air Force Engineering University, China

Based on the system control thinking, the STPA method is applied to analyze the “hose whip problem (HWP)” in aerial refueling. Firstly, the STAMP model of aerial refueling is constructed. Secondly, on the basis of the pro-posed system-level loss and system-level hazard of aerial refueling system, the HWP was taken as a typical danger, the control model is constructed and analyzed, and the corresponding unsafe control acts (UCSs) are obtained, the scenarios of the UCSs are proposed as well. The research had the application of system control cogitation in analyzing the air refueling safety come true, and provided an important basis for preventing air refueling safety accidents and improving the success rate of aerial refueling. It can also provide reference for other military warfare safety research.

ABSTRACTS

DAY 1- Saturday, September 26, 2020

13:30-15:00
Session 2

WS4201	Quantitative Analysis and Research on Emergency Linkage System Performance Based on Stochastic Petri Net **Mr. Jingcong Zhu**, Xiaoguang Zhu, Lei Guan China Academy of Safety Science and Technology, China

With the large-scale and centralized of chemical enterprises, more and more attention has been paid to the emergency linkage system of emergencies. Perfect emergency linkage can curb or delay the development of the situation. In order to quantitatively study the performance of emergency linkage system in chemical enterprises, a stochastic Petri net structural model was built based on emergency linkage process and elements. Then, the accessible set is analyzed, isomorphic transformation is carried out in combination with Markov chain and the performance of each link in the emergency linkage action has been analyzed and calculated. Finally the average working time of the emergency linkage system in completing all scenarios has been obtained. The analysis of the calculation results can be used to optimize the emergency linkage system.

WS410	Cognitive Load Measurement and Impact Analysis on Performance in Dual-task Situations **Ms. Mingjun He**, Jianbin Guo, Shengkui Zeng Beihang University, China

Along with the development of automation technology, the focus on human-machine interaction has gradually shifted from physical interaction to cognitive interaction. Especially, the cognitive load measurement is important to pilots who are up against high mental stress and have a lot of information to deal with at short notice. Through designing and carrying out experiments in the scenario of flight state parameters monitoring and emergency handling, this study searched for indicators which were sensitive to cognitive load by one-way ANOVA (analysis of variance) and non-parametric test, and analyzed the influence of cognitive load on the sensitivity of measures and the influence of the secondary task on the performance of the primary task. The results showed that NASA-TLX, SWAT, PAAS, PRT, SRT, VLF Power, A++, B--, and Gyro were sensitive to cognitive load. The secondary task would lead to an increase in cognitive load, meanwhile, the sensitivity of NASA-TLX, SWAT, and PAAS would become lower. On the contrary, the sensitivity of A++ and B-- were almost not affected by cognitive load. Besides, for dual task, the more difficult the primary task was, the more significant the impact of the secondary task on the performance of the primary task would be.

ABSTRACTS

DAY 1- Saturday, September 26, 2020

15:30-17:00
Session 3

WS1003	Analyzing Students' Behavior in Blended Learning Environment for Programming Education **Ms. Jiwen Luo**, Tao Wang National University of Defense Technology, China

Analyzing students' test scores and online learning behaviors in the blended learning environment of programming education can help computer educators understand the students' learning and programming process. Furthermore, it can help teachers provide personalized guidance to students. In this article, we first performed a time-series clustering algorithm on the 5 test scores of students online and offline, and obtained three distinct student types (“Excellent”, “Moderate”, “Poor”). To further study the behavior of students, a correlation analysis of the four behavior data obtained from online programming and test scores was conducted. Students' online time is negatively correlated with the test score. Then, a cluster analysis of the online behaviors data was conducted, and three different student types were also obtained (“Poor performance”, “High-quality learning”, “Learning hard”). Finally, the two clustering results were compared. In the recognition of middle-level students, their similarity was 10/15. Long-term online learning can achieve good and stable test scores. The consistency of student behavior qualitatively proves the rationality of our research. Besides, for students with large differences in the two clustering results, we provided a targeted analysis and gave teachers corresponding suggestions.

WS1008	An Analysis Scheme on Student's Perception in Error Finding Test **Mr. Lianzhen Liu**, Wei Liu, Xinyu Li, Jing Xu, Wenqing Cheng Huazhong University of Science and Technology, China

Programming debugging is one of the most challenge part in the programming course, which is currently assessed by the teachers manually. With the development of eye-tracking technology, the student’s cognitive process can be estimated and researched based on the eye movement data. However, most of the existing eye-tracking measurement in programming focus on the difference among different person group or different mission, and can not be directly utilized for programming assessment. In this paper, we propose an assessing scheme for debugging, providing eye movement measurement on jumping between different lines. We focus on the task of finding errors in the C-language source code. An eye-tracking based measurement system is implemented to matching the students’gazing jump sequence in error-finding tasks. By dividing the source code lines, the eye movement on specific area can be measured and analyzed. A procedural evaluation scheme is proposed to analyze the details of the testing process, including every error-finding activity and every eye movement. By checking the eye jump data between different lines, we estimate the students’perception process during reading codes, and produce a reference classification on his performance. Experiment results show that, compared with the results of traditional evaluation method (only absolute true or false), our assessment method provides a new perspective on reading characteristics.

WS1012-A	Emergency Safety Education: Local Practice and Path Exploration in Colleges **Dr. Xian Guo**, Yi Wang Beijing Sport University, China

Nowadays, all kinds of major public security incidents occur frequently, they are posing great challenges to human security and social stability. In November 2019, Xi Jinping delivered an important speech and point out "We will vigorously train emergency management personnel, and strengthen the construction of the discipline of emergency management". At present, there are some problems in the higher education of emergency safety, such as the incompleteness of the professional system of emergency safety, the shortage of emergency safety teachers, the backward training mode of emergency safety professionals, and the inability to meet the needs of the rapid development of the industry. How to promote the development of emergency safety education, how to improve the personnel training mechanism in the development of emergency safety education and emergency safety industry, and finally deepen the integration of industry and education have become the new era proposition of national higher education reform and talent development strategy innovation. The universities should focus on building a new height for personnel training in various fields of emergency safety, and formulate the personnel training objectives and programs based on industrial needs and in line with the requirements of international engineering education certification, and then demonstrate and promote the new mode of personnel training. Emergency safety higher education should also construct and optimize the construction of emergency safety teachers, promote the mutual support of emergency safety education and emergency industry, and actively explore and practice the combination of emergency safety education and emergency industry. At the same time, an emergency safety production-education fusion platform with universities as the core and an emergency safety production-education fusion base with enterprises as the core are established. Finally, it will realize the industry-education integration and collaborative development, make some contributions for personal safety as well as social harmony and stability.

ABSTRACTS

DAY 1- Saturday, September 26, 2020

15:30-17:00
Session 3

WS1013	Virtual Reality (VR) in Engineering Education and Training: A bibliometric analysis **Dr. Nai Yeen Gavin Lai**, Kok Hoong Wong, Lih Jiun Yu, Hooi Siang Kang The University of Nottingham Ningbo, China

Although Virtual Reality (VR) was first mentioned in the 60s, the research interest into the technology and its application are still gaining much attention globally. VR technology had evolved and had found niche application in many fields including entertainment, tourism, healthcare, manufacturing, education and more. A notable characteristic of the VR technology is that it seeks to immerse the user into the intended environment and narrative, allowing high user interaction and involvement. These qualities are very beneficial for engineering education. In the past, cost, hardware capabilities and availability, connectivity and other issues had hindered VR wider adoption and application. However, it is changing with the advent of more devices, the involvement of more consumer electronic players and the growth of digitization. This paper seeks to report on the research on virtual reality in engineering education over the past 26 years. The study conducts a bibliometric analysis to reflect the trend of VR in engineering education settings, thus identifying the possible emerging trends. An extensive literature search was conducted using the Scopus database and was analyzed using Vosviewer and Excel. There is an increasing trend of VR research related to the engineering education settings with an evident increase in the scope, the coverage and the citations figures. There is tremendous growth in the number of publications and citations in the recent past four years of the study. The most active author in the field is Sampaio, and the top universities where the publications are affiliated with are Purdue University and Clemson University. The majority of the publications were also found to be affiliated with the "ASEE Annual Conference and Exposition Conference Proceedings". The United States had the honor of being the country with the majority of publications from this study. There is a continuous shift of research interest observed through the publications keywords, and this provides an indication of the dynamic progression of research direction among researcher in the field of study. The findings of this study provide a good overview of the trend in research related to VR in engineering education and can serve as a guide to academics seeking to research or adapt the usage of VR in engineering settings.

WS1017	An Experimental Study on the Influence of Competition Teaching Method on High School Students' Core Accomplishment in Basketball Physical Education Sanjun Yang, **Dr. Runfa Jiang**, Yuchen Wang China University of Mining and Tecnology (Beijing), China

The core accomplishment of physical education is the essential moral quality and key sports quality and ability for students to grow up all the time1.In order to explore the influence of competition teaching method on the core accomplishment of physical education for ordinary high school students, this paper selects the basketball items , and applies experimental methods, mathematical statistics methods and comparative analysis methods to the teaching experiment of male students in senior two of Mingguang Middle School in Anhui Province.The results show that competition teaching is better than traditional teaching in cultivating the core accomplishment of high school students' physical education; the improvement of sports ability is reflected in the improvement of lower extremity explosive power and competition ability;the improvement of healthy behavior is reflected in the promotion of learning interest and independent exercise; and the cultivation of sports moral character is reflected in teamwork, courage to fight and so on.This study also provides reference for the design of physical education curriculum, the setting of goals, the selection of teaching contents and methods.

WS1025	Research on the Blended Experiential Learning Mode of Business Administration Talents in Universities **Prof. Yongzhou Li,** Yinghuan Zhu, Teng Fang Wuhan University of Science and Technology, China

At present, there are problems with insufficient application of teaching technology and in-depth experience-based learning practice in the cultivation of business management talents in universities, which cannot adapt to the heterogeneous needs of industrial and commercial enterprises for management talents with high-innovation and practical ability in the VUCA era. Based on the emerging technology, this paper proposes to build a blended experiential learning mode whose operating mechanism centered on "case teaching + virtual simulation experiment + immersive practical teaching + industry-university-research joint training", and to take human resource management as an example. The blended experiential learning mode proposes measures to strengthen the construction of a double-qualified teacher team, update teaching concepts, optimize situational teaching content, and innovate intelligent teaching methods.

ABSTRACTS

DAY 1- Saturday, September 26, 2020

15:30-17:00
Session 4

WS2017	A Granular Conceptual Model to Define Requirements for Evaluating the Functional Completeness of a Pharmacy Information System **Prof. Hesmeralda Rojas**, Walter J. Huayllani Universidad Nacional Micaela Bastidas de Apurímac, Perú

Due to the fact that the existing quality models fail to define the methodologies, tools and techniques used to meet the software product standards, a concern arises to provide and integrate empirically validated models in the software industry.
Functional completeness is a quality attribute that is part of the ISO / IEC 25010 standard and represents the degree to which the set of functionalities delivered covers all the tasks and objectives requested by the user. For this reason, a conceptual model is presented to define functional requirements that provide a framework to clarify the sequence of events that are part of a requirement. The model is composed of the tasks: input data capture within the system limit, input data capture outside the system limit, restrictions according to the business model, information processing, and information output. Likewise, the model has obtained preliminary results to be applied in the development of Pharmacy software for a state entity. The results show that the definition of requirements using the proposed model generates a closer description of the sequence of interaction events between the system and its environment applied to the description of a functional requirement.

WS3002	Research on the Construction of Pathological Knowledge Management System Based on Web **Mr. Haitao Zhang**, Jieping Xu, Hailan Wang, Shu Ou Guilin University of Electronic Technology, China

Pathology plays a crucial role in clinical diagnosis As the golden standard. The accuracy and efficiency of pathological clinical diagnosis depend on the combination of explicit knowledge and tacit knowledge possessed by pathologists. This paper analyzes the problems faced by the management of pathological knowledge, such as the internalization of pathological explicit knowledge, the externalization of pathologists' personal tacit knowledge, and the transformation of personal tacit knowledge into group tacit knowledge. Aiming at the above problems, this paper proposes a conceptual model of pathological knowledge management, and then proposes a web-based pathological knowledge management system that combines the functions of structured pathological knowledge management, semi-structured pathological knowledge management, knowledge networks and pathological knowledge mining, and discusses the system's architecture.

WS3003	Study on the Dilemma, Influence and Countermeasures of Overall Budget Performance Management in Health Care System Under the Background of Epidemic-- Based on DEA Model **Prof. Bin Liu**, Wenchang Tan Jiangxi Science and Technology Normal University, China

The epidemic situation has highlighted the dilemma of comprehensive budget management in Chinese public hospitals. After comparing and sorting out the comprehensive budget process with the composition of total health expenditure from 1993 to 2018 and the DEA analysis on the efficiency of health expenditure in 2018, it is found that the implementation of comprehensive budget management is the key to improve the efficiency of health expenditure. In order to better allocate medical and health resources and reduce costs, all departments should implement comprehensive budget performance management, clarify responsibilities, establish a diversified combination of payment modes and control price costs. At the same time, enhance the awareness of performance management, performance control throughout the entire process of budget preparation, to ensure that the budget implementation to achieve the expected results.

WS1007	Open Up-Vote Assessment for Creative Coding: Model and Quality **Mr. Yuecheng Wang**, Tian Song Beijing Institute of Technology, China

The assessment of creative coding is challenging in the credibility due to aesthetic reason. It also suffers from manual workload for the large number of enrollments in open online courses. We propose an online open up-vote assessment to tangle the above challenges. Our work has three contributions. First, we propose an approach to assessing creative coding by using online up-vote system in a crowd-sourcing way. Second, a scoring model has been established to convert the number of up-votes and views of creative works into the Wilson Score; the lines of creative codes were combined to evaluate the works on a scale from 0 to 10 points. Third, the scoring quality is evaluated by using real data set which is collected with 337 real-world creative codes and 9 sets of independent scores to them by teachers. The results show that the up-vote assessment has very tight tendency to the scores from teacher. Our work indicates that open online up-vote assessment can be trusted as a flexible and reliable way to evaluate creative works.

ABSTRACTS

DAY 1- Saturday, September 26, 2020

15:30-17:00
Session 4

WS1026	Critical Service Recovery Scheme During COVID-19 Pandemic: An Analysis from Online Text Comments **Asst. Prof. Dr. Praowpan Tansitpong** NIDA Business School, Thailand

This study explores key determinants of airline satisfaction outcome by integrating two sources of online reviews from web-craping and text mining to determine service outcomes of the airline industry during COVID-19 pandemic. Text analysis technique provides information to characterize features on how passengers evaluate attributes of service between high and low ratings and generate summary of frequent text comments (WordCloud). The results suggested that satisfied passengers are seeking for empathy and responsiveness services, while negative comments suggested frequent complaints of poor operations dimensions such as computer glitch and flight cancellations.

WS2016	A Survey of Incorporating Affective Computing for Human-System Co-adaptation **Mr. Mohammed Naji Alharbi**, Shihong Huang Florida Atlantic University, USA

Affective computing is considered one of the important areas in the field of human and computer interaction where software systems can recognize and understand human's behaviour and emotions. Affective computing integrates a variety of modalities of inputs that are used to recognize users' emotions and consequently respond to these emotions accordingly. In this paper, we first conducted a broad survey of the varieties of modalities that are used for incorporating affective computing in software systems. We then discussed, classified, and critically analyzed the different approaches in this field that can be used and incorporated in order to detect, analyze, and respond to users' inputs efficiently. The contribution of this paper is providing an up-to-date review about the current literature and discussing the current challenges that lead to some insights into the future work that can be done to make affective computing more effective.

WS2011	Research on Subway Collision Animation Based on ANSYS Data **Ms. Li Wu**, Shaodi Dong, Yang Cao Nanjing Normal University, China

In this paper, four subway cars are selected as experimental objects, and the finite element analysis software ANSYS is used to simulate collision simulation. On this basis, we provide three sets of data about the displacement of four trains within 0.24s. Through 3d animation of three sets of data, the whole deformation process of train body collision can be obtained intuitively and clearly. Then, from the perspective of displacement, plastic deformation and climbing status of train carriages, the paper makes a detailed analysis, which is obviously different from the motion law used in the traditional 3D animation production. The experimental results of simulation of collision animation show that the use of finite element analysis software ANSYS makes the production of 3D animation to show more details, and more efficient and convenient. 3D animation also makes the data calculated by ANSYS intuitive visualization.

WS2012	Software Development Process Modeling with Patterns **Ms. Asma Hachemi** USTHB, Algeria

Software developement process modeling with patterns allows to benefit from the advantages of these latter. Indeed, this modeling allows to benefit from the proved and reusable knowledge offered by patterns, which improves the quality of the models produced and reduces the modeling time and effort. In this article, we discuss the main modeling practices of software developement processes with patterns. We focuse on the advantages and difficulties of these practices.

WS502	Elderly-Oriented Design of User Interface of Agedness Internet Products Based on Synesthesia Thinking **Mr. Zongliang Bao**, Ping Wu, Guang Feng Xinjiang Institute of Technology, China

With the annual progress of these information technologies in a new era such as Mobile Internet and the Internet of Things, and the degree of population aging in our country is increasing by year as well. However, when the internet encounters a new batch of aging “fresh troops”, there will be problems in elderly users such as the development differentiation between the information technologies and the information literacy, the differentiation between products function development and habits, the differentiation between information bombardment and mental cognition patterns, which indicates there is lack of information concern for the elderly group. Therefore, this paper is performed from the thought of synesthesia thinking, and elderly-oriented interpretation of the agedness Internet products is completed in terms of module planning, content presentation, visual identity, and color configuration, combining the elderly’s characteristics variety of physiology, psychology and cognitive behavior. Finally, a set of effective and scientific design rules is proposed, which can provide an available reference for the further design research.

WS1020	Design and Application of Virtual Training System for Computer Hardware Assembly **Mrs. Yanping Tong**, Fu Xie, Xiangwei Zheng, Yi Wei Shandong Normal University, China

Virtual reality technology is a research focus today, and has been applied to education, entertainment and many other fields. Computer hardware assembly is a course that teaches students how to recognize and assemble a computer. However, traditional teaching model has a series of problems, such as the slow update of computer training equipment, serious hardware waste and danger of assembly experiment process. In order to solve these problems, we designed and developed a virtual training system for computer hardware assembly (VTSCHA) based on the Unity3D platform. In the design stage, we fully considered the needs of the course and proposed a complete system architecture. Then through the study of Playmaker visual programming plug-in, animation and UI system, we respectively realized the parts display, computer assembly demonstration and computer simulation operation function, and finally completed the system. Practical results show that using VTSCHA can achieve a good teaching effect in the classroom. This system has good three-dimensional display and interactive functions. Learners can easily get started and operate in the virtual environment.

WS2003	A Semantic-based Multi-Agent Dynamic Interaction Model **Mr. Siming Chen**, Liang Xiao, Mo Cheng Hubei University of Technology, China

Due to the autonomy of agents and their ability to perceive the environment, multi-agent systems have been widely used in many fields. The design of multi-agent systems requires the support of interactive models. The traditional multi-agent interaction model has certain feasibility in solving specific tasks. However, in a distributed environment, a relatively static multi-agent interaction model is not sufficient to support a dynamically changing interaction process. Frequent data interactions will also consume resources of multi-agent systems, thereby reducing agent performance. In this study, we propose a semantic-based multi-agent dynamic interaction model (MADIM). MADIM uses semantic ontology to map the objects in the interaction model, and defines the interaction protocol through the rule description language. This model is attached with dynamically configurable semantic templates and interaction rule base. We added a reusable dynamic resolution engine component to MADIM to provide dynamic resolution services for the semantic information in the model. MADIM supports dynamic interactive behavior and has good interoperability and interpretability. Our model provides a flexible solution to the multi-agent interaction process. Finally, we verified the feasibility of the model design scheme through a simple example.

WS24001	Quadratic Difference Set -Based Quorum Generation Algorithm in Distributed System **Dr. Peng Wu**, Xiong Ning, Jiqiang Liu, Jie Meng, Jinzhao Wu Beijing Jiaotong University, China

The quorum generation algorithm proposed in this paper is based on the quadratic difference set and initializes the quadratic difference set with a sequence of prime numbers. Initialization with prime numbers increases the fairness of marking the corresponding elements in the D set. This makes our algorithm slightly better than the algorithm with the time complexity O(N), and the time complexity of algorithm proposed in this paper is still O(N). The size of the generated quorum is close to , when the number of nodes is close to 10 million.

WS1022	Children's Emotion Recognition Based on Convolutional Neural Network **Mr. Wenxing Zhou**, Yi Sun Chengdu Jinniu District Oragn in the Second Kindergarten, China

In this paper, a facial expression recognition model for children was presented. Based on the existing research, this study divides common learner emotions into happiness, concentration, panic and boredom, and builds a large-scale learner emotion database based on this, and proposes a child emotion recognition method based on deep learning. Compared with traditional learner emotion recognition methods, this method has higher accuracy and robustness.

WS2002	Intelligent Safety Monitoring and Early Warning System for Construction Site **Mr. Zheyuan Hu**, Jun Cai, Huiwei Wang, Dehao Zhang, Yang Liu, Xin Li, YanLong Li, Fengyan Zhao, Hongjun Zhang Beihang University, China

Faced with the complex environment and difficult construction of infrastructure projects, designing an intelligent safety monitoring and early warning system for construction sites can effectively detect existing violations and reduce the probability of accidents. Existing violation detection methods for construction sites mainly include hand-crafted feature extraction and deep neural network. However, the method of extracting features is usually difficult to design and the architecture of the deep learning-based method is simple, which might lead to poor detection performance in extreme cases (Insufficient light, small detection object, occlusion, etc.) and cannot be used in actual detection environment. Therefore, we improve the existing target detection algorithm by adding image preprocessing module, multi-scale feature fusion module, and repulsion loss term. We also use the KCF algorithm to continuously track targets to identify specific violations. On this basis, we develop an intelligent safety monitoring and early warning system to classify the detected violations and send the information to the responsible person in time, which significantly improves the management capacity at the construction site. Through a series of experiments, we compared the impact of different modules on detection accuracy. The results show that our model has a significant improvement compared to existing methods on our dataset, especially in harsh environments.

ABSTRACTS

DAY 2-Sunday, September 27, 2020

10:30-12:00
Session 6

WS2004	The Application of Edge Computing in High-Definition Maps Distribution **Mr. Rongbo Zhang**, Kaiyu Cai National University of Defense Technology, China

The High-Definition map(HD map) is a key technology to achieve automatic driving above the grade of L3, with the amount of data comes to more than 105 times that of traditional navigation map. With the arrival of 5G communication and the rapid development of Internet of Things, each autonomous vehicle will request HD map service by accessing the Internet. The service of traditional navigation map under “cloud-end” mode may not be well adapted to future HD map application, so the paper proposes a MEC proposal for HD map application, deploying HD map server under “cloud-edge-end” mode to mitigate the high latency and improve low reliability caused by the faraway physical distance rather than “cloud-end” mode. The HD map is divided according to the latitude and longitude regions, being pushed to local edge computing node servers respectively to realize the interaction between autonomous vehicles and edge servers, which makes more convenient and reliable HD map services available. The experimental results show that the proposed proposal can cut off the communication delay effectively, ensuring the reliability of the HD map service, and providing high-quality HD map service for autonomous vehicles.

WS4301	A MBSE Based Flight Scenario Identification Approach for Civil Aircraft Certification Test **Mr. Xuan Zhang**, Xiaojian Ding, Kaiwei Wang CEPREI, China

Defining and designing civil aircraft certification test flight scenario (CTFS) is a prerequisite for conducting airworthiness certification flight test. The design method and process of CTFS based on the airworthiness compliance evidence link are then proposed. With “compliance evidence link” as the core, logical and traceable airworthiness compliance evidence is analysised. The model-based systems engineering (MBSE) method is used to realize the modeling of the process of constructing the compliance evidence link for CTFS. In order to improve the operability, taking the airworthiness requirement “ground heading maneuverability” as a typical case, the process of requirement analysis, design, and requirement confirmation of CTFS is demonstrated. The final designed CTFS can support the conduct of civil aircraft airworthiness certification flight test.

WS509	Art Deco Building Data Collection and Protection of Nanjing Based on 3D Digital Modeling Technology -Taking the Site of China & South Sea Bank Ltd for Example **Prof. Yang Cao**, QinYou Zhou Nanjing Normal University, China

Art Deco buildings of Nanjing in the Republic of China constitute precious historical and cultural heritages in China. How to conserve such precious intangible cultural heritage and resources and carry forward characteristic Chinese culture by way of digital media art has become a scientific research subject demanding prompt solution. Based on the data modeling technology, the paper attempts to protect buildings of Nanjing constructed in the Republic of China and takes the site of China & South Sea Bank Ltd as the example to fabricate 3D model library. Specifically, the paper first draws two-dimensional vector diagram by software such as Auto Cad on the basis of primary data, subsequently adopts MAYA for 3D modeling and eventually resorts Mental Ray rendering software to conclude static design sketch. Virtual reality scenes may be also accomplished by forming dynamic effects via MAYA.

WS510	A Visual Content Protection Evaluation Method for CS Coding Images Jixin Liu, **Ms. Min Jin** , Guang Han, Sun Ning, Xiaofei Li Nanjing University of Posts and Telecommunications, China

Recently, the widespread application of image processing technology has caused special visual privacy issues while bringing convenience to our life. In particular, most of the current mainstream intelligent recognition algorithms rely on the detailed content of images, which has significantly increased the risk of personal privacy leakage. Therefore, we propose a multi-layer compressed sensing (CS) coding model, which ensures the security of image content and retains enough information for intelligent recognition at the same time. Besides, drawing on the idea of related feature mapping quality scores in image-quality assessment (IQA), we extract multi-frequency local binary pattern (LBP) and semantic salient features to estimate the content protection degree of CS images. Finally, experiments on three CS databases prove that the proposed method has better performance compared with other IQA methods.

ABSTRACTS

DAY 2-Sunday, September 27, 2020

13:30-15:00
Session 7

WS2006	Mechanism of Parked Domains Recognition Based on Authoritative DNS Servers **Dr. Peng Yang**, Chao Shan, Dongan Wang, Lei Su, Juan Li, Xinxin Wan, Xin Wan National Computer Network Emergency Response Technical Team Coordination Center of China, China

At present, there are a large number of parked domains, which seriously affect online users when surfing. To identify parked domains effectively, a new technique was proposed based on authoritative Domain Name Server (DNS). In this way, suspected authoritative DNS servers of typosquatting domains were extracted, which commonly used in domain parking service. Then these DNS servers were clustered by semi-supervised clustering method, to identify whether they were associated with domain parking service. When detecting a parked domain, we can identify it by judging whether its authoritative DNS applied in domain parking service and whether its mapping IP addresses concluded in the set od IP addersses of parking web servers. With existing detecting method by using webpage's features to analyze the accuracy of the proposed method, the experimental results show the proposed method achieves a high accuracy rate of 92.8%, avoids crawling the webpages, has a good performance on parked domains detection in real time.

WS2005	Block Gauss-Seidel Method for Signal Detection in Uplink Massive MIMO Systems **Ms. Qianqian Ye**, Zhizhong Zhang, Xiaofang Min Chongqing University of Posts and Telecommunications, China

Minimum mean square error (MMSE) detection algorithm is near-optimal for uplink massive MIMO systems, but it involves matrix inversion with high complexity. Thus, the conventional Gauss-Seidel (GS) method has been applied for obtain a low-complexity MMSE detector without employing the computationally intensive matrix inversion. In this paper, we propose an improving GS method for the conventional GS method based on block matrix in order to reduce complexity and accelerate the convergence rate. Simulation results show that the proposed algorithm can closely match the performance of the MMSE algorithm with few number of iterations. It also outperforms GS method in terms of bit error rate (BER) performance with same number of iterations.

ABSTRACTS

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13:30-15:00
Session 7

WS2014	Design and Implementation of Preprocessing Scheme for Massive SQL Interactive Instructions in Power Business **Mr. Xiaogang Wei** NARI Group Corporation/State Grid Electric Power Research Institute, China

With the continuous development of power business, the demand of data interaction between internal and external network is becoming more and more frequent, resulting in a large number of Structured Query Language (SQL) interactive instructions. Aiming at the cluttered massive SQL interactive instructions, this paper designs and implements a pre-processing scheme for SQL interactive instructions. Firstly, execute the data detection to get the specific problem instructions, then execute the data cleaning to get the clean instructions, then execute the data compression to get the unrepeated instructions, and finally get the instruction that meets the quality requirements. The system test results show that the scheme can realize the undifferentiated cleaning and large-scale compression of massive original SQL interactive instructions, and meet the requirements of power system data analysis and mining for the preprocessing of massive SQL interactive instructions.

WS2001	Alternative Effort-optimal Model-based Strategy for State Machine Testing of IoT Systems **Mr. Vaclav Rechtberger**, Miroslav Bures, Bestoun S. Ahmed Czech Technical University in Prague, Czech Republic

To effectively test parts of the Internet of Things (IoT) systems having a character of a state machine, Model-based Testing (MBT) approach can be taken. In MBT, a model of a system is created, and test cases generated automatically from the model, and a number of current strategies exist. In this paper we propose a novel alternative strategy, that concurrently allows to flexibly adjust the preferred length of the generated test cases, as well as to mark the states, in which the test case can start and end. Compared with an intuitive N-switch coverage-based strategy that aims at the same goals, our proposal generates a lower number of shorter test cases with less test step duplications.

ABSTRACTS

DAY 2-Sunday, September 27, 2020

13:30-15:00
Session 7

WS2007	Naruto: DNS Covert Channels Detection Based on Stacking Model **Dr. Peng Yang**, Xinxin Wan, Guang Shi, Hao Qu, Juan Li, Lixin Yang, Xin Wan National Computer Network Emergency Response Technical Team Coordination Center of China, China

A covert channel is an information channel which is used by computer process to exfiltrate data through bypassing security policies. The DNS protocol is one of the important ways to implement a covert channel. DNS covert channels are easily used by attackers for malicious purposes. Therefore, an effective detection of the DNS covert channels is significant for computer system and network security. Aiming at the difficulty of the DNS covert channel identification, we propose a DNS covert channel detection method based on stacking model. The stacking model is evaluated in a campus network and the experimental results show that the detection based on the stacking model can detect the DNS covert channels effectively. Besides, it can also identify unknown covert channel traffic. The area under the curve (AUC) of the proposed method, reaching 0.9901, outperforms the existed methods.

WS2009	ARQ Algorithm Optimization of Radio Link Control Layer in 5G System **Mrs. Yu Cheng**, Fang Cheng, Bingying Zhang Chongqing University of Posts and Telecommunications, China

In the process of realizing the Radio Link Control layer of 5G system, ARQ mechanism is introduced to ensure the reliability of data retransmission, but at the same time, high delay and low throughput are also introduced in the retransmission. In addition, the traditional ARQ mechanism is inefficient and only applies to LTE systems. Therefore, an improved retransmission scheme based on wireless channel quality is proposed. The channel estimation is used to monitor the quality of the new channel in real time, and then compare the channel coefficient with the preset threshold value to adaptively select to receive feedback response. In addition, the sending and receiving scheme of the AM entity is designed in detail. The simulation result show that the ARQ mechanism proposed in this paper can achieve fast retransmission, significantly reduce the transmission delay, and increase the system throughput.

WS2015	Research on Perception of Calligraphy Time Sequence Based on Markov Chain **Assoc. Prof. Ruimin Lyu**, Lilin Mei, Hongcha Xing, Yuefeng Ze Jiangnan University, China

Sequential restoration relates to the psychological phenomenon that one can imaginatively reconstruct the writing process by observing the stroke traces on a piece of calligraphy. While traditional theory emphasizes this phenomenon as a unique aesthetic feature of calligraphy, and neuroaesthetics studies its biological basis, this paper introduces the idea of quantifying it. In order to quantify sequential restoration, and to explore the factors that affect it, a sequentiality quantization method based on Markov chain is proposed. First, beholders' perception of the sequential order of predefined marker points on the calligraphy work is modeled as a Markov chain. Then, the entropy rate of the Markov model is calculated to measure its uncertainty. Finally, the metric sequentialiy is defined as the normalized negative entropy rate. The feasibility of this method is verified through the actual measurement of the character "Zou". The effect of graphic transforms on the sequentiality of single brush stroke was studied, and the result shows that graphic transforms, including mirror and rotation, significantly affect sequentiality. The experiment also shows that the textural details of a brush stroke are not the primary factor in forming the sequential restoration experience, but the viewer's own experience of stroke order is more important.

WS3004	Prediction Model of Microblog Retweeting Based on Naive Bayesian **Mr. Haoyuan Su**, Hengmin Zhu, Jing Wei Nanjing University of Posts and Telecommunications, China

In this paper, we take Sina microblog as the research object to explore the features that influence microblog retweeting, as well as predict retweeting behavior. On the basis of obtaining a large number of microblog retweeting records, three features including number of historical interactions, interest similarity between users and microblog and similarity of active time are taken into account. We explore their exact influence on users' retweeting behavior, and establish a prediction model based on Naive Bayesian. Experiment indicates that the prediction model could achieve higher prediction accuracy with fewer features, which enables us to predict microblog retweeting timely in the process of dynamic public opinion propagation.

ABSTRACTS

DAY 2-Sunday, September 27, 2020

13:30-15:00
Session 8

WS3005	Formal Description of Manufacturing Process Based on Domain Ontology Construction **Mr. Fei Huang**, Youling Chen, Dongsheng Xu Chongqing University, China

In order to solve the problem of process knowledge sharing, integration and reuse in the field of machinery manufacturing due to the complexity, dispersion and diversity of process knowledge. Taking into account the advantages of ontology in knowledge representation, this paper proposes an ontology-based knowledge management framework in the production line. On the basis of inductively analyzing the attributes of the mechanical manufacturing process attributes and intra-process and inter-process relationships, an improved conceptual ontology expression model of the 4-tuple process is proposed.

WS3006	A Knowledge-based Express Model of Operational Plan Containing Uncertainties **Dr. Xin Jin**, Xinnian Wang, Yan Yu Nanjing Research Institute of Electronic Engineering, China

Under the new confrontational mode of "Multi-Domain Operations", "change" becomes the key to victory. Uncertainty becomes an important challenge to operational command decision making. Traditional operational plans are made according to deterministic assumptions and has very limited ability to adapt to changes. Only human can adapt according to his own understanding to plans. This study proposes a knowledge-based express model of operational plan containing uncertainties. It can formally describe operational plans with uncertain starting time, optional strategies and dynamic calculated parameters, and can be executed by machine. It may be used in wargames, autonomous action monitoring, and other intelligent applications.

WS3009	Research on Recognition of Key Innovation Conflicts of College Students Based on Matter-field Model **Prof. Yimin Zhang**, Guojun Sheng, Shan Deng Dalian Neusoft University of Information, China

Fierce market competition and challenges of innovative work lead to higher requirement for college students' innovation practice activities. In order to guide the progress of college students' innovation smoothly, this paper proposes the Key Conflict Identification Model for college students' innovation. The model introduces the matter-field model of TRIZ to identify conflicts. and then, the AHP and entropy method to determine parameters and elements' weight, and a three-dimensional model to calculate the conflict weights. Finally, the process and method of identifying key conflicts are given. The results show that the key conflict in the innovation of college students are the convenience and risk under the knowledge element, following by the conflicts of cost and time under the demand element, and then, the conflict under the cultural element, between penetration force and harmful factors of the system.

WS505	Research on the Application of 3d Technology in the Protection and Inheritance of Intangible Cultural Heritage ——Take Pizhou for Example **Ms. Xue Chen** Nanjing Normal University, China

There are a lot of Chinese cultural history and intangible cultural heritage left in the era of Chinese ancestors. These precious historical and cultural heritages are the precious historical and cultural wealth that our ancestors gave us, recording the important historical objects and materials of the ancient Chinese nation's historical development and survival. How to preserve these precious intangible cultural heritages and their resources and better inherit and develop the unique ancient Chinese culture is an important scientific research topic to be solved in the current intangible cultural heritage. This paper briefly introduces the connotation and content of the ecological and cultural protection of the intangible cultural heritage of Running Zhuma in Pizhou. According to the graphic and graphic data of the intangible culture of Running Zhuma in Pizhou, finish the three-dimensional model of Running Zhuma characters, headwear, clothing, and Zhuma is completed, explore the style and movement of the Running Zhuma in Pizhou, and the application fields of the 3D digital technology in the protection and development of the intangible cultural heritage of Running Zhuma in Pizhou are further studied.

WS412	Components Interaction Safety Analysis Method Based on STAMP and Formal Verification **Mr. Nan Ye**, Jianguo Zhang, Jie Wu Beihang University, China

The traditional safety analysis method is based on the event chain theory, which is not suitable for analyzing the accident caused by components interaction problems of complex system. However, the System Theoretic Accident Model and Process(STAMP) can overcome this difficulty. There are some shortcomings in the current research on STAMP, such as describing the model with natural language and relying on manual analysis. Therefore, this paper proposes a components interaction safety analysis method based on STAMP and formal verification. Taking the aero-engine control system as an example, the root cause of system hazard is obtained and the feasibility of the proposed method is verified.

WS401	Research on Quantitative Evaluation Technology of Highly Accelerated Life Test **Ms. Limei Xie**, Yonghua Hua, Zhenrong Shen Reliability Engineer Center of CEPREI, China

The purpose of highly accelerated life test (HALT) is mainly to stimulate the potential defects of products, Therefore, at present, HALT can't quantitatively obtain the reliability index of the product. In this paper, because of the current situation of insufficient utilization of enhanced test data, the methods of data extrapolation and reliability evaluation based on accelerated model are studied. Firstly, the HALT data is extrapolated into failure data under normal stress environment by using the acceleration model, and the extrapolated HALT data are regarded as a set of reliability growth test data. Then, the reliability of the product is evaluated by the reliability growth test evaluation method, thereby realizing the reliability evaluation based on the HALT data.

ABSTRACTS

DAY 2-Sunday, September 27, 2020

15:30-17:00
Session 9

WS402	Failure Analysis of Subsea Control System Based on Fuzzy-Topsis Method **Mr. Mingyang Yue**, Xin Zuo China University of Petroleum, China

In offshore oil mining, The underwater production control system provides safe, reliable, and efficient data acquisition and monitoring functions for underwater oil and gas production.The failure of various parts of it has a significant impact on the safe extraction of offshore oil.Based on the opinions and experience of industry experts, this article identifies the overall potential types of failure of the subsea control system and ranks the most critical ones,based on this, a multi-criteria decision method based on Fuzzy-Topsis is designed to analyze and optimize the most critical failure modes proposed.The experimental results conclude that the fuzzy TOPSIS model mentioned in this paper can also be well applied to the fault analysis application of the offshore oil industry.

WS407	Directional Markov Chain Monte Carlo Algorithm for Fast Dynamic Reliability Assessment **Dr. Jinling Wang** Zibo Vocational Institute, China

Failure problems of many electromechanical devices are caused by the interaction of discrete disturbance and continuous degradation. A challenge presented by such multiscale failure behavior is how to implement fast dynamic reliability assessment. The Directional Markov Chain Monte Carlo (DMCMC) algorithm was thus presented to resolve the problem with variable steps. Thanks to the definition of failure space and the directional sampling principle, the computational cost was thus reduced. Simulation of a servo valve case demonstrated its efficiency.

ABSTRACTS

DAY 2-Sunday, September 27, 2020

15:30-17:00
Session 9

WS408	Simulation Model for Cascading Failure in Complex Network: A Cellular Automata Approach Jun Zhang, **Dr. Xinli Xiong**, Yongjie Wang, Jingye Zhang NUDT, China

In complex networks, there is a phenomenon of avalanche failures defined as cascading failures, caused by a few nodes randomly or deliberately and resulted in a significant number of nodes malfunction or the collapse of the entire network. To analyze the process of cascading failures, a method for simulation of cascading failures in complex networks based on cellular automata, a powerful calculation model in complex systems, is proposed in this paper. Through simulations in various scenarios, results show that cyber-attacks are more threatening than random failures. Also, random links in networks provide extra robustness when the scale of the network is large.

WS411	Research on Human-Machine Dynamic Trust Based on Alarm Sequence **Mr. Zhenping Lu**, Jianbin Guo, Shengkui Zeng, Qirui Mao Beihang University, China

With the extensive application of automation equipment, the issue of trust in automation has become a research hotspot in the field of human-machine interaction. Too high or too low trust levels may affect the performance and security of human-machine interaction. False alarm is considered to be an important factor affecting operator's automatic trust. Many experimental results show that the false alarm rate is significantly correlated with trust level. This paper studies the relationship between the alarm sequence (composed of a series of correct alarm and false alarm events) and trust level. Based on the cockpit simulation experiment, the dynamic change of the trust level with the warning event is obtained. The experimental results show significant recency and primacy effects

WS1009	Hybrid Audio-video Recording System for PBL Lecture in Round Sitting Classroom **Prof. Ao Ku**, Wei Xu, Jintao Zou, Wenqi Liu, Wei Liu Huazhong University of Science and Technology, China

The PBL classroom is a circular area in which students study in a circle. At the same time, teachers should have a complete understanding of the participation of each student in the PBL classroom. Due to the shortage of manpower resources, a system is needed to record students' behaviors. The typical solution is to deploy a lot of prep work, either voila recognition camera installation or immobilization, which is not
easy to deploy in PBL classroom. In this paper, we propose a kind of lightweight equipment, which locates in the center of the round table and is scalable to similar classroom. It can support speaker localization function, by hybrid audio-video localization algorithm. In this scheme, the basic positioning is through sound field positioning and six-microphone array, and in some difficult situations, such as people sitting close, people moving, will make the video decision method. The video is shot by a fish-eye camera for face/mouth detection and can also calculate positioning angles. Finally, the test results show that this method can effectively identify the speaker's position in class and record it.

WS1014	Design and Application of the Virtual Simulation Teaching System for Grouting Fire Prevention and Extinguishment **Assoc. Prof. Bo Tan**, Yanling Liu, Kaixuan Wang China University of Mining and Technology (Beijing), China

Due to the danger of practical teaching of underground grouting fire prevention and extinguishment, the enormousness of the grouting equipment and the limited practical teaching conditions, the teaching effect is often poor. In order to improve the efficiency and quality of practical teaching, this paper builds a virtual simulation system for underground grouting fire prevention and extinguishment to enable students to experience the process by themselves, and achieve virtual practical teaching. It can not only increase students' sense of practical operation experience, but also ensure the safety of practice and unlimited practicing opportunities without causing waste of resources. It is also very helpful to the train technicians in collieries.

WS1023	Online and Offline Teaching Mode of C Language Programming Chuandong Song, **Prof. Bin Yang**, Wei Zhang, Haifeng Wang Zaozhuang University, China

Due to the complicated content system, and abstract, boring and trivial knowledge points, C language programming is understood badly by the fresh students. So an online and offline teaching mode for C language programming is proposed. In our teaching mode, the recorded videos about knowledge points are uploaded on the Chaoxing website and made as Massive Online Open Course (MOOC). Grammar exercises are set on the Chaoxing website. Programming exercises are put on Online Judge (OJ) platform. The students from Zaozhuang University could learn the knowledge by online and offline manners. Through the implementation of one semester, the investigation and scores feedbacks about our proposed mode could show that the online and offline teaching mode is very efficient. Some improvement methods also are proposed to guide the future teaching process.

WS1024	A Rapid Visual Effect Preview Generation System for the Virtual Simulation Teaching **Assoc. Prof. Yang Yu** , Jiexiao Tang Hefei Normal University, China

Virtual simulation technology featuring virtuality, interaction and immersion has changed the way of knowledge presentation and learning interaction and promoted intelligent teaching in colleges and universities. It is essential to construct a rapid visual effect preview generation system to adopt virtual simulation practical teaching for students majoring film and television animation, because such mode of teaching would not only help to cultivate talents of rapid visual effect preview production in the film and animation industry, but also remarkably improve teaching effectiveness and the training quality of application-oriented talents.

WS1032	Protection of Ethnic Language of Ethnic Minority Students in Schools Ha Thi Kim Linh, Nguyen Thi Tinh, **Mr. Huynh Tan Hoi** Ho Chi Minh City Open University, Vietnam

From the theoretical framework and research methodology are suggested, we use a highly reliable data source, basing on quantitative approach with descriptive statistical methods to analyze the current situation of keeping minority ethnic languages for local students. This method will provide objective and reliable evidences. The issues of keeping minority ethnic languages for local students are (i) Awareness of keeping minority ethnic languages, (ii) Awareness of educational activities to keep minority ethnic languages, (iii) Skills of using minority ethnic languages of teachers and students, (iv) Care of keeping minority ethnic languages at the secondary schools. Basing on theory and surveys, 5 measures for keeping minority ethnic languages for local students are given. Indicators and items are designed to research on the status. When analyzing, we attempt to show the most important characteristics of keeping minority ethnic languages. Among them, needs of communicating by minority ethnic languages are still essential for the students.

WS1018	Research on the Course Design of Basic Basketball Teaching Intelligent in Colleges and Universities Sanjun Yang, **Ms. Hongyu Ran**, Yu Gao China University of Mining and Technology (Beijing), China

In order to apply the intelligent classroom to the basic basketball technology teaching of public physical education in colleges and universities, this research explores the application effect of the intelligent classroom which designs in the basic basketball technology (dribbling, three-step layup, one-handed shoulder shooting) and physical exercise attitude.
In this study, the teaching experiment method and mathematical statistics method were adopted to investigate two undergraduate male basketball classes of 2018 with a total of 48 subjects.
The research results show that after 16 weeks of teaching experiment, classroom teaching scheme fusion wisdom in college basketball basic technique teaching will help students grasp three quick layup and one hand shoulder shot technology, more conducive to cultivate consciousness of physical exercise, and generate a positive attitude towards physical exercise, the results of the study of wisdom classroom design which are applied to the public sports in colleges and universities have a positive impact.

WS2013	Exploration and Practice on the Construction of Teaching Staff for A Plan for Educating and Training Outstanding Engineers Based on Engineering Education Accreditation **Mr. Guoyan Luan**, Kong Li, Chen Li Jilin Institute of Chemical Technology, China

In this paper, the specific requirements of Engineering Education Accreditation(EEA) and A Plan for Educating and Training Outstanding Engineers(PETOE) on teaching staff were compared.Combining with the construction of teaching staff of specialty for chemical engineering and technology in Jilin Institute of chemical technology as an example,the exploration and practice on construction of teaching staff in recent years were introduced in detail, aiming to provide reference for the construction of A Plan for Educating and Training Outstanding Engineers (PETOE)in local colleges and universities.

MORE INFORMATION

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