The 4rd International Conference on Innovative Computing (IC 2021)

Co-located Conferences

The International Workshop on Future Technology (FUTECH 2021)
The 5th International Conference on Big-data, IoT, Cloud computing Technologies and Applications (BICTA 2021)

IC 2021
Final Program

TAIWAN
February 01 – 03, 2021
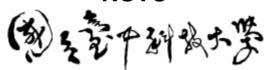
Organized by

Frontier Computing Conference Group

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Message from Organizing Committees

The International Conference on Innovative Computing (IC 2021) will be held in Taiwan, Taichung City, 1 - 3, February 2020. This event is the 4th event of the conference series, in which fruitful results can be found in IC2015 (Xiamen, China), IC2016 (Taichung, Taiwan), IC2020(Ho Chi Minh, Vietnam). Each event brings the researchers worldwide together to have excited and fruitful discussions as well as future collaborations. This conference series aims at providing an open forum to reach a comprehensive understanding of the recent advances and emergence in information technology, science, and engineering.

There are two international workshop and international conference are jointly operated with IC2021 at the same time and place, i.e., The International Workshop on Future Technology (FUTECH 2021), and The 5th International Conference on Big-data, IoT, Cloud computing Technologies and Applications (BICTA 2021), which are organized by FC conference group and Korean Institute of Information Technology, Korea Institute of information technology and innovation (KIITI) and SIEC Korea Chapter.

The papers accepted for inclusion in the conference proceeding primarily cover the topics: database and data mining, networking and communications, web and internet of things, embedded system, soft computing, social network analysis, security and privacy, optics communication, and ubiquitous and pervasive computing. Many papers have shown their great academic potential and value and indicate promising directions of research in the focused realm of this conference series. We believe that the presentations of these accepted papers will be more exciting than the papers themselves, and lead to creative and innovative applications. We hope that the attendees (and readers as well) will find these results useful and inspiring to your field of specialization and future research.

On behalf of the organizing committee, we would like to thank the members of the organizing and the program committees, the authors, and the speakers for their dedication and contributions that make this conference possible. In this year's IC2021, we have to change it in online presentation form. We appreciate the contributions from these experts and scholars to enrich our IC2021. We would like to thank and welcome all participants to the online conference of IC2021. We also sincerely hope that all participants from overseas and from Taiwan enjoy the technical discussions at the conference, build a strong friendship, and establish ties for future collaborations.

Organizing Committees

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Keynote Speaker

Dr. Jia-Wei Chang

Assistant Professor

Department of Computer Science and Information Engineering, National Taichung University of Science and Technology

Taiwan

Deep Learning for the Applications of Music Industry

Abstract

For the music industry, one of the valuable applications is to generate the lyrics of popular music. However, the lyrics generators are not comparable to lyricists now, that is, it is difficult to generate creative results like human beings. If the AI agent can create original and artistic music, which means that the machines achieve high-level human intelligence, "creativity". Popular music with its lyrics is a medium of expression, mainly conveying emotions and thoughts. However, the machines cannot understand the human feelings included in the texts. Therefore, the generated lyrics more lay on imitation than creation. It means the current methods are difficult to break through the existing framework. The main bottleneck of the current lyrics generators is the lack of contextual harmony of the music melody, the ambiguity and the emotional inconsistency of the lyrics, and the lack of creativity. To achieve the applications, deep embedding methods can be used to extract the deep representations of musical features that according to the essential elements of popular music creation. Notably, the musical deep representations can be useful inputs for the generative models. For the context, GPT-2 model is powerful for text generation. The conditional GPT-2 model can be used to generate lyrics according to the given style. For suitable for singing, the structure and rhyme of lyrics can modify by the use of a syntactic parser and a rhyme modification module. With automatic and human evaluations, the experimental results show that the proposed method can generate lyrics with high structural consistency, rhyme consistency, and originality according to the given music style.

Biography

Jia-Wei Chang is an assistant professor in Department of Computer Science and Information Engineering at National Taichung University of Science and Technology. Since January 2019, he is a Young Professionals Chair of the Institution of Engineering and Technology (IET) - Taipei Network. Since 2017, he is a consultant of NEXCOM Industry 4.0 Innovation Center. During February to July 2018, he was an adjunct assistant professor in Department of Engineering Science at National Cheng Kung University. He was a data scientist and project manager at IoT BU, Nexcom during 2016-2017. He received the Ph.D. degree from Department of Engineering Science, National Cheng Kung University in 2017. His research interests include natural language processing, internet of things, artificial intelligence, data mining, and e-learning technologies.

Schedule

Day 1
February 01, 2021 (Monday)

	Room1
14:00~15:00	Opening Ceremony
15:00~	Organizing Committee Meeting

Day 2
February 02, 2021 (Tuesday)

	Room1	Room2
09:00~10:00	Keynote Speech: Dr. Jia-Wei Chang	
10:00~11:30	Session 1-1	Session 1-2
12:00~13:30	Lunch	
13:30~15:00	Session 2-1	Session 2-2

Day 3
February 03, 2021 (Wednesday)

	Room1	Room2	Room3
09:00~10:30	Session 3-1	Session 3-2	Session 3-3
10:30~12:00	Session 4-1	Session 4-2	Session 4-3
12:00~13:30	Lunch		
13:30~15:00	Session 5-1	Session 5-2	Session 5-3
15:00~16:30	Session 6-1	Session 6-2	Session 6-3

Day 1
February 01, 2021

PM: Opening Ceremony
Organizing Committee Meeting

Day 2
February 02, 2021

Session 1-1
Chair: Dr. Yan Pei

1. **Detection of Region-of-Interest Based on Noise Filtering in High-Speed Images**
Seok-Woo Jang

2. **Detection of Error Images Based on Matching Edges with Strong Components**
Seok-Woo Jang

3. **Visual Tracking Detection and Movement Identification by Using Eye-tracker for Esports Player**
Jiaho Lin and Jason C. Hung

Session 1-2
Chair: Dr. Jia-Wei Chang

1. **Construction and Research of E-sportsSpeech Emotion Recognition Model**
Jin-Che Chen and Jason C Hung

2. **Modularized e-commerce system**
Xian-De Liao, Chien-Che Huang and Jia-Wei Chang

3. **Detect safety net on the construction site based on YOLO**
Tzu-Lien Tzou, Chung-Ho Huang, Yun-Hui Lai, Meng-Hsiun Tsai, Chia-Te Hsu, Ping-Sung Chen, Wen-Jinn Lee

Session 2-1
Chair: Dr. Jianqiang Li

1. **Epidemic Data Visualization Analysis of the Covid-19 Development in China**
    Jianqiang Li, Jingnan Wang, Chengyao Xiong, Yanan Wang and Yan Pei

2. **Using Natural Language Processing Technology to Predict Patient Reintubation with Traditional Chinese Nursing Records**
    Chung-Kai Wu, Wen-Cheng Chao and Jia-Wei Chang

3. **In view of Information Systems Success Model: Data Visualization of Institutional Research Public Information**
    Sheng-Hsiang Yang, Jia-Wei Chang, Chien-Che Huang and Chi-Shun Hung

Session 2-2
Chair: Dr. Yan Pei

1. **Emotion Recognition in Conversation Using Capsule Networks and Gated Recurrent Units**
    Yinlong Xiao, Jianqiang Li, Qing Zhao and Yan Pei

2. **Effects of an Augmented Reality-based Educational Game on Student's Learning Performance and Motivation in Nature Course**
    Wen Yen Lin

Day 3
February 03, 2021

Session 3-1
Chair: Dr. Yizhe Wang

1. **nertial Navigation Method for Spacecraft Based on General Relativity**
   Zhenni He, Baojun Fei, Jian Du

2. **Intelligent Invoice Identification Technology Based on Zxing Technology**
   Yang Wang

3. **Power Marketing Risk Pevention and Control Management of Power Supply Enterprises Based on Big Data Analysis Technology**
   YeZhang, Yingkai Cai, Shilong Cao, Shengyu Gao, Yizhe Wang

Session 3-2
Chair: Dr. Junhui Mao

1. **Marketing Strategy of Distribution Network of Power Supply Company**
   Shilong Cao, Xintan Han, Qianqiao Zhao, Jingjing Xu, Rong Mu

2. **Optimal Operation and Maintenance of Power Consumption Acquisition System for Power Users Based on Data Drive**
   Fei Liang, Zhiqiang Ma, Xinqing Ye, Wei Dong, Bo Shi, Junhui Mao

3. **Analysis of Computer Information Processing Technology in the Big Data Era**
   Shujun Zhao

Session 3-3
Chair: Dr. Qingping Zhang

1. **Design of Partial Discharge Detection System for High Voltage Electrical Equipment Based On Intelligent Video Detection Algorithm**
   Liang Qi, Bo Wang, Yapeng Zhang, Qingping Zhang, Wenwei Zhu

2. **Optimization of Ant Colony Algorithm based on Wireless Sensor Networks**
   Xiaohui Liu, Xinfang Song

3. **Intelligent Test of Substation Monitoring System Based on Artificial Intelligence Theory**
   Xiaoyue Zhang, Chunchao Hu, Shanqiang Feng, Cuijuan Wu

Session 4-1
Chair: Dr. Liang Xing

1. **Data Analysis on Library Entry Behavior of University Library**
   Youchen Chen, Liang Xing, Jun Liu

2. **Analysis of Data Storage Security Technology in University Library**
   Limei Zhao, Liang Xing, Jinbai Zhang

3. **Data Migration and Storage Security of University Library**
   Jinbai Zhang, Liang Xing, Youchen Chen

Session 4-2
Chair: Dr. Jun Liu

1. **Network Information Utilization Technology Based on Information Retrieval Technology**
   Jing Fang, Jun Liu, Youchen Chen

2. **Application of Artificial Intelligence in News Communication**
   Guohua Song

3. **Service Security of Cloud Storage Technology in Digital Library**
   Liang Xing, Limei Zhao, Jinbai Zhang

Session 4-3
Chair: Dr. Jason C Hung

1. **Document Resource Management of University Library Based on Data Analysis**
   Jun Liu, Jianping Liu, Jinbai Zhang

2. **Application of Artificial Intelligence Technology in Information Retrieval of University Library**
   Jianping Liu, Jun Liu, Youchen Chen

3. **Influence of Digital Media Technology on Animation Production Process**
   Juntao Gong

Session 5-1
Chair: Dr. Abdujappar Rusul

1. **An Improved Segmentation Algorithm based on Video Human Motion**
   Zhanwei Feng

2. **By Using Number State Filtered Coherent States to Improve Phase Sensitivity with Multiple Passes**
   Lixin Xia, Yu Lan, Abdujappar Rusul, Yasheng Niyazi

3. **Teaching Reform of Diversified Internet UI Interface Design under the Background of New Media**
   Shuwang He

Session 5-2
Chair: Dr. Yong Zhang

1. **Safety Quantitative Analysis and Optimization Model of Car-Free Carrier Platform**
   Yijiao Chen

2. **Ecological Big Data Panorama Fusion Technology Based on Symmetric Encryption Adaptive Algorithm**
   Yun Liu, Yong Zhang

3. **Application Exploration and Practice Research of Management Accounting under the Background of Big Data Artificial Intelligence**
   Yanhong Wu

Session 5-3
Chair: Dr. Yiwei Qiu

1. **Location Differential Privacy Protection Method based on Generative Adversarial Network**
   Zhihan Wang, Yiwei Qiu

2. **Credit Risk Identification of Internet Financial Institutions Based on Machine Learning**
   Mingxiao Zhang

3. **Application of Big Data in Chinese College English Teaching Reform Based on CBI**
   Changhong Shao

Session 6-1
Chair: Dr. Yucong You

1. **System Research and Analysis of Railway Intelligent Transportation System**
Jiayang Gao

2. **Data Mining Driven Modelling on the Individual Heterogeneity of Economic Preference: A Metaphor Corpus of Neuroeconomics**
Yucong You

3. **Application of Computer Science and Technology in Economic Management**
Yang Jiao

Session 6-2
Chair: Dr. Chunling Zhu

1. **Rural Property Right Mortgage Financing under Rural Revitalization Strategy based on data analysis: Theory and Practice**
Caixia Li, Yue Wang, Shuwei Zhao

2. **Application of Educational Informatization in College Teaching**
Xiaofang Wang, Chunling Zhu

3. **Risk Spillover Effect between Coastal Economy and Banking in the Context of the Belt and Road Initiative based on Time-varying GARCH-Copula-CoVaR of Skewed-t Distribution**
Jinghong Xu, Yan Zhen

Session 6-3
Chair: Dr. Lin He

1. **Current Situation and Development Countermeasures of New Media Education Communication**
Qixiang Wu, Lin He
2. **Planning and Deployment of IPv6 Campus Network Based on eNSP**
Shan Jing, Junjie Cheng, Qian Wang, Qi Zhao, Bin Xiao