2021 4ᵗʰ International Conference on

Image, Video Processing and Artificial Intelligence (IVPAI2021)

23-24 October 2021
Shanghai, China

Introduction

The 4th International Conference on Image, Video Processing and Artificial Intelligence (IVPAI2021) will be held during October 23-24, 2021 in Shanghai, China. IVPAI is organized by Shanghai Advanced Research Institute, Chinese Academy of Sciences. As an annually-held conference, IVPAI has achieved its success in the past 3 years. In 2019, IVPAI attracted more than 5000 applications and 1000 attendees.

IVPAI aims to provide a communication platform for top technology leaders, scholars, engineers, scientists, leading industry leaders as well as graduate students to share ideas and discuss the latest technology in artificial intelligence and related fields. The conference offers keynote speeches, invited speeches, oral presentation sessions, poster sessions, exhibitions and other forms of communication and information exchange. Authors are invited to submit original and not published papers describing new technologies and trends about the topics. The conference proceeding will be published in SPIE digital library, and finally indexed by Ei-Compendex, CPCI, SCOPUS, and others.

We believe that IVPAI2021 will definitely offer a more professional and more meaningful chance for the experts and scholars from all over the word. On behalf of the organizing committee, we sincerely invite you to participate in IVPAI2021 as authors, speakers and listeners, and we look forward to meeting you all in Shanghai!

Organizing Committee of IVPAI2021

Venue

上海市浦东新区锦绣路2588号，浦东星河湾酒店

Note:

1. All the participants are advised to arrive before 09:30, 23 October.
2. Certificate of Participation can be collected at the registration counter.
3. Please copy PPT files of your presentation to the secretary when registration.
4. The organizer doesn't provide accommodation, and we suggest you make an early reservation.
5. If you want to deliver oral presentation but your paper is not in the session list, please contact us by Email: cfp@ivpai.org

Instruction about Oral Presentation
Devices Provided by the Conference Organizer:
        Laptops
        Projectors & Screen
        Laser Sticks
Materials Provided by the Presenters:
        PowerPoint or PDF files
        Duration of each Presentation:
        Regular Oral Session: about 10-15 Minutes of Presentation and 3 Minutes of Q&A

Conference Committee

Conference Chair

Prof. Songlin Feng, Shanghai Advanced Research Institute, Chinese Academy of Sciences, Shanghai, China

Program Chairs

Prof. Huaiyu Xu, Shanghai Advanced Research Institute, Chinese Academy of Sciences, Shanghai, China
Dr. Ruidan Su, Shanghai Advanced Research Institute, Chinese Academy of Sciences, Shanghai, China
Dr. Han Liu, Shenzhen University, China
Prof. Yu-Dong Zhang, University of Leicester, UK

Technical Program Committee

Prof. Yu-Dong Zhang, University of Leicester, UK
Prof. Manuchehr Soleimani, University of Bath, UK
Prof. Richard Jiang, Lancaster University, UK
Prof. Smain FEMMAM, UHA University, France
Dr. Shamneesh Sharma, Poornima University, India
Dr. P. K. Verma, Rajkiya Engineering College, India
Dr. IVAN IZONIN, Lviv Polytechnic National University, Lviv, Ukraine
Dr. Mohammad (Behdad) Jamshidi, University of West Bohemia in Pilsen, Czech Republic
Prof. Santiago Pérez Suárez, Universidad de Las Palmas de Gran Canaria, Spain
Dr. Alejandro Medina Santiago, Instituto Nacional de Astrofísica, Óptica y Electrónica, Mexico
Dr. Tan Tse Guan, Universiti Malaysia Kelantan, Malaysia
Dr. Birjodh Tiwana, Linkedin Inc., India
Dr. Sachin Kumar, Kyungpook National University, South Korea
Dr. P.M.K.Prasad, GVP College of Engineering for Women, India
Dr. Sankhanil Dey, University of Calcutta, India
Dr. Issa Atoum, The World Islamic Sciences & Education University, Jordan
Prof. IVANNA DRONYUK, Lviv Polytechnic National University, Lviv, Ukraine
Dr. Vinh TRUONG HOANG, Ho Chi Minh City Open University, Vietnam
Dr. Rajmohan Pardeshi, KRE's Karnatak Arts Science and Commerce College
Dr. BENMOUSSA Khaoula, Abdelmalek Essaadi University, Morocco
Dr. Marko Horvat, Zagreb University of Applied Sciences, Republika Hrvatska
Dr. Sivarama Krishnan Rajaraman, National Institutes of Health (NIH), India
Dr. NIRESH J, PSG College of technology, India
Dr. Ireneusz Kubiak, Military Communication Institute, Poland
Dr. N. Archana, PSG College of Technology, India

Prof. Andrey Krylov, Lomonosov Moscow State University, Russia
Prof. Muhammad Sarfraz, Kuwait University, Kuwait
Prof. Minglun Gong, University of Guelph, Canada
Dr. Qinghe Zheng, Shandong University, China
Prof. M. Hassaballah, South Valley University, Egypt
Prof. Lei-Ming Ma, Shanghai Central Meteorological Observatory
Dr. Na Ma, Shanghai Advanced Research Institute, Chinese Academy of Sciences, China
Dr. Keshav Sinha, Birla Institute of Technology, Mesra, Ranchi, India
Prof. Shou-Hsiung Cheng, Chienkuo Technology University, Taiwan

Time Schedule

Keynote Talks	
09:30-10:00	**Keynote Speech: AI+X 驱动科学发现** Fei Wu | Zhejiang University
10:00-10:30	**Keynote Speech:** Bao-Liang Lu | Shanghai Jiao Tong University
10:30-11:00	**Keynote Speech: 智能传感系统与健康信息分析** Chen Wei | Fudan university
11:00-11:30	**Keynote Speech: 基于结构的场景新视角合成及人体图像生成** Shenghua Gao | Shanghai University of Science and Technology
11:30-12:00	**Keynote Speech: 面向自主泊车任务的视觉感知** Lin Zhang | Tongji University
12:00-13:00	**Lunch**
Young Scholar's Forum	
13:00-13:30	**Learning to reconstruct 3D Meshes from few samples** Yanwei Fu | Fudan university
13:30-14:00	**行人再识别挑战与最新进展** Jingya Wang | Shanghai University of Science and Technology
14:00-14:30	**机器学习的自动化与元学习理论** WeiFeng Ge | Fudan university
14:30-15:00	**面向多风格肖像画的媒体艺术生成** Ran Yi | Shanghai Jiao Tong University
15:00-16:30	**Oral Presentations**
VP407	**Superpixel Segmentation with Attention Convolution Neural Network** Zhenye Luan | Shandong Normal University
VP408	**Dual-discriminator GAN with a attention module for infrared and visible image fusion** Jinwen Ren | Shandong Normal University
VP411	**A Novel Method for Brain Tumor Segmentation Based on U-Net with Residual Block and CBAM** Zishu Yu | Shandong Normal University
VP417	**EEG unilateral limb motor imagery modeling based on fMRI screening** Jun Ma | Shanghai university
IV100-34	**Informetric Analysis of Researches on Application of Artificial Intelligence in COVID-19 Prevention and Control** Zhuozhu Liu | Wuhan University
IV100-35	**Theoretical Research and Improvement of Knowledge Conversion** Zhuozhu Liu | Wuhan University

IV100-44	**Image Inpainting Method Based Sparse Analysis Model Of Synchronous Dictionary Learning** Bin Li	China Academy of Space Technology (Xi'an)
IV100-49	**Informetric Analysis of Researches on Artificial Intelligence in Anthropology** Qiong Lan	School of Ethnology and Sociology, South-Central University for Nationalities
IV100-50	**Research on Application of Artificial Intelligence in Movie Industry** Wenda Du	School of Communication and Film, Hong Kong Baptist University

Paper Presentations

CN301	**The Novel G-CPDA Detector for the MIMO-OCDM System** Yinfang Yin
1	**Formulation of Precise Short Neural Network Code** Syeda Sadia Rubab
VP401	**Atmospheric Visibility Prediction Based on Multi-Model Fusion** Shiyang Yan
VP402	**Design and Implementation of Gobang Game Server Based on Distributed Cluster** Pingping Chen
VP403	**Slipping control of flying-walking power transmission line inspection robot using ANFIS** Zhaojun Li
VP404	**Detection method of power line under uneven lightness for flying-walking power line inspection robot** Bo Li
VP406	**Online metering model and experiment for gas-liquid phase in oil production well based on nozzle pressure differenc** Chaodong Tan
VP409	**Research on the Method of Detecting and Eliminating Gross Errors in Beidou Monitoring Time Series** Qing An
VP410	**Research and application of bridge safety monitoring system based on GNSS** Qing An
VP412	**Low-Illumination Environment Vehicle Detection Based on Optimized Adaptive Image Enhancement** Kun Zhao
VP413	**Transfer Learning for Micro-expression Recognition based on the Difference Key Frame Images** Zhihua Xie
VP415	**UD-GAN: A Dense Connected Generative Adversarial Network for**

	Pixel-Level Modal Translation of Multimodal Images Yuan Gao
VP416	**Application of sigmoidal functions based on atomic functions in a machine learning problem of the analysis of biomedical and biometric data** Konnova Natalia
VP418	**Computer simulations for the denoising effect of morphological reconstructions for CT images on hexagonal grids and regular hexagonal regions** Xiqiang Zheng
VP419	**A defect detection method for glass bottle mouth based on area segmentation** Xiaoxu Lu
VP422	**Ultrasonic Phased Array Sparse-TFM Imaging Based on Deep Learning and Genetic Algorithm** Junying Song
VP423	**Data-driven mining method for adjustable capacity of electric boiler with heat reservoir** Yuhang Qiu
VP425	**Query Interface Schema Extracting from Deep Web using Ontology** Yong Sun
VP426	**Adaptive energy-load matching optimization method** Dexin Li
VP427	**Learning Human-Object Interaction Detection via Deformable Transformer** Shuang Cai
VP429	**Research on innovative methods based on clustering and case-based reasoning** Kun Shang
VP430	**Sound Field Control in Surround Screen Speaker Array by COSH and SINC Algorithms** Rui Huan
VP432	**An Overview of Constructing Geometric Models of Buildings using Point Clouds** Yuanzhi.Cai
VP435	**Synchronous analysis of a neural networks system** Changyou Wang
VP436	**Research on a Personalized Physiological Status Cluster Discrimination System Based on Pulse Signal** Xiaofei Chen
VP437	**Research and Application on Virtual Metering Model for Production of ESP Well Based on Working Performance Curve** Wenrong Song
VP441	**Research on path planning method of mobile robot based on**

	improved spider swarm algorithm Yanhua Chen
IV100-5	**A Systematic Review of Automated Reconstruction of Indoor Scenes using Point Clouds** Sujitha Kurup
IV100-7	**An end-to-end multi-task learning to link framework for emotion-cause pair extraction** Haolin Song
IV100-39	**Low light image enhancement method based on guided filtering** Zhen Han
IV100-47	**The critical effect of diffusion coefficients and boundary data on the global exponential stabilization of delayed Markovian jump neural control systems** Puchen Liu
IV100-58	**Poetry can group social relations among poets in Tang Dynasty based on Word2vec and social network** Yanbin Fang

Speakers

Prof. Fei Wu (吴飞)

Zhejiang University, China

Bio:Fei Wu received his B.Sc., M.Sc. and Ph.D. degrees in computer science from Lanzhou University,University of Macau and Zhejiang University in 1996, 1999 and 2002 respectively. From October,2009 to August 2010, Fei Wu was a visiting scholar at Prof. Bin Yu's group, University of California,Berkeley. Currently, He is a Qiushi distinguished professor of Zhejiang University at the college of computer science. He is the vice-dean of college of computer science, and the director of Institute of Artificial Intelligence of Zhejiang University. He is currently the Associate Editor of Multimedia System, the editorial members of Frontiers of Information Technology & Electronic Engineering. He has won various honors such as the Award of National Science Fund for Distinguished Young Scholars of China (2016). His research interests mainly include Artificial Intelligence, Multimedia Analysis and Retrieval and Machine Learning.

Speech Title: AI+X 驱动科学发现

Prof. Baoliang Lv (吕宝粮)

Shanghai Jiao Tong University, China

Bio:Bao-Liang Lu received the Ph. D. degree in electrical engineering from Kyoto University, Kyoto,Japan, in 1994. From April 1994 to March 1999, He was a Frontier Researcher at the Bio-Mimetic Control Research Center, the Institute of Physical and Chemical Research (RIKEN), Japan. From April 1999 to August 2002, he joined the RIKEN Brain Science Institute, Japan, as a research scientist. Since August 2002, he has been a full professor at the Department of Computer Science and Engineering, Shanghai Jiao Tong University, China. He is the directors of the Center for Brain-Like Computing and Machine Intelligence and the Key Laboratory of Shanghai Education Commission Intelligent Interaction and Cognitive Engineering, Shanghai Jiao Tong University, and the Executive Director of Qing Yuan Research Institute. His research interests include brain-like computing, neural network, machine learning, brain-computer interface and affect computing.
He received the IEEE Transactions on Autonomous Mental Development Outstanding Paper Award from the IEEE Computational Intelligence Society in 2018. He was the past President of the Asia Pacific Neural Network Assembly and the general Chair of the 18th International Conference on Neural Information Processing. He is an Associate Editor of IEEE Transactions on Cognitive and Developmental Systems.

Prof. Wei Chen (陈炜)
Fudan University, China

Bio:Professor Chen Wei was admitted to the Department of Information and Communication Engineering of Xi'an Jiaotong University in 1995, and received her bachelor's and master's degrees in 1999 and 2002, respectively. In 2007, she received her Ph.D. degree from the Department of Electrical and Electronic

Engineering, University of Melbourne, Australia. In 2005,she worked as an intern at Bell Labs Alcatel-Lucent R&D Center in Stuttgart, Germany. In 2007,she was hired as an assistant professor at the Eindhoven University of Technology in the Netherlands. In 2011, she was awarded a tenure chair. In 2015, she was hired as a professor and doctoral supervisor of Fudan University. Professor Wei Chen is an IEEE senior member and serves as the associate editor of the well-known international academic journal IEEE Journal on Biomedical Health Informatics.

Speech Title: 智能传感系统与健康信息分析

Shenghua Gao (高盛华)

Shanghai University of Science and Technology

Bio:Shenghua Gao is an associate professor at Shanghaitech University, China. He received the B.E. degree from the University of Science and Technology of China in 2008, and received the Ph.D.degree from the Nanyang Technological University in 2012. From Jun 2012 to Aug 2014, he worked as a research scientist in UIUC Advanced Digital Sciences Center in Prof Yi Ma's group,Singapore. From Jan 2015 to June 2015, he visited UC Berkeley as a visiting professor, hosted by Prof Jitendra Malik. His research interests include computer vision and machine learning. He has published more than 50 papers on image and video understanding in many top-tier international conferences and journals. He also served as a chair for some workshops in CVPR2017, ACCV2014, ACCV2016, and area chair in ICCV2019. He also served as the Associate Editor for IEEE Transactions on Circuits and Systems for Video Technology (IF:3.558) and Neurocomputing (IF:3.224). His work on personalized saliency detection was nominated as outstanding student award (runner-up) in IJCAI 2017. He was awarded the Microsoft Research Fellowship in 2010, and ACM Shanghai Young Research Scientist in 2015.

Speech Title: 基于结构的场景新视角合成及人体图像生成

Prof. Lin Zhang (张林)

Tongji University

Bio: Lin Zhang is a professor at School of Software Engineering,Tongji University,China.In 2003 and 2006, he received his bachelor's and master's degrees from the Department of Computer Science and Technology, Shanghai Jiaotong University,China. After that, he worked in Microsoft and Autodesk. In March 2008, he went to the Hong Kong Polytechnic University to study for a doctorate degree. In August 2011, he joined Tongji University.He recipient of the "2013 Shanghai Pujiang Program", Science and Technology Commission of Shanghai Municipality and award The First Prize of Shanghai Science and Technology Progress Award in 2021,He was the 2020 Highly Cited Chinese Researchers, Elsevier.

Speech Title: 面向自主泊车任务的视觉感知

Yanwei Fu (付彦伟)

Fudan University, China

Bio: 2014 年获得伦敦大学玛丽皇后学院博士学位，先后入选上海市扬帆计划、上海高校特聘教授 （东方学者）等，并获得 2017 年 ACM SigAI 新星奖。主要研究领域包括计算机视觉与模式识别、机器学习与统计学习、情感计算、多媒体视频分析与处理等，有 IEEE TPAMI，CVPR，ICCV 等顶级期刊会议论文 30 篇，30 项中国专利（10 项已授权）、2 项美国专利（已授权）。目前主要研究领域包括零样本、小样本识别、终生学习算法，人脸识别及行人再识别，及视频情感分析等。

Speech Title: Learning to reconstruct 3D Meshes from few samples

Jingya Wang (汪婧雅)
Shanghai University of Science and Technology, China

Bio: 2012 年在澳大利亚斯威本科技大学获得学士学位，2018 在英国伦敦大学玛丽女王学院获得博士学位，随后在澳大利亚悉尼大学从事博士后研究工作，于 2020 年 11 月加入上海科技大学信息学院。她的研究方向包括计算机视觉、机器学习、人工智能，目前的研究兴趣侧重于以人为中心的视觉感知、推理与决策。她已发表了多篇计算机视觉顶级期刊和会议文章，包括 CVPR、ICCV, ECCV, AAAI, AI 等。 攻博期间入选 CVPR Doctoral Consortium Award，第一作者论文入选 Computer Vision News Magazine 评比的 2018 Best of CVPR Paper。

Speech Title: 行人再识别挑战与最新进展

Weifeng Ge（戈维峰）
Fudan University, China

Bio: 2019 年底于香港大学计算机科学系获得博士学位，并于 2020 年加入复旦大学计算机科学技术学院任青年副研究员。戈维峰博士于 2020 年获得香港大学李嘉诚奖和杰出研究生奖提名,并获得 2021 年第 12 届 UEC 杯世界计算机围棋大会亚军，目前已在人工智能领域国际会议和期刊以第一作者发表文章多篇,包括 CVPR 、ICCV 、ECCV、TOG 等。戈维峰博士主要研究方向为计算机视觉、模式识别和机器学习，近年来主要专注在自动化机器学习、强化学习和元学习等方面，以及机器学习算法在图像分类、物体检测、实例分割和图像超分辨率等方面的应用。

Speech Title: 机器学习的自动化与元学习理论

Ran Yi（易冉）
Shanghai Jiao Tong University, China

Bio: 分别于 2016 年和 2021 年于清华大学获工学学士和工学博士学位。博士期间发表 17 篇论文

于 PAMI、TOG、TVCG、TASE 等国际期刊和 CVPR、ICCV、IROS 等国际会议上。获 2021 年北京图象图形学学会优秀博士学位论文奖、2019 年中国计算机学会计算机视觉专委会学术新锐奖、2019 年微软学者提名。主要研究方向为计算机视觉、计算机图形学。

Speech Title: 面向多风格肖像画的媒体艺术生成

Oral Presentations

VP407	Title: Title: Superpixel Segmentation with Attention Convolution Neural Network

Abstract:

A superpixel consists of a series of small regions composed of pixel points that are located next to each other and have similar features such as color,luminance, and texture. Most of these small areas retain the original information of the image, which facilitates faster follow-up processing. Most of the existing superpixel segmentation methods do not use deep learning network architectures. Some methods use deep learning, but they also have a very simple network architecture. And there are a few superpixel segmentation methods combined with deep learning. In this method, a more complex convolutional neural network with an attention module is applied to superpixel segmentation. The resulting superpixel segmentation network is more complex, and the addition of the attention module allows for more accurate chunking of the images, thus yielding more comprehensive and detailed segmentation results. By experimenting on a public dataset BSDS500,the method has higher accuracy in superpixel segmentation. Also, the segmentation speed of the method is similar to that of the existing simple segmentation networks.

VP408	Title: DDGANA: Dual-discriminator GAN with a attention module for infrared and visible image fusion

Abstract:

Infrared image can distinguish the target and background according to the difference of thermal radiation, and it can work normally under any lighting conditions. In contrast, visible image can provide rich texture details, which is in line with human visual system. The fused image contains more comprehensive and rich information. In this paper, a fusion method of infrared image and visible image is proposed based on dual discriminators generative adversarial networks with attention mechanism, which is called DDGANA. Our method establishes a confrontation training between the generator and the discriminators, in which the goal of the generator is to generate images similar to infrared images and visible images, which has the advantages of both infrared image and visible image. The purpose of the two discriminators is to make the image generated by the generator close to the infrared image and the visible image. After continuous confrontation learning, the final fusion image keeps the high contrast in the infrared image and the rich texture details in the visible image at the same time. Experiments on TNO dataset show that the proposed network can generate clear fusion images, which not only contains the high contrast advantage of infrared images, but also contains rich texture details in visible images.

VP411	Title: DA-ResUNet: A Novel Method for Brain Tumor Segmentation Based on U-Net with Residual Block and CBAM

Abstract:

This paper focuses on a new method for brain tumor segmentation in Magnetic Resonance Imaging (MRI), using a modified residual block and CBAM for the U- Net network. To deepen the network, we replace the convolutional layer with a residual block with a CBAM module. We also insert the CBAM dual-attention module after skip connection and upsampling at each layer. It solves the problem that the low-level features contain a lot of redundant information because the skip connection connects the feature maps extracted by the encoder directly to the corresponding layer of the decoder. The performance is evaluated on the MRI dataset of Medical Image Computing and Computer Aided Intervention Society (MICCAI) 2018 Brain Tumor Segmentation Challenge.Numerical results are presented in the form of Specifity, Sensitivity, HD_95 and Dice coefficient (DICE) for GD-enhancing tumor (ET), tumor core (TC) andwhole tumor (WT), respectively. We compare the proposed method with expert manual method and other state-of-art methods. Experiments show that RDAU-Net achieves state-of- the-art performance.

| VP417 | Title: EEG unilateral limb motor imagery modeling based on fMRI screening |

Abstract:

Motor imagery brain computer interface (MI-BCI) recognizes brain motor intention through electroencephalogram (EEG) acquisition and deep learning. The advantage of MI-BCI is that the recognition of brain ideas does not depend on task prompts, but it is difficult to accurately recognize the unilateral limb motor imagery tasks because of the difficulty of EEG decoding algorithm. In this paper, the asynchronous functional magnetic resonance imaging (fMRI) and EEG motor imagery data of unilateral limb hand grasping and hand handling tasks are creatively collected, and the brain activation features of each task are obtained by fMRI statistical analysis. The activation difference of the fMRI cerebral cortex is mapped to the corresponding channel position of the corresponding EEG and compared with the average power spectrum density (PSD) of each channel of each EEG trail. According to the comparison results, the more consistent EEG data are selected for training.The experimental results show that the screened EEG data training model shows a predict accuracy of 69.3%, which is a better classification result. The results proved that screening high-quality EEG by fMRI data has a certain effect, and the model is more consistent with the characteristics of brain motor imagery. This method can improve the prediction accuracy and guide the subjects to imagine correctly.

| VP441 | Title: Research on path planning method of mobile robot based on improved spider swarm algorithm |

Abstract: Path planning is one of the important fields of mobile robot research. Its advantages and disadvantages directly affect the interaction ability between the robot and the surrounding environment. The commonly used global path planning methods are prone to problems such as decision-making speed decline and deadlock when expanding space. During iterative optimization, we simulate the motion law of spider population, that is, according to female Male spiders cooperate, attract each other and interact with each other in the process of marriage, and finally get the optimal solution. Experiments show that the improved spider colony algorithm can realize the path planning of mobile robot, improve its search ability, and avoid falling into local optimization in the process of path planning. Compared with spider colony algorithm and particle swarm optimization algorithm, the optimized shortest path and actual path are better.

| IVP100-34 | Title: Informetric Analysis of Researches on Application of Artificial Intelligence in COVID-19 Prevention and Control |

Abstract:

The COVID-19 (2019 novel Coronavirus) is the most widespread pandemic infectious disease encountered in human history. Its economic losses and the number of countries involved rank first in the history of human viruses. Since the outbreak of the COVID-19 pandemic around the world, AI has made a great contribution to

the prevention and control of the COVID-19 pandemic. In this paper, researches on the application of artificial intelligence in COVID-19 pandemic prevention and control were analyzed by informetric method. 432 papers indexed in Thomson Reuters's Web of Science were studied by the perspectives of categories of researches, high frequency keywords, authors, institutions, journals and countries, and we get conclusions as follows: The analysis of keywords co-occurrence shows application of machine learning and deep learning in COVID-19 pandemic diagnosis and prediction. The journal that received the most cites was Radiology and the journal that published the most papers was Journal of Medical Internet Research. USA, India and China have the largest number of published articles. USA, China and UK are most influential countries. We also analyzed the review literature on the application of AI in COVID-19 pandemic prevention and control in the Web of Science, and found that these papers specifically can be divided into the following three categories: The first is the application of AI in clinical diagnosis and treatment, the second is the application of AI in the development of anti-epidemic drugs, and the third is the role of AI in the epidemiological research of COVID-19 and the social governance of pandemic prevention and control.

IVP100-35 — Title: Theoretical Research and Improvement of Knowledge Conversion

Abstract:

This paper reconsiders the knowledge conversion theory proposed by Ikujiro Nonaka, pointing out the inconformity between theory and practice in the original theory when knowledge conversion is based on the theoretical basis and the actual situation, that is, socialization or combination can not be realized directly, but can only be realized indirectly through the combination of internalization and externalization. On this basis, the model is improved, and the spatial vector model of knowledge conversion is proposed. The SECI model is innovated, which provides theoretical support for the subsequent research on knowledge conversion. Through the establishment of knowledge conversion model in the spatial vector coordinate system, the specific transformation mode between explicit knowledge and tacit knowledge is embodied, and the inner conversion mode of combination and socialization is refined that there are two direct ways of knowledge conversion,namely externalization and internalization.

IVP100-44 — Title: Image Inpainting Method Based Sparse Analysis Model Of Synchronous Dictionary Learning

Abstract:

A novel image inpainting algorithm based on sparse analysis model is proposed. The model is formulated on an analysis dictionary. The dictionary is updated using a least-squares method. The experiments on images demonstrate improved performance in peak signal to noise ratio (PSNR) compared to other image inpainting methods including AMLE Inpainting, Harmonic Inpainting, Mumford-Shah Inpainting, and Transport Inpainting algorithm. The evaluation results showed that our proposed algorithm has better performance.

IVP100-49 — Title: Informetric Analysis of Researches on Artificial Intelligence in Anthropology

Abstract:

In the 21st century, one of the most important technologies must be artificial intelligence. It may bring us a whole new kind of people and technology, people and machines, or changes between people. So anthropological research is closely related to artificial intelligence research. This paper makes an infometric analysis to study 72 papers indexed in Thomson Reuters's Web of Science by the perspectives of categories of researches, high frequency keywords, keywords co-occurrence and classifications of research topics. We uses

VOSviewer to make a keywords co-occurrence map of the intersection of AI and anthropology which showed that artificial intelligence and interaction of anthropology focuses on the human spirit, body, technology improvement, the challenge of the moral and ethical aspects of the application, research is focused on the theory research and applied research. Researches of AI in anthropology mainly include two parts that the theoretical researches and the applied researches. The theoretical researches focuses on the relationship between human and AI, featuring the development of human beings in the future. The applied researches mainly includes the following three aspects: The application of AI in academic research, the application of AI in institutional service and the application of AI in people's daily life.

IVP100-50	Title: Research on Application of Artificial Intelligence in Movie Industry

Abstract:
The development of artificial intelligence has given birth to a series of innovations in the film industry. This article systematically summarizes these innovations into three parts; movie recommendation, movie distribution and audio-visual language creation. In the first part, the paper lists a series of movie recommendation systems based on AI technology. These systems can help users quickly find the movie resources they are interested in among the massive movie resources. In the second part, the article lists a series of cases of film production using AI, including analyzing film projects, estimating film box office, analyzing film reviews, and writing abstracts. In the third part, the article lists several cases about audio-visual language using AI systems , including classifying films and the aesthetic feature, analyzing image features through AI, changing the appearance and age of actors, and creating visual characters.

Paper Presentations

CN301	Title: The Novel G-CPDA Detector for the MIMO-OCDM System

Abstract: The orthogonal chirp division multiplexing (OCDM), proposed in 2016, is a relatively new multi-carrier technology which has been studied in recent years. The complex probabilistic data association (CPDA) algorithm has been applied in the MIMO OCDM system which obtains better bit error rate (BER) performance than the minimal mean square error (MMSE) algorithm. To reduce the computational cost, this paper presents a novel group-based CPDA (G-CPDA) scheme and presents the simulation results.

1	Title: Formulation of Precise Short Neural Network Code

Abstract: This research is a comprehensive and mathematical way of explaining a simple 2-layered neural network by coding one from scratch in python and behind the scenes of such popular algorithms. First, we give a rationale view of the study behind the elaboration of these algorithms and mathematical intuition behind them. Then, we dive into the coding of a neural network mixing python lines of code and mathematical equations. In this research, we will create a two-layered neural network, but the idea remains the same for more than two-layered neural networks. Finally, we think about how we could publicize our model and make it more adaptable for solving complex real-life issues.

VP401	Title: Atmospheric Visibility Prediction Based on Multi-Model Fusion

Abstract: In this paper, a combinatorial algorithm-based visibility prediction method is proposed for improving the accuracy of visibility prediction. Firstly, four algorithms, namely support vector machine, kernel extreme learning machine, random forest and RBF neural network, are used as the basis functions for prediction, then the objective function of the combined prediction is constructed, the cuckoo search is used to optimise the calculation of the weighting coefficients of the combined prediction, and finally the combined prediction results are obtained. The experimental results show that the combined prediction algorithm proposed in this paper can effectively improve the accuracy of visibility prediction, and has certain application and research value.

VP402	Title: Design and Implementation of Gobang Game Server Based on Distributed Cluster Technology

Abstract: The distributed cluster structure has been widely used in the development of the server-side.The cluster structure is the basis to ensure the high availability and high scalability of the server-side. The distributed architecture reduces the coupling between the modules of the server-side and reduces the cost of development and maintenance. The paper developed a simple and extensible Gobang game server based on the distributed cluster structure. A simple method for network disconnection and reconnection is designed for different types of disconnection. In order to manage the thread resources uniformly, the paper designed a thread pool for the server. The result showed a 45.65 percent increase in operational efficiency while using thread pool in single core system. The design of double message queue has a good effect on avoiding frequent lock competition. Bitwise operation was used for instead of part of ordinary operation in this paper. In the case of large-scale operation, bitwise operation shows obvious advantages. The core algorithm code of the intelligent robot is within 500 lines. The time complexity of the algorithm can be stable at $O(N2)$.

VP403	Title: Slipping control of flying-walking power transmission line inspection robot using ANFIS

Abstract: Power line inspection robot can replace manual inspection, reduce the burden of manpower, and collect more information about the state of power line. When power line inspection robot walks along the power line, it is prone to slipping of driving wheel, which causes some problems, e.g., inaccurate position recognition,unstable image acquisition. To solve the slipping problem on power line, a walking mechanism of a flying-walking power line inspection robot (FPLIR) is designed in this paper, working principle of the walking mechanism is elaborated, and its mathematical model is established. To determine the walking state of the robot on the power line, a slipping identification method is proposed by defining a slipping degree to evaluate the slipping state. Considering that the factors causing slipping have a high degree of uncertainty and cannot be described by a very precise model, we design an adaptive neural fuzzy controller using ANFIS for the walking mechanism. A rigid-flexible coupling model is established using ADAMS software to simulate and verify

the walking process of the FPLIR along the power line, and effect of the controller is tested based on the evaluation of the slipping degree. These simulation results show that the proposed adaptive neural fuzzy controller can effectively restrain slipping and improve the stability of the FPLIR inspection. The walking efficiency of the FPLIR is increased 35% using the proposed controller in the simulation. This study provides important reference of direction and technology for the subsequent slipping control research of inspection robot.

VP404   **Title: Detection method of power line under uneven lightness for flying-walking power line inspection robot**

Abstract: Due to the variation of sunlight conditions resulting in uneven lightness in images,the details of target objects tend to hide in the dark or bright regions, which is adverse to following image processing. To reliably land on the power line under the change of lightness, the flying-walking power line inspection robot (FPLIR) needs reliable detection for the power line. In this paper, a machine vision-based detection method of power line is proposed to adapt different lightness. Firstly, a visual system of the FPLIR is designed to collect and process power line images. Secondly, the multi-scale retinex (MSR) algorithm is used to reduce the influence of lightness. Then, the local binary pattern (LBP) map of power line image is generated by the LBP operator and is divided into many blocks. An LBP histogram vector is calculated for every block, then the first-order entropy and second-order entropy of every histogram vector are calculated. Finally, the first-order entropy, the second-order entropy, and the edge density of power line image are used as the feature vector of fuzzy c-means (FCM) to obtain the power line region. The experimental result shows that the accuracy of the proposed method is 82.6%, which is 9.3% more than the method without image enhancement. Thus, the proposed method can effectively detect power line, improving the robustness and accuracy of power line detection (PLD) during the FPLIR landing.

VP406   **Title: Online metering model and experiment for gas-liquid phase in oil production well based on nozzle pressure difference**

Abstract: On-line measurement of multiphase flow holdup in oil well is important to production performance analysis and measure optimization. In this paper, aiming at the problem of large measurement error in the process of gas-liquid two-phase measurement, an on-line metering model of gas-liquid flow based on nozzle differential pressure is proposed, and experimental research on two-phase flow measurement is carried out. The relationship between differential pressure fluctuation and parameters of gas-liquid phase flow is explored by testing experiments. The characteristic value of differential pressure fluctuation signal is analyzed, and relationship models between some dimensionless parameters and gas rate are established. According to the experimental data, the correlation between the differential pressure and flow rate of each phase is obtained by multiple regression. Experimental study shows that measurement error of gas rate is less than 10% and error of liquid content is less than 8% based on the regression of experimental test samples, which improves the

application scope and accuracy of wellhead production measurement, and provides a new solution for the measurement of multiphase flow in high gas liquid ratio wells.

| VP409 | Title: Research on the Method of Detecting and Eliminating Gross Errors in Beidou Monitoring Time Series |

Abstract: In deformation monitoring work, there are often gross errors in the monitoring data sequence. Due to the complex distribution of the monitoring data sequence, the conventional gross error detection method is not ideal in the processing of the monitoring data sequence. Based on this, the improved 3σ method based on wavelet analysis is proposed to achieve the purpose of identifying and eliminating gross errors. The experimental results show that the method can identify and eliminate the gross error signals that are randomly added, and it can fit the overall trend of the detail signal and the data signal well. The simulation example of the algorithm illustrates its trend extraction. The accuracy fully meets the requirements of gross error identification and elimination.

| VP410 | Title: Research and application of bridge safety monitoring system based on GNSS |

Abstract: Based on high-precision GNSS / GIS integration technology, a set of bridge health monitoring system is designed. Taking Wuhan Baishazhou Yangtze River Bridge as an application demonstration, the functions of real-time deformation monitoring, comprehensive analysis, early warning prediction and health assessment of the monitoring station are realized by receiving GNSS satellite positioning signal and differential signal of reference station for precise calculation. The results show that the monitoring system can realize the full-automatic, high-precision, all-weather, three-dimensional deformation monitoring which is difficult to realize by traditional monitoring methods, and the positioning accuracy reaches the real-time centimeter level and the post millimeter level. The application of the system significantly improves the accuracy of bridge health monitoring and the reliability of prediction and evaluation.

| VP412 | Title: Low-Illumination Environment Vehicle Detection Based on Optimized Adaptive Image Enhancement |

Abstract: With the increasing number of vehicles, vehicle detection has become an important part of intelligent transportation system. At present, most detection algorithms are only suitable for normal light conditions, but the detection performance is poor for low illumination conditions. In order to achieve effective vehicle detection under low illumination conditions, this paper proposes an image enhancement algorithm to increase the contrast of the image, thereby greatly improving the effect of vehicle detection. First, the image contrast is enhanced through an adaptive contrast stretching algorithm. Secondly, the bilateral filtering algorithm is used to filter out the noise in the image. Finally, the detection system based on Haar features and AdaBoost classifier is used to detect vehicles.

Experimental results show that the proposed algorithm can effectively enhance image contrast, highlight vehicle information, and the vehicle detection accuracy rate under low illumination conditions reaches 87.04%.

VP413	Title: Transfer Learning for Micro-expression Recognition based on the Difference Key Frame Images

Abstract: Micro-expression, revealing the true emotions and motives, attracts extraordinary attention on automatic facial micro- expression recognition (MER). The main challenge of MER is large-scale datasets unavailable to support deep learning training. To this end, this paper proposes an end-to-end transfer model for facial MER based on the difference images. Compared with micro-expression dataset, macro-expression dataset has more samples and is easy to train for deep neural network. Thus, we pre-train the resnet-18 network on relatively large expression datasets to get the good initial backbone module. Then, the difference images based on adaptive key frame is applied to get MER related feature representation for the module input. Finally, the preprocessing difference images are feed into the pre-trained resent-18 network for fine-tuning. Consequently, the proposed method achieves the recognition rates of 74.39% and 76.22% on the CASME2 and SMIC databases, respectively. The experimental results show that the difference image between the onset and key frame can improve the transfer training performance on resnet-18, the proposed MER method outperforms the methods based on traditional hand-crafted features and deep neural networks.

VP415	Title: UD-GAN: A Dense Connected Generative Adversarial Network for Pixel-Level Modal Translation of Multimodal Images

Abstract: Modal translation between multimodal images is an effective complementary scheme when images with some certain modal are difficult to obtain. Since pixel level image modal translation method can obtain the images with the highest quality, ithas become a research hotspot in recent years. Generative adversarial network (GAN) is a network for image generation,due to the complex structure of GAN and the complexity of the image generation task, the training results of GAN are not stable. In this paper, on the basis of U-nets, the dense block is used to increase the feature information in the subsampling encoding and up-sampling decoding operation, so as to reduce the loss of information and obtain higher quality images. At the same time, the dense long connection is introduced to connect the encoding and decoding operations of the same stage, so that the network can effectively combine the features at low and high level, and improve the performance of the network. Experimental results show that the proposed method is effective in modal translation of multimodal images, and the image quality is better than some state-of-the-art methods.

VP416	Title: Application of sigmoidal functions based on atomic functions in a machine learning problem of the analysis of biomedical and biometric data

Abstract: The paper proposes sigmoidal activation functions based on atomic functions. The properties of atomic functions are described, which allow them to satisfy the conditions for transfer functions in artificial neural networks. The applied problems of using the presented functions are considered on the example of problems of analysis of biophysical signals of cardiac activity. The results obtained using the constructed classifiers using various architectures of neural networks, including MLP, RNN, LSTM, GRU, CNN networks, are presented. The efficiency of using atomic functions in the constructed neural networks on the examples of the problem of automated diagnostics of pathologies based on seismocardiography data and biometric authentication by heart rate was determined using metrics of accuracy, recall,precision, sensitivity, specificity, and F-measure.

VP418	Title: Computer simulations for the denoising effect of morphological reconstructions for CT images on hexagonal grids and regular hexagonal regions

Abstract:

 In this paper, morphological operations on hexagonal lattices and regular hexagonal regions are applied to 2D parallel beam comput-erized tomography (CT) image denoising. To show some denoising ef-fects of the morphological operations, for an input image, we add certain amount of noise to get the noised image; and perform Radon transform and inverse Radon transform on the noised image to obtain a CT im-age. To compare hexagonal lattices with square lattices fairly, the CT image is resampled to an image defined on a certain randomized grid,which is in turn resampled to an image defined on a hexagonal lattice and an image defined on the corresponding square lattice (with the same sampling rate), respectively. For the morphological operations, we use a structuring element defined on a hexagonal lattice and a structuring element defined on a square lattice such that those two structuring ele-ments have the same number of ones. Each of those two images performs an erosion with the corresponding structuring element. Then use those two images as masks and use the two corresponding eroded images as makers to perform morphological image reconstructions to obtain the two reconstructed images. Finally, both usual and Phantom images are used as test images. For many different tested noise levels, the output data show that the image reconstructed on the hexagonal lattice is usu-ally more similar to the input image than the one reconstructed on the square lattice.

VP419	Title: A defect detection method for glass bottle mouth based on area segmentation

Abstract: Quality inspection is an essential technology in the glass product industry. Machine vision has shown more significant potential than manual inspection at present. However, the visual inspection of the bottle for defects remains a challenging task in a quality-controlled due to the difficulty in detecting screw thread defects. To overcome the problem, we propose a bottle mouth detection method based on area segmentation. First, an area segment method

with traditional image processing methods, which is based on the characteristics of screw thread, was proposed. According to the result of the segment, the bottle area is divided into a screw thread area and a non-screw thread area. For the former, a defect detection method that uses edge detection and Gaussian filters is proposed to precisely detect screw thread defects. For the latter, a defect detection method that uses techniques such as the Sobel algorithm and global binarization is proposed to precisely detect other defects. The proposed method is tested for data sets obtained by our designed vision system. The experimental result demonstrates that our framework achieves good performance.

VP422	Title: Ultrasonic Phased Array Sparse-TFM Imaging Based on Deep Learning and Genetic Algorithm

Abstract: As ultrasonic phased array total focus method (TFM) imaging technology can achieve full range of dynamic focusing with clear imaging and strong ability to characterize defects, TFM imaging algorithm has become the gold standard for testing other post-processing algorithms. However, due to the large amount of data and time-consuming calculation, the TFM imaging has limited the application in some industrial fields. With the reduction of the number of phased array transmitting elements, the imaging quality gets worse. To improve the imaging efficiency of the TFM algorithm and ensure the imaging quality, this paper proposes a method combining Siamese Convolutional Neural Network (SCNN) and Genetic Algorithm (GA) to obtain an optimal sparse array layout, to approximate the imaging effect of the full array with limited effective elements. After selection of an appropriate sparsity ratio, GA is used to optimize the sparse array layout. The sparse array elements emit ultrasonic waves, and the full array elements receive echo signals for imaging. SCNN is trained by a self-built industrial defect dataset, to output the similarity between the sparse-TFM image and the full-array TFM image. The similarity is used as an objective evaluation index to evaluate the imaging effect. The optimal sparse array layout is proposed by combining subjective evaluation with objective evaluation.

VP423	Title: Data-driven mining method for adjustable capacity of electric boiler with heat reservoir

Abstract: In order to solve the problems of insufficient new energy consumption and serious abandonment of wind and light in the three north areas of China, the electric boiler is installed in the power grid area where the wind power consumption is insufficient, and the electric boiler is used to absorb wind power on the spot. In this paper, the heating demand and the maximum heat storage capacity of the electric boiler with heat reservoir are reversely deduced based on the user's electricity consumption data for the first time. According to the time of use electricity price in Jilin Province, the bubble sorting principle is used to tap the adjustable potential of the electric boiler with heat reservoir, and the peak power consumption is shifted to the low, so as to reduce the user's electricity charge and absorb the abandoned wind during the low period of the power grid, it plays the role of cutting peak and

filling valley and stabilizing power grid. Compared with the brute force exhaustive method, this method greatly reduces the computational complexity. Compared with the method relying on the parameters of electric boiler and environmental parameters, this method greatly reduces the data which is needed to be collected, and reduces the evaluation errors caused by the performance degradation of electric boiler.

VP425   **Title: Query Interface Schema Extracting from Deep Web using Ontology**

Abstract: There are abundant information on the network, such as weather information, book information and so on. Now the Web information has far exceeded human imagination. However, most deep web information resources are not available through simple click, and often need query interface. We use domain ontology to construct the interface schema extraction method, the approach extracts interface schema from the perspective of visual units and the internal codes.There are many data extraction methods. Among them, CAW (Context-Aware Wrapper) is representative and outstanding. Thus, we choose it as our state-of-art baseline algorithm. The extraction effect of this method is better than CAW in the experiment. Finally, the effectiveness of this method is verified.

VP426   **Title: Adaptive energy-load matching optimization method**

Abstract: Due to serious new energy abandonment in Jilin grid of China, an adaptive energy-load matching optimization method for wind-photovoltaic complementary is built in this paper. Among certain new energy sources, we adaptively select the combination of new energy stations with high load matching, so that more new energy is consumed and less power is discarded. In this paper, the optimization method of maximizing new energy consumption without energy-load matching is taken as the comparison benchmark, and the advantages of adaptive energy-load matching optimization method are analyzed from multiple scenarios of different total amount of new energy. By selecting the combination of new energy stations with high load matching degree, the method can obtain lower curtailment of new energy, and the complexity of decision space is reduced, making the decision variables of new energy stations can be solved in a short time,when the number of decision variables is big.

VP427   **Title: Learning Human-Object Interaction Detection via Deformable Transformer**

Abstract: The goal of human-object interaction (HOI) detection is to localize both the human and object in a picture and recognize the interactions between them. HOIs are always scattering in the image. The traditional methods based on CNNs are unable to aggregate the information scattered in the image. Many new methods utilizing the contextual features cropped from the outputs of the CNNs, which sometimes are not effective enough. To overcome the challenge, we utilize the deformable transformer to aggregate the whole

features output form the CNNs. The attention mechanism and query-based predictions are the keys. In view of the success of the methods based on graph neural networks, the attention mechanism is proved to be effective to aggregate the contextual information image-wide. The queries can extract the features of each human-object pair without mixing up the features of other instances. The deformable transformer can extract effective embeddings and the prediction heads can be fairly simple. Experimental results show that the proposed method is effective in HOI detection.

VP429	Title: Research on innovative methods based on clustering and case-based reasoning

Abstract: Innovation is one of the decisive factors for the prosperity of an enterprise. The Theory of Inventive Problem Solving (TRIZ) is an effective method to promote system innovative design. However, TRIZ solution is a highly abstract conceptual solution, and its transformation to a specific solution requires a large amount of rich knowledge from different engineering fields. Designers themselves cannot master all the supporting knowledge required for problem solving, which increases the difficulty of TRIZ in practical application. In order to overcome these difficulties, this paper presents a method synthesizing TRIZ, CBR and GHSOM, in which TRIZ can systematically generate innovative solutions, CBR makes designers take full advantage of past experience and knowledge to transform abstract TRIZ solutions into solutions to specific design problems, and GHSOM as a clustering tool expands the scope of knowledge utilization and promote the diversification of design solutions. Finally, an example is given to illustrate the method.

VP430	Title: Sound Field Control in Surround Screen Speaker Array by COSH and SINC Algorithms

Abstract: This paper proposes a method to solve the problem that the sound reproduction system cannot work when the movie screen is made by a sound-proof material such as LED. It is demonstrated in an array of 192 speakers to surround a screen for sound reproduction, called surround screen speaker array. The speaker array is built in an actual cinema. The sound field control algorithms are implemented by mixers. In order to improve the uneven sound field distribution and sound field aliasing caused by the speaker array, two algorithms COSH and SINC are used in this paper. A new control algorithm is proposed and demonstrated to improve the uniformity of the sound field distribution and reduce the sound field interference.

VP432	Title: An Overview of Constructing Geometric Models of Buildings using Point Clouds

Abstract: Building Information Modelling (BIM) and the associated numerical simulations have widely been recognised as useful components of building design support tools, and are readily applied in the design and the construction of new buildings. Meanwhile, their applications in existing buildings are often constrained by the lack of as-built geometric

models, the generation of which often depends on two aspects: the spatial data (e.g., point cloud data) representing the building of interest and the means of constructing geometric models using the spatial data. The former can readily be obtained using laser scanning techniques. However, the generation of geometric models is mainly a manual process in practice, which is often time consuming. To improve the efficiency, extensive research has been carried out to investigate approaches for automating the geometric modelling process and improving the quality of the models obtained. This article provides a review of the approaches and the tools available in the literature for generating geometric models of buildings using point cloud data. The strengths and weaknesses of those approaches and the potential benefits of combining some of them are critically discussed.

VP435	Title: Synchronous analysis of a neural networks system

Abstract: In this article, we studies the synchronous problem of a fractional neural-networks. Based on the open-loop and adaptive feedback controls, we obtain the controller expression ensuring the projection synchronization for this models. Adopting V-function and applying comparison principle, a sufficient condition for the model to achieve projection synchronization is achieved.

VP436	Title: Research on a Personalized Physiological Status Cluster Discrimination System Based on Pulse Signal

Abstract: At present, the workload of mental workers in society is getting heavier and heavier, and it is necessary to conduct research on their physiological state assessment. Considering that the pulse is easily available and non-invasive, the pulse wave signal is used as the data source. The infrared pulse sensor is used to collect the pulse wave signals of the human body in different states, and the data is preprocessed and feature extraction is performed, and then the feature value weight is calculated by the Relief algorithm to obtain a new weighted pulse sample. The third step is to use k-means algorithm and fuzzy C-means (FCM) algorithm for clustering analysis of the weighted eigenvalue samples, and use the three parameters of error square sum, contour coefficient, and CH coefficient as clustering effect evaluation indicators. Finally, The state of the clustered model is determined according to specific eigenvalues, and the state classification is realized. Thus, a personalized physiological state classification method is proposed, which is to establish different classification algorithm models for different individuals, thereby avoiding Individual differences.

VP437	Title: Research and Application on Virtual Metering Model for Production of ESP Well Based on Working Performance Curve

Abstract: Aiming at the problems of scattered oil wells and high production measurement cost of single well in Halfaya oilfield, in order to timely grasp the change trend of single well production and improve the intelligent management level of oil well , the virtual metering

method of liquid production of Electric submersible pump (ESP) well in Halfaya oilfield is studied. Starting from the working performance curve of ESP well and considering the influence of gas, viscosity and water content in fluid on pump operation performance, this paper calculates and corrects the working performance curve of ESP well by using the least square curve and polynomial fitting method, and constructs the virtual metering mathematical model of ESP well production based on real-time monitoring data. The comparison and verification of field measurement shows that the virtual measurement model of ESP well production in this paper is simple and practical, and can realize the on-line measurement of ESP well production. The calculated results are in good agreement with the measured results, and the maximum relative error is less than 5%, which provides a basis for oil well dynamic analysis and working system optimization in Halfaya oilfield.

IV100-5	Title: A Systematic Review of Automated Reconstruction of Indoor Scenes using Point Clouds

Abstract: Creating structured 3D modeling of indoor environments from captured data is essential in applications like indoor navigation and interior remodeling. The recent surge in indoor scene reconstruction from point cloud information has made substantial progress when dealing with the complexity and variability of the indoor en-vironment but many open research problems remain. In this survey, a review of the existing methodologies in characterization of the input sources, reconstruction model along with the other components in the structured reconstruction pipeline is done. An overview of the reconstruction methodologies is summarized along with its effectiveness and limitations while also acknowledging future research directions and challenges for the purpose of promoting research interest.

IV100-7	Title: An end-to-end multi-task learning to link framework for emotion-cause pair extraction

Abstract: Emotion-cause pair extraction (ECPE), as an emergent natural language processing task, aims at jointly inves-tigating emotions and their underlying causes in documents. It extends the previous emotion cause extraction (ECE) task, yet without requiring a set of pre-given emotion clauses as in ECE. To solve ECPE task, we re-gards emotion-cause pair extraction as a link prediction task, and learns to link from emotion clauses to cause clauses, i.e., the links are directional. We propose a multi-task learning model that can extract emotions, causes and emotion-cause pairs simultaneously in an end-to-end manner. Emotion extraction and cause extraction are incorporated into the model as auxiliary tasks, which further boost the pair extraction. Experiments are conducted on an ECPE benchmarking dataset. The results show that our proposed model outperforms a range of state-of-the-art approaches.

IV100-39	Title: Low light image enhancement method based on guided filtering

Abstract: Illumination component needs to be estimated in the classic Retinex model for enhancing a low light image. Then, this method projects the illumination component back to the corresponding reflectance. Therefore, the accuracy of illumination component estimated determines the performance of enhancement results. Based on Retinex model, this paper proposed an illumination component estimating method by guided filtering. In the proposed method, bright channel is used for obtaining a rough illumination map. Then, the gray image converted by the given low light image is employed as a guidance image; accordingly, we refine the obtained rough illumination map for obtaining a structural-awared illumination map by guided filtering. Lastly, the enhanced image can be achieved by a simple computation.Experimental results demonstrated that the visual performance of enhanced image by our method significantly overpasses conventional image enhancement methods.

| IV100-47 | Title: The critical effect of diffusion coefficients and boundary data on the global exponential stabilization of delayed Markovian jump neural control systems |

Abstract: By employing Friedrichs' inequality and constructing new Lyapunov-Krasovskii functional, we have studied the stabilization of delayed reaction-diffusion control systems with Markovian jump parameters and Robin boundary conditions. Different from existing traditional results, our easy-to-test control design on global exponential stabilization in expected value is based also on diffusion coefficients and boundary conditions, which discloses the crucial role of the diffusion coefficients and boundary data in the stabilization of neural control systems. The model here includes many models as special cases and the global exponential stabilization has a wider adaptive range. An example and its simulations are demonstrated to verify the effectiveness of theoretical results.

| IV100-58 | Title: Poetry can group: social relations among poets in Tang Dynasty based on Word2vec and social network |

Abstract: The study sought to dig deeply into the social relations of poets in Tang Dynasty through Tang poetry. Based on Word2vec, we trained the corpus of Tang poetry and generated the word vector, thus WMD was used to calculate the poetic similarity to reflect the poetic style; we use Gephi to construct the poets' social relation network and use network analysis algorithms, including Community detection, Network shortcuts, etc to quantify the integral and partial attributes of the networks and to analyze the characteristics of "poetic social" and how the poet's own attributes affect the poet social on the macroscopic and microcosmic levels. Furthermore, poetic similarity were used to analyze the evolution characteristics of poetry styles under the influence of "poetic social". The study shows that there are some phenomena such as small groups and long tail effect in poets' social interaction; the social closeness of poets is related to the attributes of poets to varying extent; the social relations and poetic styles influence each other in development.

About Us
Shanghai X-academy

The major responsibilities of the X-academy, are to cooperate with IEEE (Institute of Electrical and Electronics Engineers), SPIE, Springer and top universities from in and out China by arranging and holding slap-up conferences on mechatronics, applied mechanics, materials, computer science, information technology, business management, etc. It creates and offers opportunities for experts, researchers and scholars from all over the world to present their technological advances and research results.

All papers in our conference proceedings will be published by the well-known press, and will be submitted to the major indexing services for indexing.
X-academy also publishes high quality academic journals with American Scientific Publishers. In academic journal publishing, X-academy's partners also includes Academy Publisher in Finland.

X-academy owns a professional team formed by elites who are striving for developing Chinese academia and education. And the experienced key figures who have worked in the academia and education field are all graduated from famous schools and institutes both in and out China with Master or Doctor Degree. As a professional organizer for academic conferences, the X-academy will focus on international communication and cooperation among academia, education and culture all the time.

If you have interests in organizing an academic conference/ being a keynote speaker/ being a reviewer/ being the co-editor of the proceeding/ submitting a manuscript etc., welcome to contact us.

Official Website: www.x-academy.ac
Tel: +86-24-83958379