第十九届“数字多媒体通信”国际论坛

THE 19TH INTERNATIONAL FORUM OF DIGITAL MULTIMEDIA COMMUNICATION

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December 9, 2022, Shanghai, China

主题报告 Keynote Speech

Lu Zhang Asso. Prof.
National Institute of Applied Sciences, France
《Model Observers for the Objective Quality Assessment of Medical Images》

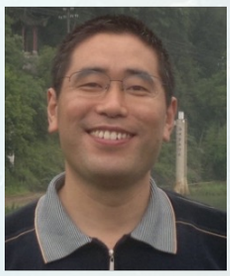
Abstract: Task-based approaches have been popular in the medical image quality assessment domain since 1993, named “model observer”. The underlying paradigm is to quantify the quality of a particular image by its effectiveness with respect to its intended task. A system/algorithm that enables medical experts to gain a better diagnostic task performance or to spend less time for interpretation with the same diagnostic reliability is said to be better. In this talk, an overview of model observes will be introduced.

Dr. **Lu Zhang** is an Associate Professor at National Institute of Applied Sciences (INSA) of Rennes in France. She received the B.S degree from Southeast University and the M.S. degree from Shanghai Jiaotong University in China in 2004 and 2007, respectively. She received PhD degree from LISA and CNRS IRCCyN labs in France in 2012. She received the “Excellent Doctoral Dissertation of France” awarded by IEEE France Section, SFGBM, AGBM and GdR CNRS-Inserm Stic-Santé in 2013. Then she worked on the quality of experience (QoE) in telemedicine before she joined INSA in September 2013, as a member of the VAADER research group of the IETR lab. She is a board member of the VQEG. She works on human perception understanding, image quality assessment, saliency prediction, image analysis and coding.

Mylène C.Q. Farias
Asso. Prof.
University of Brasilia
《A Point Cloud Quality Assessment Method Based on Geometric-Aware Texture Descriptors》

Abstract: Point Clouds (PC) are collections of points distributed in the 3D space. Reliable quality metrics are needed in order to automatically estimate the perceptual quality of PC contents. In this talk, we present a PC quality assessment method that uses geometric-aware texture descriptors. The proposed approach uses texture descriptors to extract features of PC content. Then, the descriptor statistics are computed and a machine learning algorithm is employed to regress these statistics into visual quality scores. Since currently there are several quality assessment metrics for static PC and very few metrics for dynamic PC, we also present a method for estimating the quality of dynamic PC using temporal pooling functions that combine the quality scores predicted for each of the frames using the texture descriptors. Our experimental tests were carried out using the latest publicly available database and demonstrated the efficiency of the proposed methods.

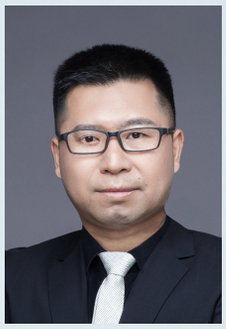
Mylene C.Q. Farias received her B.S. degree from Federal University of Pernambuco, Brazil, in 1995 and her M.S. degree from the State University of Campinas, Brazil, in 1998. She received her Ph.D. in electrical and computer engineering from the University of California Santa Barbara, USA, in 2004. Currently, she is an associate professor in the Department of Electrical Engineering at the University of Brasilia. Dr. Farias is a researcher of the Digital Signal Processing Laboratory and her current interests include video quality metrics, video processing, multimedia signal processing, immersive media, and visual attention. She is currently Associate Editor for IEEE Signal Processing Letters and SPIE Journal of Electronic Imaging, besides being an Area Editor for Elsevier Signal Processing Image Communication. She has served on several program committees, served as Technical Program Co-Chair for ACM NOSSDAV 2021 and QoMEX 2020, and is co-chair of the 2022 ACM MMSys.



刘怡光 教授
四川大学
《Challenges and Countermeasures of Intelligent Detection and Perception 》

Abstract: Target detection and perception face the challenges of both the environment and the target itself. In order to improve the detection and perception ability, based on the analysis of the advantages and disadvantages of visible light/infrared/SAR, the possible architecture of plenoptic detection and perception as well as its combination with new computational optics detection are discussed. At the same time, the intelligent processing mode and architecture under the case of incomplete, uncertain information and lack of prior knowledge are discussed. Finally, some our preliminary explorations in this area are reported .

刘怡光，四川大学教授，研究方向主要聚焦于信息探测与智能感知。南京理工大学学士(1995)、北京大学硕士(1998)、四川大学博士(2004)、新加坡国立大学博士后(2008)、帝国理工学院访问教授(2011)、密歇根州立大学高级研究学者(2013)。论文100余篇，IEEE汇刊/ICCV/CVPR/PR等权威期刊会议70余篇，SCI收录80余篇。国家发明专利授权22项；国家重大专项课题、自然科学基金等国家级项目课题10余项。获四川省科技进步奖一等奖和自然科学二等奖各1次(1/10，1/5)、IEEE ICME论文奖2次。《激光技术》、《中国图形图象学报》编委(2022年优秀编委)，中国图形图像学会常务理事，中国人工智能学会智能融合专委会常务理事，中国图形图像大会CCIG2022程序主席 。



刘治 教授
山东大学

《Medical Ultrasound Robot Based on Artificial Intelligence》

Abstract: The wide application of ultrasound is mainly due to its significant advantages of low coat, non-invasive, no radiology, portable, and dynamic. Compared with other examinations in the hospital, ultrasonography is inexpensive and has strong applicability, which can meet the requirements of the vast majority of the population. Ultrasound is a safe and less side effect method, and ultrasound examination is non-invasive, doctor can check by the ultrasound probe without any surgery. Moreover, the rapid development of small and portable ultrasound equipment can use handheld ultrasound to generate images in real time. Sonographers can dynamically select the most useful parts for rapid diagnosis to observe and record. This lecture is about the application of medical ultrasonic robot based on artificial intelligence in auxiliary diagnosis and treatment, which is mainly divided into the following four parts: firstly, I will introduce the research background and significance of ultrasound; secondly, we will learn about the main technologies related to ultrasound robots; then, I will introduce the main research results of our team in the field of medical ultrasound and ultrasound robots; finally, the development trend of ultrasound in the future.

刘治，山东大学信息科学与工程学院教授、博士生导师，山东大学特聘国际合作联络教授。山东省医疗数据感知与计算开放创新应用实验室主任，青岛市多维智能感知与认知计算重点实验室主任，青岛市智能医学工程技术创新中心主任。主要研究方向为模式识别理论与应用、医学影像组学、数据安全。已发表SCI期刊论文60余篇，是2个国际学术期刊的编委，同时是十余个国际期刊的特约审稿人。已主持并完成省部级以上课题30余项。已获授权的国家发明专利31项，PCT 5项，美国专利2项。他目前是IEEE高级会员，山东省人工智能学会理事，山东省生物医学工程学会理事，山东省大数据专家咨询委员会专家，2017年获第七届“吴文俊人工智能科学技术奖”（二等奖首位），2016年入选山东省“泰山产业领军人才”，2019年入选山东省“智库高端人才”。

议程安排 Schedule

2022.12.9

线上会议室	请用腾讯会议客户端/Tencent Meeting，会议号码/ID：598387924，密码/PWD：233425 参会链接/Conference Link：https://meeting.tencent.com/dm/Q09w4k3196aq 直播链接/Live Video：https://meeting.tencent.com/l/16ja7hiYON5Y
8:30-8:35	会议开始
8:35-9:15	**Mylène C.Q. Farias:《A Point Cloud Quality Assessment Method Based on Geometric-Aware Texture Descriptors》**
9:15-10:00	**刘怡光:《Challenges and Countermeasures of Intelligent Detection and Perception》**
10:00-10:10	休息
10:10-12:00	Oral Session 每个报告12分钟汇报，3分钟提问 • An Adaptive Musical Vibrotactile System (MuViT) for Modern Smartphones. Tianqiang Yan and Yuwei Liu • River Turbidity Monitoring Based on Semi-Supervised Transfer Learning. Shuangyi Xie, Xin Liao, Ruxue Bai and Chengxu Zhou • A Lightweight Segmentation Network Based on Weak Supervision for COVID-19 Detection. Fangfang Lu, Tianxiang Liu, Chi Tang, Zhihao Zhang, Guangtao Zhai, Xiongkuo Min and Wei Sun • Combining Transformer and Convolutional Neural Network for Smoke Detection. Yafei Gong, Xinkang Lian, Xuanchao Ma, Zhifang Xia and Chengxu Zhou • Deep Fourier Kernel Exploitation in Blind Image Super-Resolution. Yu Fu, Xiaoyun Zhang, Yixuan Huang, Ya Zhang and Yanfeng Wang • SMA-Net: Sobel Operator Combined With Multi-Attention Networks for COVID-19 Lesion Segmentation. Chi Tang, Fangfang Lu, Zhihao Zhang and Tianxiang Liu • Few-Reference Image Quality Assessment with Multiple Information Measurement Fusion. Shuang Shi, Simeng Wang, Yuchen Liu, Chengxu Zhou and Ke Gu • Blindly Evaluate the Quality of Underwater Images via Multi-Perceptual Properties. Yan Du, Xianjing Xiao, Runze Hu, Yutao Liu, Jiasong Wang, Zhaolin Wan and Xiu Li

线上会议室	请用腾讯会议客户端/Tencent Meeting，会议号码：898588681，密码：400181 参会链接/Conference Link：https://meeting.tencent.com/dm/NNUwVCt4Y7W6
13:00-13:35	**Lu Zhang:《Model Observers for the Objective Quality Assessment of Medical Images》**
13:35-14:20	**刘　治:《Medical Ultrasound Robot Based on Artificial Intelligence 》**
14:20-14:30	休息
14:30-17:30	Poster Session 每个报告5分钟汇报 • Perceptual Quality Assessment of TTS-Synthesized Speech. Zidong Chen and Xiongkuo Min • The Effects of Air Pollution and Meteorological Factors in the Transmission and Lethality of COVID-19. Ting Shi, Ailin Qi, Wu Yang, Pengyu Li, Chengxu Zhou and Ke Gu • Federated Learning for Industrial Entity Extraction. Shengze Fu, Xiaoli Zhao and Chi Yang • On the Robustness of “Robust Reversible Data Hiding Scheme Based on Two-Layer Embedding Strategy”. Wen Yin, Zhaoxia Yin, Xinpeng Zhang and Bin Luo • DLICA: Deep Learning Based Novel Strategy for Intelligent Channel Adaption in Wireless SDN-IoT Environment. Zabeeh Ullah, Fahim Arif, Yawar Bangash, Shahbaz Ahmad and Muhammad Waseem • Latent Energy Based Model with Classifier Guidance. Weili Zeng and Jia Wang • Pedestrian Re-recognition Based on Memory Network and Graph Structure. Yunfeng Zhang, Xiaopeng Li, Jiaqi Cao, Jiarui Ou, Muzhou Hou, Shihua Zhu and Cong Cao • Pedestrian Attribute Recognition Method Based on Multi-Source Teacher Model Fusion. Zhengyan Ding and Yanfeng Shang • Dense 3D Reconstruction of Non-cooperative Target Based on Pose Measurement. Jiasong Wang, Hao Wang, Yongen Zhao, Ronghao Yuan and Fan Xu • An Image Classification Method Based on Sequential Multi-source Domain Adaption. Lan Wu, Han Wang and Xin GuoA Generic Image Feature Extraction Method Towards Multiple Vision Tasks. Jiao Wei, Ping An, Kunqiang Huang, Chao Yang and Ran Ma • Bit-Depth Enhancement With Distortion Sensitivity. Jing Liu, Xin Li, Xiaofeng Mi and Yuting Su • Generative Model Watermarking Based on Human Visual System. Li Zhang, Yong Liu, Shaoteng Liu, Tianshu Yang, Yexin Wang, Xinpeng Zhang and Hanzhou Wu • Feature Adaptation Predictive Coding for Quantized Block Compressive Sensing of COVID-19 X-Ray Images. Haoran Zheng, Hao Liu and Genlong Chen • Pyramid Channel Attention Combined Adaptive Multi-Column Network for SISR. Yingjie Yang, Yongfang Wang, Junjie Lian and Zhijun Fang • FPGA-Based Hardware Implementation of JPEG XS Encoder. Dong Yang and Li Chen • A Correction-Based Dynamic Enhancement Framework Towards Underwater Detection. Yanling Qiu, Qianxue Feng, Boqin Cai, Hongan Wei and Weiling Chen • Water Segmentation via Asymmetric Multiscale Interaction Network. Jianzhuo Chen, Tao Lu, Yanduo Zhang, Wenhua Fang, Xiya Rao and Mingming Zhao • Adversarial Example Defense via Perturbation Grading Strategy. Shaowei Zhu, Wanli Lyu, Bin Li, Zhaoxia Yin and Bin Luo • MSPP-IQA: Adaptive Blind Image Quality Assessment Based on Multi-level Spatial Pyramid Pooling. Fangfang Lu, Yingjie Lian, Feng Qin, Guangtao Zhai, Xiongkuo Min and Wei Sun • Subjective and Objective Emotional Consistency Assessment for UGC Short Videos. Yubo Gui, Yucheng Zhu, Guangtao Zhai and Ning Liu • L2RT-FIQA: Face Image Quality Assessment via Learning-to-Rank Transformer. Zehao Chen and Hua Yang • Adaptive Amplitude Modulation and Recovery Method for Video Coding. Haiwu Zhao, Xiwu Shang, Jianghong Yu and Guozhong Wang • Tracking of Aerial Cooperative Target by Satellite-based Optical Cameras. Qichang Zhao, Lian Chen, Houmao Wang, Yefei Li, Yubin Yuan and Yiquan Wu • Regression Augmented Global Attention Network for Query-Focused Video Summarization. Min Su, Ran Ma, Bing Zhang, Kai Li and Ping An • Deep Video Matting with Temporal Consistency. Yanzhuo Li, Li Fang, Long Ye and Xinyan Yang • Deep Flow-Guided Video Dehazing Based on Multi-Scale Recurrent Network. Shiyan Sun, Yongfang Wang, Tengyao Cui and Zhijun Fang • Fast Skip CU Inter Mode for VVC. Xiangkai Hu, Yue Li and Wenbin Lin