CCBR 2021

第十五届中国生物特征识别大会

The 15th Chinese Conference on Biometric Recognition

会 议 手 册

欢 迎 辞

由于互联网时代日益突出的安全和隐私问题，以及世界范围内严峻的反恐形势，生物特征识别技术受到了越来越多的关注与重视，广泛应用于刑侦、政府和民用等诸多领域。在中国，得益于巨大的互联网和智能手机用户群体，以及政府在安全和隐私保护方面的重大投入，生物特征识别技术和市场发展迅猛，持续吸引着学术界和工业界的大量研究人员和技术人员投身这一领域。中国生物特征识别大会（Chinese Conference on Biometric Recognition，简称 CCBR）旨在为生物特征识别界的同仁提供一个相互交流生物特征识别理论、技术、系统和应用方面的最新进展与成果，寻求合作与共赢的平台，促进中国生物特征识别领域的发展，并为世界生物特征识别技术的进步做出贡献。

第 15 届中国生物特征识别大会（CCBR2021）将于 2021 年 9 月 10 - 12 日线上举行。自 2000 年始，CCBR 已经在北京、杭州、西安、广州、济南、沈阳、天津、成都、深圳、乌鲁木齐和株洲等地成功举办了 14 届。本届大会由中国人工智能学会和中国科学院自动化研究所主办，由上海大学计算机工程与科学学院承办，得到了 Springer 出版社、生物识别产业技术创新战略联盟、IEEE Beijing Section Biometrics Council Chapter、SAC/TC1000/SC2 生物特征标委会、中国图象图形学学会、公安部第三研究所、IEEE WIE Shanghai Affinity Group、上海市计算机学会人工智能专委会、上海市人工智能技术协会和中国图象图形学报的大力支持。

CCBR 2021 共收到论文投稿 72 篇，每一篇经过程序

委员会中至少两名专家的评审，由程序委员会主席在专家评审意见的基础上给出最终录用结果，最终 20 篇论文被录用为口头汇报论文，33 篇论文被录用为墙报展示论文。这些论文涵盖了人脸识别与分析，指纹、掌纹、静脉等生物特征，虹膜生物特征，行为生物特征，情感计算，特征提取与分类方法，防伪与隐私，视频监控等方向，将分别在大会的 4 个口头汇报环节和 3 个墙报展示环节进行报告与交流。会议论文集将于 Springer 出版社的 Lecture Notes in Computer Science（LNCS）图书系列出版，并被 EI 和 ISTP 检索。

在 CCBR 2021 共计三天的会期中，将举行包括三场特邀报告、两场主题报告和一个技术沙龙，并有生物特征识别企业技术宣讲和展览。CCBR2021 能够成功举办离不开主办和承办单位的支持，离不开 CCBR 2021 论文作者和广大与会人员的积极参与，离不开 CCBR 2021 顾问委员会委员们的热情关心和帮助，离不开 CCBR 2021 程序委员会和组织委员会全体委员们的辛勤付出和共同努力，离不开赞助和参与 CCBR 2021 的生物特征识别企业的鼎力支持，同样离不开 CCBR 2021 众多志愿者们的无私奉献。在此，我们对大家表示最诚挚的谢意！

最后，祝大家在会议期间度过愉快而充满收获的时光！

CCBR 2021 大会主席

汪小帆、孙哲南、梅林

CCBR 2021 程序委员会主席

冯建江、张军平、刘满华、方昱春

Welcome Message

Security and privacy issues are topics of growing concern in the Internet era and as a result of the growing demand for the anti-terrorism activity. This raises great interest in biometric technology, which provides substantial advantages over traditional password- or token-based solutions. Biometric recognition systems have been extensively deployed worldwide in law-enforcement, government, and consumer applications. In China, thanks to the huge population using the Internet and smartphones and to the great investment of the government in security and privacy protection, the biometric market is rapidly growing and biometric research keeps attracting the attention of numerous scholars and practitioners. These researchers have been addressing various biometric problems, promoting diverse biometric techniques, and making significant contributions to the biometrics field. The Chinese Conference on Biometric Recognition (CCBR), an annual conference held in China, provides an excellent platform for biometric researchers to share their progress and advances in the development and applications of biometric theory, technology, and systems.

CCBR 2021 will be held online during September 10-12, 2021, and is the 15th in the series that has been successfully held in Beijing, Hangzhou, Xi'an, Guangzhou, Jinan, Shenyang, Tianjin, Chengdu, Shenzhen, Urumchi and Zhuzhou since 2000. CCBR 2021 received 72 submissions, each of which was

reviewed by at least two experts from the Program Committee. Based on the rigorous review comments, 20 papers were selected for oral presentation and 33 papers for poster presentation. These papers comprise the volume of the CCBR 2021 conference proceedings covering a wide range of topics: face recognition and analysis; fingerprint, palm-print, and vascular biometrics; iris biometrics; behavioral biometrics; affective computing; feature extraction and classification theory; anti-spoofing and privacy, and surveillance.

We would like to thank all the authors, reviewers, invited speakers, volunteers, and Organization Committee members, without whom CCBR 2021 would not be successful. We also wish to acknowledge the support of the Chinese Association for Artificial Intelligence, Institute of Automation of Chinese Academy of Sciences, Shanghai University and sponsors for supporting this conference.

We hope that you enjoy all the events at CCBR 2021, including three keynote speeches, two invited talks, four long-oral (oral) sessions, three short-oral (poster) sessions and one technical salon. Thank you for making CCBR 2021 to be a great success!

We welcome you to the CCBR 2021!

General Chairs of CCBR 2021

Xiaofan Wang, Zhenan Sun, Lin Mei

Program Chairs of CCBR 2021

Jianjiang Feng, Junping Zhang, Manhua Liu, Yuchun Fang

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中国生物特征识别大会

CHINESE CONFERENCE ON BIOMETRIC RECOGNITION, CCBR

由中国人工智能学会（CAAI）、中国科学院自动化研究所主办的国内生物特征识别领域的学术盛会。生物识别是模式识别、图像处理、人工智能等学科领域的前沿方向，其在安全领域发挥着重要作用。自 2000 年以来，CCBR 已经在北京、杭州、西安、广州、济南、沈阳、天津、成都、深圳、乌鲁木齐和株洲等地成功举办了 14 届，有力地促进了国内本领域的学术和技术发展。

第十五届中国生物特征识别大会（CCBR 2021）将于 2021 年 9 月 10-12 日举行，由上海大学承办，中国图象图形学会（CSIG）、公安部第三研究所、IEEE WIE Shanghai Affinity Group、IEEE Beijing Section Biometrics Council Chapter、上海市计算机学会人工智能专委会、上海市人工智能技术协会、中国图象图形学报协办。

本届会议将汇聚国内从事生物特征识别理论与应用研究的广大科研工作者，并邀请国际同行，共同分享我国生物特征识别研究的最新理论和技术成果，为大家提供精彩的学术盛宴。

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特邀报告嘉宾

约瑟夫·克特勒 教授

英国萨里大学

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Josef Kittler

Professor of University of Surrey and Jiangnan University

约瑟夫·克特勒是英国萨里大学视觉、语音和信号处理中心的教授，同时担任江南大学人工智能与计算机科学学院特聘教授。他于剑桥大学获得学士、哲学博士和理学博士学位。他从事机器智能领域的研究和教学，重点研究方向包括生物特征识别、视觉数据检索和认知视觉。他的学术著作涵盖了统计模式识别的多个卷辑。他发表了 800 多篇学术论文，其中包括 300 多篇期刊出版物。他担任多个模式识别和计算机视觉学科期刊编委，并担任 Springer Lecture on Computer Science 2004-2016 的系列编辑。

他在 1994-1996 年担任国际模式识别协会 (IAPR) 主席。他获得了拉普兰塔理工大学和布拉格捷克理工大学的荣誉博士学位。他是 IET、IAPR、EURASIP 和 BMVA 的会士。2000 年，他被选为英国皇家工程学院院士。2006 年，他获得了 IAPR 颁发的“傅京孙奖”和 2008 年的 IET“法拉第奖章”。他为许多公司提供咨询，是 OmniPerception 有限公司的创始人之一。

Josef Kittler is Professor of Machine Intelligence at the Centre for Vision, Speech and Signal Processing, University of Surrey. He is also Distinguished Professor at the School of Artificial Intelligence and Computer Science, Jiangnan University. He received his BA, PhD and DSc degrees from the University of Cambridge. He teaches and conducts research in Machine Intelligence, with a focus on Biometrics, Video and Image Database retrieval, and Cognitive Vision. He published a Prentice Hall textbook on Pattern Recognition: A Statistical Approach and several edited volumes, as well as more than 800 scientific papers, including more than 300 journal publications. He serves on the Editorial Board of several scientific journals in Pattern Recognition and

特邀报告嘉宾

约瑟夫·克特勒
Josef Kittler

Computer Vision and was Series Editor of Springer Lecture Notes on Computer Science 2004-2016.

He served as President of the International Association for Pattern Recognition (IAPR) 1994-1996. He received Honorary Doctorates from the Lappeenranta University of Technology and from the Czech Technical University in Prague. He is Fellow of IET, IAPR, EURASIP, and BMVA. He was elected Fellow of the Royal Academy of Engineering in 2000. In 2006 he was awarded the KS Fu Prize from IAPR and the IET Faraday Medal in 2008. He consulted for many companies and was one of the founders of OmniPerception Ltd.

特邀报告主题

从信息理论视角探索生物特征识别中的机器学习
An Information Theoretic Perspective on Machine Learning in Biometrics

特邀报告摘要

The core of any Artificial Intelligence (AI) application is machine learning. During the last decade the huge potential of AI has been accentuated by a revolutionary progress in deep learning, whereby a task is solved by training a deep neural network (DNN) using training data and an appropriate objective function. The quest for an effective DNN architecture, as well as the learning objective, is the subject of hundreds, if not thousands, of papers published annually. The talk will focus on the problem of measuring the loss of DNN that drives the learning process. Noting that most researchers use heuristic methods to define the loss function, we resort to information theory to provide a better basis for selecting an objective function that is cognizant of the fact that in machine learning we are dealing with a multitude of probability distributions. The first question to consider is whether the classical information measures such as Shannon entropy and Kullback-Leibler divergence that have been developed for communication applications are equally relevant for decision making

特邀报告嘉宾

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Josef Kittler

tasks. We will show that there are arguments for adopting or developing variants that are better suited for machine learning. We will also address the problem of modelling the various distributions that play an important part in deep learning. The advocated comprehensive information theoretic approach to machine learning will be illustrated on a number of AI tasks, including classification, retrieval, regression and classifier incongruence detection.

特邀报告嘉宾

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悉尼大学副教授、电子信息工程学院研究主任。

2011 年于香港中文大学获得博士学位。研究方向包括计算机视觉，模式识别，深度学习，图像处理等。主要从事基于深度学习结构设计，物体检测与跟踪，以及与人相关的问题的课题研究。他和团队曾获得 ImageNet 和 COCO 物体检测第一名。ICCV 最佳审稿人，IJCV 和 Pattern Recognition 编委，TPAMI 客座编辑，IEEE 高级会员，ICCV2019 展示主席，CVPR2021、ICCV2021 领域主席。入选 2021 年度「人工智能全球 2000 位最具影响力学者榜」计算机视觉领域前 100 名学者。担任 TPAMI, IJCV, TOG, TIP, CVPR, ICCV, SIGGRAPH 等期刊 / 会议的审稿人。

Wanli Ouyang received the PhD degree in the Department of Electronic Engineering, The Chinese University of Hong Kong. He is now an associate professor at the University of Sydney. His research interests include image processing, computer vision and pattern recognition. He serves as the associate editor for IJCV and Pattern Recognition, guest editor for TPAMI, area chair for CVPR, ICCV, AAAI, ICPR, and demo chair for ICCV 2019. He has served as the reviewer of many top journals and conferences such as IEEE TPAMI, TIP, IJCV, SIGGRAPH, CVPR, ICCV, and ECCV.

Personal Webpage: https://wlouyang.github.io/

特邀报告嘉宾

欧阳万里
Wanli Ouyang

特邀报告主题

深度学习模型的自动学习理论
Towards Automated Learning for Deep Learning

特邀报告摘要

The major advantage of deep learning is its ability to learn feature representation from data. This advantage makes deep learning widely applied for computer vision and biometric recognition. However, there are lots of factors in deep learning not learned from data, e.g., loss function, sampling strategy, and network architecture design. These factors can be learned by using automated learning. This talk will introduce our recent works on automatically learning for deep neural network structure and other factors, e.g. data augmentation, loss function.

特邀报告嘉宾

刘小明 教授
密歇根州立大学

Xiaoming Liu
Foundation Professor of
Michigan State University

密歇根州立大学计算机科学与工程系 MSU Foundation 讲座教授，国际模式识别协会（IAPR）会士。

2004 年获卡内基梅隆大学电子与计算机工程专业博士学位，之后进入通用电气全球研发中心工作任研究员，2012 年秋，加入密歇根州立大学计算机科学与工程系。2021 年 1 月起任职密歇根州立大学计算机科学与工程系 MSU Foundation 讲座教授。研究领域涉及计算机视觉，机器学习，人工智能，模式识别，和生物识别，尤其是人脸和三维视觉相关的问题。曾任 ICLR，WACV，FG 和 CVPR 等多个计算机视觉及图像处理国际顶尖会议领域主席和会议主席，获得多项国际学术大奖。共发表或出版 150 余篇学术文章，持有 29 项美国专利。

Dr. Xiaoming Liu is the MSU Foundation Professor at the Department of Computer Science and Engineering of Michigan State University (MSU) and also a visiting research scientist at Google Research. He received Ph.D. degree from Carnegie Mellon University in 2004. Before joining MSU in 2012 he was a research scientist at General Electric (GE) Global Research. He works on computer vision, machine learning, and biometrics especially on 3D vision, and face related analysis. Since 2012 he helps to develop a strong computer vision area in MSU who is ranked top 15 in US according to the 5-year statistics at csrankings.org. He received the 2018 Withrow Distinguished Scholar Award from MSU. He has been Area Chairs for numerous conferences, including CVPR, ICCV, ECCV, ICLR, NeurIPS, ICML, the Co-Program Chair of BTAS'18, WACV'18, and AVSS'21 conferences, and Co-General Chair of FG'23 conference. He is an Associate Editor of Pattern Recognition Letters, Pattern Recognition, and IEEE Transaction on Image Processing. He has authored more than 150 scientific

特邀报告嘉宾

刘小明
Xiaoming Liu

publications, and has filed 29 U.S. patents. His work has been cited over 14000 times according to Google Scholar, with an H-index of 60. He is a fellow of International Association for Pattern Recognition (IAPR). His research has been widely reported in prominent national and international news outlets including the Wall Street Journal, CNBC, CNET, Engadget, Fortune, the Mac Observer, MSU Today, New Scientist, Silicon Angle, VentureBeat, and the Verge. More information of Dr. Liu's research can be found at http://cvlab.cse.msu.edu

特邀报告主题

可信生物识别技术：未来十年的生物识别技术研究

Trustworthy Biometrics: Sustaining Biometrics Research into the Next Decade

特邀报告摘要

In recent years we have witnessed increasingly diverse application scenarios of Biometrics in our daily life, despite the societal concerns on some of the weakness of the technology. A sustainable deployment and prospects of biometric systems will rely heavily on the ability to trust the recognition process and its output. As a result, in addition to the high recognition accuracy, trustworthy biometrics has become an emerging research area, with topics ranging from biometrics security (e.g., presentation attack detection and forgery detection), biasness in biometrics, adversarial robustness, to interpretable biometrics. In this talk, we will present some of the recent works on these topics and discuss the remaining issues warrant future research.

嘉宾简介

西莉亚·沙纳兹 教授

孟加拉工程技术大学

Celia Shahnaz

Professor of Bangladesh University of Engineering and Technology

西莉亚·沙纳兹，IEEE 高级会员，IEB 研究员，于加拿大康科迪亚大学获得博士学位，自 2015 年起担任孟加拉工程技术大学电气电子工程系教授。她发表了 150 多篇国际期刊 / 会议论文。她因在科学和技术方面的贡献而获得加拿大联邦奖学金和孟加拉国科学院金奖。她的研究兴趣包括用于语音分析和语音增强的信号处理、用于生物特征安全的视听识别、控制系统、机器人技术、模式识别、机器学习和音频、视频、生物医学、电源信号的深度学习、多模态情感识别和人道主义技术。

Celia Shahnaz, SMIEEE, Fellow IEB, received Ph.D. degree from Concordia University, Canada and is currently a Professor at, Department of EEE, BUET, Bangladesh since 2015. She has published more than 150 international journal/conference papers. She is a recipient of the Canadian Commonwealth Scholarship/Fellowship and Bangladesh Academy of Science Gold Medal for her contribution in Science and Technology. Her research interests include the areas of signal processing for speech analysis and speech enhancement, audio-visual recognition for biometric security, control system, robotics, pattern recognition, machine learning and deep learning for audio, video, biomedical, power signals, multimodal emotion recognition, and humanitarian technology.

Recently, her papers have received best paper awards in IEEE BECITHCON 2019, biomedical Engineering tracks at TENCON 2017 and at IEEE WIECON-ECE 2016, in Humanitarian Challenge track at R10 HTC 2017, and the best interactive poster award at ICIVPR 2017. Her paper has been selected for the top ten best paper awards in the Student Paper Contest of the 2018 and 2014 IEEE International Midwest Symposium on Circuits and Systems (MWSCAS), College Station, Texas, USA and Knoxville, TN,

嘉宾简介

西莉亚·沙纳
Celia Shahnaz

USA, respectively. She was the winner, the Best Student Paper Award, 2008 IEEE International Conference on Neural Networks and Signal Processing (ICNNSP), Zhenjiang, China. She was selected as one of the finalists of the Student Research Presentation Competition in the 2009 SYTACOM Workshop, Montreal, QC, Canada.

She was the mentor of 1st/2nd prize winning projects in IEEE IAS CMD Contests (Robotics, Humanitarian) in 2017-2019, USA. She was the supervisor of 4th/5th rank winning teams in SPCUP competitions, ICASSP 2020 (Spain)/2015 (Australia) and 5th rank winning team in VIP CUP competition, ICIP 2020 (United Arab Emirates) .

She is the recipient of the 2021 Inspiring Women in Academia Award from Bangladesh brand forum, 2019 R10 Humanitarian Activities Outstanding Volunteer Award, 2016 MGA Leadership Award 2015 WIE Inspiring Member Award, 2013 R10 WIE Professional Volunteer Award.

She has been appointed as 2021-23 Chair, IEEE SPS Women in Signal Processing, 2021-23 Liaison between IEEE SPS and IEEE WIE. She has been appointed as 2021-22 Member, IEEE History Committee, Liaison between IEEE History Committee and IEEE WIE, 2021 Chair, IEEE WIE History Subcommittee and 2021 Member, IEEE Educational Activities Board Faculty Resource Committee. She is 2020-21 Member, IEEE WIE Senior Member Elevation Drive, 2019-2021 Member, IEEE WIE WePower Subcommittee, 2020-21 Member, IEEE smart Village South Asian Working Group, 2017-2021 IEEE PES Women in Power (WiP) IEEE Region 10 Regional representative. She was a candidate for the 2021-22 IEEE Region 10 Director-Elect election, 2020 Member, IEEE New Initiative Committee, 2020 Chair, Women in SIGHT Working Group, , 2017, 2019 Communications Chair, IEEE SIGHT steering Committee, 2017-18 Chair, IEEE WIE Workshops Subcommittee, 2017-18 Member, IEEE Region 10 Subcommittees (WIE, Humanitarian Technology Activity, Education), and 2016 IEEE Region 10 WIE Coordinator. She has served as the Chair, IEEE Bangladesh Section, 2018-6/2021.

She is the founder & Chair, IEEE SPS, IAS Bangladesh Chapters, Co-founder & Vice-Chair, IEEE RAS, SSIT Bangladesh Chapters, Founder and Advisor, WIE AG, IEEE Bangladesh Section. She has served as the General Chair, IEEE TENSYMP 2020, IEEE

嘉宾简介

西莉亚·沙纳
Celia Shahnaz

SPICSCON 2019, IEEE PEEIACON 2019, General Chair: IEEE WIECON-ECE 2019, 2018, 2016, General Co- Chair, IEEE Region 10 HTC 2017 and IEEE WIECON-ECE 2017, Founder and TPC Chair: IEEE WIECON-ECE 2015, IEEE BECITHCON 2019, IEEE RAAIACON 201.

She has served as an Editorial board member, IET Signal Processing From 2018 to date and 2018- 20 Member, Technical Committee, Image, Video, and Multimedia (IVM), Asia Pacific Signal and Information Processing Association (APSIPA).

She has more than 20 years of experience (20 years as an IEEE volunteer) in leading impactful Technical, Professional, Educational, Industrial, Women Empowerment and Humanitarian Technology, Power and Energy-related Projects at national/international levels.

报告主题

基于深度神经网络的计算机辅助生物信号疾病自动检测

Computer-Aided Automatic Disease detection from Biosignals based on Deep Neural Networks

报告摘要

To treat the diseases or injuries of the joints, bones, muscles, and spine in both adult and pediatric imaging the 2-D musculoskeletal radiographs bring a significant depth of expertise. Various machine learning processes have played a significant role in medical image classification and abnormality detection from musculoskeletal radiographs. There are other 2-D images that are utilized for Tuberculosis, COVID 19 detection. Many Networks, such as Densenet, Resnet, Inception v3, and Capsnet architecture will be explained here for musculoskeletal radiographs abnormality detection and other life threatening diseases detection. Such computer-based automatic detection of abnormality and diseases is time-saving, and more accurate thus creates a huge impact on the community and humanity.

嘉宾简介

贲晛烨 教授

山东大学

Xianye Ben

Professor of Shandong University

贲晛烨博士，山东大学教授，博士生导师。IEEE Senior Member、中国电子学会高级会员、中国电子学会青年科学家俱乐部成员、中国电子学会信号处理分会委员、中国自动化学会混合智能专委会委员、山东省人工智能学会理事、山东省神经科学学会人工智能与类脑研究分会常务理事、Valse 执行领域主席、中国图象图形学学会会员、PeerJ Computer Science 副主编、《应用科技》编委、《中国图象图形学报》青年编委、《吉林大学学报（工学版）》青年编委、《中国电子学会会员通讯》编委、International Journal of Computer Applications in Technology 客座编委。主要研究方向为图像处理、模式识别、机器学习、情感计算、数据挖掘、人工智能等。主持国家自然科学基金项目 3 项、国家重点研发计划课题 / 子课题 3 项、山东省重点研发计划 3 项等等。在 IEEE T-PAMI、IEEE T-IP、IEEE T-CSVT、IEEE T-MM、PR 、CVPR 等国内外核心期刊会议上发表学术论文 97 篇，1 篇入选 ESI 高被引论文，被评为 2019 年《中国图象图形学报》新媒体高关注度作者。申请国家发明专利 78 项，授权 44 项，转让 1 项，成果在银川监狱、呼和浩特第三监狱和赣州监狱的个人谈话、心理矫治与智能审讯系统上成功应用，为科学矫正提供了技术支撑，社会效益显著，获青岛科技进步二等奖。

Xianye Ben is currently working as a Full Professor in the School of Information Science and Engineering, Shandong University, Qingdao, China. Her current research interests include pattern recognition, digital image processing and analysis, machine learning. She has published 97 papers in major journals and conferences, such as IEEE T-PAMI, IEEE T-IP, IEEE T-CSVT, IEEE T-MM, PR, CVPR etc., and one paper is selected as a highly cited paper of ESI. Dr. Ben was awarded the high attention scholar by new media

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Xianye Ben

of "Journal of Image and Graphics" in 2019, and also served as associate editor of PeerJ Computer Science. As the Principal Investigator (PI), she has been successively granted three NSFC research funds, lead three national key R & D program project/ sub-projects, and one major innovation project in Shandong Province. So far, Dr. Ben is holding 44 Chinese granted patents, and she has transferred 1 Chinese granted patent. Dr. Ben’s work has been successfully applied to personal conversation, psychological correction and intelligent interrogation system of Yinchuan prison of Ningxia Hui Autonomous Region, the third prison of Hohhot of Inner Mongolia Autonomous Region, as well as Ganzhou prison of Jiangxi Province, which covers 3000 prisoners in 30 prison zones. Dr. Ben’s work provides technical support for scientific correction with remarkable social benefits.

报告主题

面部微表情视频分析：数据、特征、算法和挑战

Towards Video-based Facial Micro-Expression Analysis: Datasets, Features, Algorithms, and Challenges

报告摘要

Unlike the conventional facial expressions, micro-expressions are involuntary and transient facial expressions capable of revealing the genuine emotions that people attempt to hide. Therefore, they can provide important information in a broad range of applications such as lie detection, criminal detection, etc. Since micro-expressions are transient and of low intensity, however, their detection and recognition is difficult and relies heavily on expert experiences. Due to its intrinsic particularity and complexity, video-based micro-expression analysis is attractive but challenging, and has recently become an active area of research. Although there have been numerous developments in this area, thus far there has been no comprehensive survey that provides researchers with a systematic overview of these developments with a unified evaluation. Accordingly, in this talk, we first highlight the key differences between macro- and micro-expressions, then use these differences to

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贲晛烨
Xianye Ben

guide our research survey of video-based micro-expression analysis in a cascaded structure, encompassing the neuropsychological basis, datasets, features, spotting algorithms, recognition algorithms, applications and evaluation of state-of-the-art approaches. For each aspect, the basic techniques, advanced developments and major challenges are addressed and discussed. Furthermore, after considering the limitations of existing micro-expression datasets, we present and release a new dataset — called micro-and-macro expression warehouse (MMEW) —containing more video samples and more labeled emotion types. We then perform a unified comparison of representative methods on CAS(ME)2 for spotting, and on MMEW and SAMM for recognition, respectively. Finally, some potential future research directions are explored and outlined.

嘉宾简介

刘满华 教授，博士生导师
上海交通大学人工智能研究院

Manhua Liu
Professor of Shanghai Jiao Tong University

刘满华于 2006 年博士毕业于新加坡南洋理工大学信息技术系；于 2007.1-2008.7 在新加坡南洋理工大学从事博士后研究；2008 年 8 月至今在上海交通大学电子信息与电气工程学院。并于 2011-2012 年在美国北卡罗来纳大学教堂山分校医学院生物信息中心访学一年。近十多年一直从事人工智能和图像识别领域的关键技术研究，包括多模态医学影像智能计算和分析、人工智能、指纹识别、机器视觉等关键技术研究。在国内外重要刊物如 IEEE Trans，Neuroimage, Human Brain Mapping, PR 等发表论文 50 余篇，其中 SCI 收录 30 余篇。作为负责人主持国家自然科学基金 5 项、国家重点研发计划“数字诊疗装备研发专项”课题 1 项、教育部基金 2 项、上海市自然科学基金 1 项等多项。目前主要研究兴趣包括深度学习、图像特征提取、多模态医学影像融合分析等。

Manhua Liu is currently a full Professor and PhD advisor with the Artificial Intelligence Institute, Shanghai Jiao Tong University, China. She received the Ph.D. degree from Nanyang Technological University, Singapore in 2006. From January 2007 to July 2008, she was a post-doc research fellow at Nanyang University of technology. From August 2008 to now, she worked in the school of Electronic Information and Electrical Engineering, Shanghai Jiao Tong University. From 2011 to 2012, she visited the bioinformatics center of the medical school at the University of North Carolina at Chapel Hill. In recent years, she has been engaged in the research of key technologies in artificial intelligence and image recognition, including multimodal medical image computing and analysis, artificial intelligence, fingerprint recognition, machine vision and so on. She has published more than 50 SCI/EI papers in top journals and conference proceedings such as IEEE Trans, neuroimage, human brain mapping and PR, etc.. As the PI, she has also collaborated on 5 NSFC projects, 1 National Key

嘉宾简介

刘满华
Manhua Liu

Research and Development Program sponsored project, 2 projects from the Ministry of education, 1 Shanghai Natural Science Funding project, etc. At present, the main research interests include deep learning, image feature extraction, multimodal medical image fusion analysis and so on

嘉宾简介

董　晶 副研究员
中科院自动化研究所

Jing Dong
Associate Professor of Institute of Automation, Chinese Academy of Sciences

董晶，女，博士，2010 年博士毕业于中科院自动化研究所模式识别国家重点实验室，现任中国科学院自动化研究所智能感知与计算研究中心副研究员。

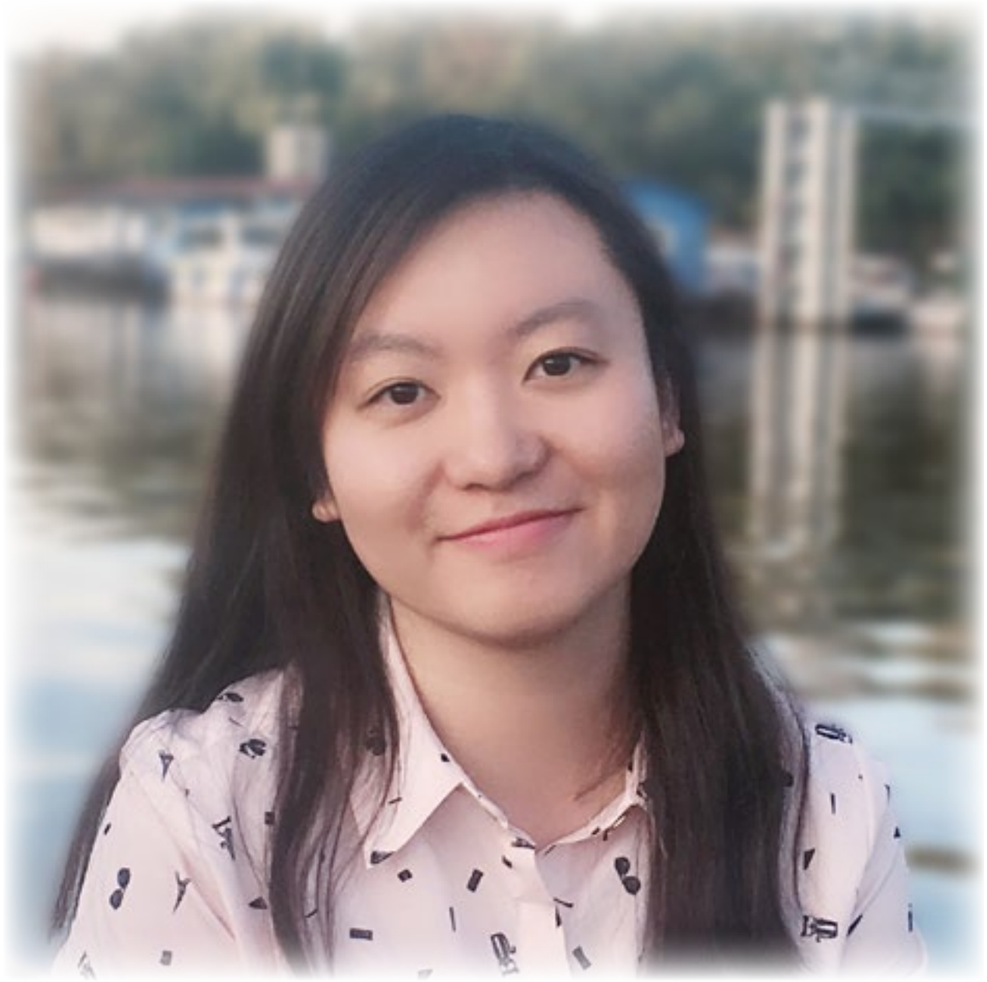
董晶博士主要从事图像处理、计算机视觉、多媒体内容安全方面的研究工作，已在国际权威期刊及学术会议上发表学术论文 50 余篇，申请发明专利 20 余项，其中已授权 10 项中国专利及 3 项美国专利。她主持或主要参与了国家 863 计划、973 计划，科技支撑计划、重点研发计划、国家自然科学基金等 20 余项国家和省部级科研项目。她现为中国科学院青年创新促进会会员；中国人工智能 (CAAI) 学会理事、杰出会员；中国图象图形学学会 (CSIG) 理事、副秘书长；CSIG 女科技工作者委员会秘书长，CSIG 数字媒体取证与安全专委会常委、副秘书长、CSIG 视觉大数据专委会委员、中国计算机学会 (CCF) 计算机视觉专业委员会委员，北京图象图形学学会 (BSIG) 常务理事、青工委主任委员；亚太信号与信息处理协会 (APSIPA) 多媒体安全取证专委会委员、美国电气电子工程师学会 (IEEE) 高级会员、IEEE 亚太区执委、IEEE 亚太区人道主义科技活动委员会主席（2019-2022）、IEEE 亚太区女工程师委员会主席（2017-2018）、IAPR《Newsletter》主编，Elsevier《Journal of Information Security and Application》国际期刊的副主编，曾获 2016 年度 IBM 教职人员奖、2018 年度国际模式识别大会最佳科技论文奖、2019 年度中国人工智能学会杰出贡献会员奖、2020 年度 CSIG 石青云女科学家奖（青年组）。她还多次担任 IEEE TIFS, TIP, IJCAI，ICCV，ECCV，CVPR，ICIP，ICPR 等本领域权威的国内外相关学术会议的论文评审与会议组织工作。

嘉宾简介

董 晶
Jing Dong

Dr. Jing Dong is currently an Associate Researcher in the National Laboratory of Pattern Recognition in the Institute of Automation, Chinese Academy of Sciences. Her research interests include pattern recognition, computer vision and artificial intelligent. She is a senior member of IEEE, CSIG, and the member of several international and national technology committees and actively volunteered herself in severing these communities as an important female volunteer leader over 13 years. She is the IEEE Region Asia&Pacific ExCom member, Humanitarian Technology Activities Committee Chair, Vice-Chair of Women in Engineering Beijing Affinity Group, Council member of CSIG and CAAI, and the Secretary-General of Women in CSIG. She was awarded with the IBM Faculty Award(2016), the ICPR Best Scientific Paper Award (2018), the Outstanding Individual Member Award (2019), and the CSIG Outstanding Female Young Scientist Award (2020).

嘉宾简介



张 曼 教授
北京邮电大学

Man Zhang
Professor of Beijing University of Posts and Telecommunications

张曼，女，工学博士，现任北京邮电大学人工智能学院教授。2013年于中国科学院自动化研究所模式识别国家重点实验室获得工学博士学位，曾任中国科学院自动化研究所助理研究员、副研究员，银河水滴科技公司高级总监。研究方向为计算机视觉、模式识别、生物特征识别等。承担 / 参与国家和省部级科研项目 25 项，发表文章 30 篇，授权专利 8 项。曾入选北京市科协青年人才托举工程、北京市科技新星和北京市三八红旗奖章。

Prof. Man Zhang received the PhD degree in Computer Science from the Institute of Automation, Chinese Academy of Sciences(CASIA) in 2013. She successively held the posts of Assistant Professor, Associate Professor in CASIA and Director in Watrix Technology. Now she is a professor in School of Artificial Intelligence, Beijing University of Posts and Telecommunications. Her current research focuses on computer vision, pattern recognition and biometrics. She presided over or mainly participated in 25 national and provincial scientific research projects. She has published 30 academic papers in international authoritative journals and academic conferences, authorized 8 patents. She was awarded the Beijing Nova program, Beijing Association for Science and Technology "Young Talents Support Project" etc.

嘉宾简介

王　茜 高级工程师
上海交通大学

Qian Wang
Senior Engineer, Shanghai Jiao Tong University

王茜，女，高级工程师，上海大学计算机应用技术专业博士，现任上海交通大学人工智能研究院在职博士后。主研领域：人工智能，计算机视觉，生物特征识别，区块链技术。拥有多年政务服务、公共安全领域项目搭建经验。

Prof. Qian Wang received the PhD degree in Computer Science and technology from the Institute of Computer Engineering and Science, Shanghai University in 2018. She is now an on-the-job Postdoctoral Fellow of the Institute of Artificial Intelligence of Shanghai Jiaotong University. Her current research focuses on artificial intelligence, computer vision, biometrics, block-chain technology. She has nearly 20 years of experience in project construction related to government administration and public security fields.

大会日程

9/10/2021
09:00-21:00

CCBR 2021

生物特征识别理论前沿 IEEE-WIE 论坛
IEEE-WIE Forum on the Frontier of Biometrics

09:00-21:00	会议签到、注册 Registration
14:00-16:00	专题报告 Invited Talk
	报告一：基于深度神经网络的计算机辅助生物信号疾病自动检测 Speech 1:Computer-Aided Automatic Disease detection from Biosignals based on Deep Neural Networks
	西莉亚·沙纳兹 教授 孟加拉工程技术大学 Celia Shahnaz, Professor of Bangladesh University of Engineering and Technology
	报告二：面部微表情视频分析：数据、特征、算法和挑战 Speech 2:Towards Video-based Facial Micro-Expression Analysis: Datasets, Features, Algorithms, and Challenges
	贲晛烨 教授 山东大学 Xianye Ben, Professor of Shandong University
	主持人：方昱春 教授 上海大学 Chair:Yuchun Fang, Professor of Shanghai University
16:00-17:00	专题辩论 Panel
	主题：WIE 视角下的生物特征识别技术与应用 Topic: T&A of Biometrics in the Perspective of WIE
	特邀嘉宾 Invited Speakers：
	西莉亚·沙纳兹 教授 孟加拉工程技术大学 Celia Shahnaz, Professor of Bangladesh University of Engineering and Technology
	贲晛烨 教授 山东大学 Xianye Ben, Professor of Shandong University
	刘满华 教授 上海交通大学 Manhua Liu, Professor of Shanghai Jiao Tong University
	董　晶 副研究员 中科院自动化研究所 Jing Dong, Associate Professor of Institute of Automation, Chinese Academy of Sciences
	张　曼 教授　北京邮电大学 Man Zhang, Professor of Beijing University of Posts and Telecommunications
	王　茜 高级工程师 上海交通大学 Qian Wang, Senior Engineer, Shanghai Jiao Tong University
	主持人：孙　妍 博士 上海大学 Chair:Yan Sun, Assistant Professor of Shanghai University

大会日程

9/11/2021
08:00-18:00

CCBR 2021

线上会议链接
Online conference link

08:00-18:00	会议签到、注册 Registration
08:30-09:00	开幕式 Opening Ceremony 主持人：张军平 教授 复旦大学 Chair: Junping Zhang, Professor of Fudan University 欢迎致辞：汪小帆 教授 上海大学副校长 Welcome Speech: Xiaofan Wang, Vice President of Shanghai University 大会组织报告：方昱春 教授 上海大学 Organization Report: Yuchun Fang,Professor of Shanghai University
09:00-10:00	特邀报告 1：从信息理论视角探索生物特征识别中的机器学习 Keynote Speech 1: An Information Theoretic Perspective on Machine Learning in Biometrics 报告人：约瑟夫·克特勒 教授 英国萨里大学，江南大学 Speaker: Josef Kittler, Professor of University of Surrey and Jiangnan University 主持人：孙哲南 研究员 中科院自动化研究所 Chair: Zhenan Sun, Professor of Institute of Automation, Chinese Academy of Sciences
10:20-11:20	口头报告（长）1：多生物特征与新兴生物特征识别 Oral Session 1:Multi-biometrics and emerging biometric recognition 主持人：杨金锋 教授 深圳职业技术学院 / 葛永新 副教授 重庆大学 Session Chair:Jinfeng Yang, Professor of Shenzhen Polytechnic / Yongxin Ge, Associate Professor of Chongqing University

口头报告（长）1：多生物特征与新兴生物特征识别 （5 篇）
Oral Session 1: Multi-biometrics and emerging biometric recognition

10:20-10:32	**Oral 40** End-to-end Finger Trimodal Features Fusion and Recognition Model Based on CNN Mengna Wen; Haigang Zhang *; Jinfeng Yang
10:32-10:44	**Oral 28** Skeleton-Based Action Recognition with Improved Graph Convolution Network Xuqi Yang; Jia Zhang; Rong Qin; Yunyu Su; Shuting Qiu; Jintian Yu; Yongxin Ge *

10:44-10:56	**Oral 9** A Novel Dual-modal Biometric Recognition Method Based on Weighted Joint Sparse Representation Classifaction Chunxin Fang; Hui Ma *; Zedong Yang
10:56-11:08	**Oral 13** Personal Identification with Exploiting Competitive Tasks in EEG Signals Menglu Zhou;Yuchun Fang *;Zhengye Xiao
11:08-11:20	**Oral 61** 3D Context-Aware PIFu for Clothed Human Reconstruction Tingting Liao;Xiangyu Zhu;Zhen Lei *;Stan Z. Li

13:00-14:00	**特邀报告 2：深度学习的自动化探索** Keynote Speech 2: Towards Automated Learning for Deep Learning
	报告人：欧阳万里 副教授 悉尼大学 Speaker: Wanli Ouyang, Associate Professor of University of Sydney
	主持人：刘满华 教授 上海交通大学 Chair: Manhua Liu, Professor of Shanghai Jiao Tong University
14:00-15:00	**企业宣讲** Enterprise propaganda
	主持人：贾伟 副教授 合肥工业大学 Chair: Wei Jia, Associate Professor of Hefei University of Technology
15:00-16:30	**口头报告（短）1：生物特征识别** Short Oral Session 1:Biometrics Recognition
	主持人：赵启军 教授 四川大学 / 蔡忠闽 教授 西安交通大学 Session Chair:Qijun Zhao, Professor of Sichuan University / Zhongmin Cai, Professor of Xi'an Jiaotong University

口头报告（短）1：生物特征识别（15 篇）
Short Oral Session 1: Biometrics Recognition

15:00-15:06	**Oral 81** Palatal Rugae Recognition via 2D Fractional Fourier Transform Jinbo Wei;Hong Shangguan *;Qiang Luo;Xiong Zhang;Bing Li;Zhigang Jia
15:06-15:12	**Oral 14** Fusion of Partition Local Binary Patterns and Convolutional Neural Networks for Dorsal Hand Vein Recognition Kefeng Li *;Quankai Liu;Guangyuan Zhang

15:12-15:18	**Oral 50** Automatically Distinguishing Adult from Young Giant Pandas Based on Their Call Yanqiu Zhang;Rong Hou;Longyin Guo;Peng Liu;Shan Zhang;Peng Chen;Qijun Zhao *
15:18-15:24	**Oral 47** Full Quaternion Matrix and Random Projection for Bimodal Face Template Protection Zihan Xu;Zhuhong Shao *;Yuanyuan Shang;Zhongshan Ren
15:24-15:30	**Oral 49** To See Facial Expressions Through Occlusions via Adversarial Disentangled Features Learning with 3D Supervision Wenxue Yuan;Qijun Zhao *;Feiyu Zhu;Zhengxi Liu
15:30-15:36	**Oral 71** Low-quality 3D Face Recognition with Soft Thresholding Shudi Xiao;Shuiwang Li;Qijun Zhao *
15:36-15:42	**Oral 75** An Arcloss-based and Openset-test-oriented Finger Vein Recognition System Zhenxiang Chen;Wangwang Yu;Haohan Bai;Yongjie Li *
15:42-15:48	**Oral 29** Incomplete Texture Repair of Iris Based on Generative Adversarial Networks Yugang Zeng;Ying Chen *;Huimin Gan;Zhuang Zeng
15:48-15:54	**Oral 36** Signatured Fingermark Recognition based on Deep Residual Network Yongliang Zhang;Qiuyi Zhang;Jiali Zou;Weize Zhang *;Xiang Li;Mengting Chen;Yufan Lv
15:54-16:00	**Oral 44** Mouse Dynamics Based Bot Detection Using Sequence Learning Hongfeng Niu;Jiading Chen;Zhaozhe Zhang;Zhongmin Cai *
16:00-16:06	**Oral 48** Portrait Thangka Image Retrieval via Figure Re-Identification Xire Danzeng;Yuchao Yang;Yufan Yang;Zhao Hou;Rui Xi;Xinsheng Li;Qijun Zhao;Pubu Danzeng;Gesang Duoji *;Dingguo Gao
16:06-16:12	**Oral 60** Cognitive Analysis of EEG Signals Induced by Visual Stimulation of Facial Emotion Chen Chen;Yuchun Fang *
16:12-16:18	**Oral 63** An Efficient Joint Bayesian Model with Soft Biometric Traits for Finger Vein Recognition Liping Zhang;Linjun Sun;Xiaoli Dong;Lina Yu;Weijun Li *;Xin Ning

16:18-16:24	**Oral 77** Different Dimension Issues in Deep Feature Space for Finger-vein Recognition Yiqi Zhong;Jiahui Li;Tingting Chai;Shitala Prasad;Zhaoxin Zhang *
16:24-16:30	**Oral 30** Deepfakes Detection Based On Multi Scale Fusion Peng Sun *;ZhiYuan Yan;Zhe Shen;ShaoPei Shi;Xu Dong

16:30-17:30

口头报告（长）2： 手部生物特征识别
Oral Session 2: Hand biometric recognition

主持人：冯建江 副教授 清华大学 / 金长龙 副教授 山东大学
Session Chair:Jianjiang Feng, Associate Professor of Tsinghua University / Changlong Jin, Associate Professor of Shandong University

口头报告（长）2：手部生物特征识别（5 篇）
Oral Session 2: Hand biometric recognition

16:30-16:42	**Oral 35** Finger Crystal Feature Recognition Based on Graph Neural Networks Zihao Zhao *;Ziyun Ye;Jinfeng Yang;Haigang Zhang
16:42-16:54	**Oral 26** Finger Vein Recognition Using a Shallow Convolutional Neural Network Jiazhen Liu;Ziyan Chen;Kaiyang Zhao;Minjie Wang;Zhen Hu;Xinwei Wei;Yicheng Zhu;Yuncong Yu;Zhe Feng;Hakil Kim;Changlong Jin *
16:54-17:06	**Oral 53** A Lightweight CNN using HSIC Fine-tuning for Fingerprint Liveness Detection Chengsheng Yuan *;Jie Chen;Mingyu Chen;Wei Gu
17:06-17:18	**Oral 23** Pose-Specific 3D Fingerprint Unfolding Xiongjun Guan;Jianjiang Feng *;Jie Zhou
17:18-17:30	**Oral 73** A Generalized Graph Features Fusion Framework for Finger Biometric Recognition Hongxu Qu;Haigang Zhang *;Jinfeng Yang;Zhitao Wu;Liming He

大会日程

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线上会议链接
Online conference link

09:00-10:00	特邀报告 3：Keynote Speech 3: 可信生物识别技术：未来十年的生物识别技术研究 Trustworthy Biometrics: Sustaining Biometrics Research into the Next Decade 报告人：刘小明 教授 密歇根州立大学 Speaker: Xiaoming Liu, Foundation Professor of Michigan State University 主持人：张军平 教授 复旦大学 Chair: Junping Zhang, Professor of Fudan University
10:00-11:00	口头报告（长）3：Oral Session 3: 脸部生物特征识别 Facial biometric recognition 主持人：沈琳琳 教授 深圳大学 / 毋立芳 教授 北京工业大学 Session Chair:Linlin Shen, Professor of Shenzhen University / Lifang Wu, Professor of Beijing University of Technology

口头报告（长）3：脸部生物特征识别（5 篇）
Oral Session 3: Facial biometric recognition

10:00-10:12	**Oral 66** Wavelet-based Face Inpainting with Channel Relation Attention Huiwen Shao;Yunlian Sun *
10:12-10:24	**Oral 8** Holistic Co-occurrence Prior for High-density Face Detection Qixiang Geng;Dong Liang *
10:24-10:36	**Oral 32** One-Class Face Anti-spoofing Based on Attention Auto-encoder Xiaobin Huang;Jingtian Xia;Linlin Shen *
10:36-10:48	**Oral 84** Embedding Fast Temporal Information Model to Improve Face Anti-spoofing Yaowen Xu;Lifang Wu *;Yongluo Liu;Zhuming Wang
10:48-11:00	**Oral 59** Face Attribute Estimation with HMAX-GCNet Model Zeyuan Deng;Yuchun Fang *;Yaofang Zhang

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13:00-14:00

口头报告（长）4：Oral Session 4:

语音处理
Speech processing

主持人：库尔班·吾布力 教授 新疆大学 / 杨莹春 副教授 浙江大学
Session Chair:Kurban Ubul, Professor of Xinjiang University / Yingchun Yang, Associate Professor of Zhejiang University

口头报告（长）4：语音处理（5 篇）
Oral Session 4: Speech processing

13:00-13:12	**Oral 82** Explore the Use of Self-supervised Pre-trained Acoustic Features on Disguised Speech Detection Quan Jie;Yingchun Yang *
13:12-13:24	**Oral 34** Attention Network with GMM based Feature for ASV Spoofing Detection Zhenchun Lei *;Hui Yu;Yingen Yang;Minglei Ma
13:24-13:36	**Oral 37** Cross-corpus Speech Emotion Recognition Based on Sparse Subspace Transfer Learning Keke Zhao;Peng Song *;Wenjing Zhang;Weijian Zhang;Shaokai Li;Dongliang Chen;Wenming Zheng
13:36-13:48	**Oral 33** Jointing Multi-task Learning and Gradient Reversal Layer for Far-field Speaker Verification Wei Xu;Xinghao Wang;Hao Wan;Guo Xin;Junhong Zhao *;Feiqi Deng;Wenxiong Kang
13:48-14:00	**Oral 62** Channel Enhanced Temporal-Shift Module for Efficient Lipreading Hao Li;Mutallip Mamut;Nurbiya Yadikar;Yali Zhu;Kurban Ubul *

14:00-15:00

口头报告（短）2：Short Oral Session 2:

脸部和手部生物特征识别
Facial and Hand Biometric Recognition

主持人：刘满华 教授 上海交通大学 / 王伟 副研究员 中科院自动化研究所
Session Chair:Manhua Liu, Professor of Shanghai Jiao Tong University / Wei Wang, Associate Professor of Institute of Automation, Chinese Academy of Sciences

口头报告（短）2：脸部和手部生物特征识别（9 篇）
Short Oral Session 2: Facial and Hand Biometric Recognition

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14:00-14:06	**Oral 42** An Improved Finger Vein Recognition Model with a Residual Attention Mechanism Weiye Liu;Huimin Lu *;Yupeng Li;Yifan Wang;Yuanyuan Dang
14:06-14:12	**Oral 54** Kinship Verification via Reference List Comparison Wenna Zheng;Junlin Hu *
14:12-14:18	**Oral 65** A Novel Local Binary Operator Based on Discretization for Finger Vein Recognition Chengcheng Zhao;Huimin Lu *;Yupeng Li;Weiye Liu;Ruoran Gao
14:18-14:24	**Oral 41** Dorsal Hand Vein Recognition Based on Transfer Learning with Fusion of LBP Feature Gaojie Gu;Peirui Bai *;Hui Li;Qingyi Liu;Han Chao;Xiaolin Min;Yande Ren
14:24-14:30	**Oral 72** Research on Face Degraded Image Generation Algorithm for Practical Application Scenes Li Yu *;Wenhao Xian;Mengyao Jiang
14:30-14:36	**Oral 55** A Deep Attention Transformer Network for Pain Estimation with Facial Expression Video Haochen Xu;Manhua Liu *
14:36-14:42	**Oral 31** Balance Training for Anchor-free Face Detection Chengpeng Wang;Chunyu Chen;Siyi Hou;Ying Cai;Menglong Yang *
14:42-14:48	**Oral 74** A STN-based Self-supervised Network for Dense Fingerprint Registration Yang Yu;Haixia Wang *;Yilong Zhang;Peng Chen
14:48-14:54	**Oral 17** A Systematical Solution for Face De-identification Songlin Yang;Wei Wang *;Yuehua Cheng;Jing Dong

15:00-16:00

口头报告（短）3： Short Oral Session 3:

新兴生物特征识别和技术
Emerging biometric recognition and techniques

主持人：雷柏英 副教授 深圳大学 / 王云龙 副研究员 中科院自动化研究所
Session Chair:Baiying Lei, Associate Professor of Shenzhen University / Yunlong Wang, Associate Professor of Institute of Automation, Chinese Academy of Sciences

口头报告（短）3：新兴生物特征识别和技术（9 篇）
Short Oral Session 3: Emerging biometric recognition and techniques

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15:00-15:06	**Oral 64** Facial Expression Synthesis With Synchronous Editing Of Face Organs Jiangnan Dai *
15:06-15:12	**Oral 12** Iris Normalization Beyond Appr-circular Parameter Estimation Zhengquan Luo;Haiqing Li;Yunlong Wang *;Zilei Wang;Zhenan Sun
15:12-15:18	**Oral 46** Auricular Point Localization Oriented Region Segmentation for Human Ear Li Yuan *;Xiaoyu Wang;Zhichun Mu
15:18-15:24	**Oral 25** Non-Segmentation and Deep-Learning Frameworks for Iris Recognition Wenqiang Wu;Ying Chen *;Zhuang Zeng
15:24-15:30	**Oral 45** A New Age-groups Classifying Method for Irrawaddy Dolphin Min Sheng;Qingxuan He;Kangwei Wang;Daoping Yu;Benyue Su *
15:30-15:36	**Oral 52** Alzheimer's Disease Prediction via the Association of Single Nucleotide Polymorphism with Brain Regions Yafeng li;Yiyao Liu;Tianfu Wang;Baiying Lei *
15:36-15:42	**Oral 68** Monocular 3D Target Detection Based on Cross-modal and Mass Perceived Loss Jingang Chen;Fengsui Wang *;Furong Liu;Qisheng Wang
15:42-15:48	**Oral 69** Multi-lingual Hybrid Handwritten Signature Recognition Based on Deep Residual Attention Network Wanying Li;Mahpirat;Wenxiong Kang;Alimjan Aysa;Kurban Ubul *
15:48-15:54	**Oral 80** Traumatic Brain Injury Images Classification Method Based on Deep Learning Shaojie Zhang;Taiyang Cao;Haifeng Zhao *
16:00-17:30	大会闭幕式 Closing Ceremony
	主持人：方昱春 教授 上海大学 Chair: Yuchun Fang, Professor of Shanghai University
	闭幕致辞：孙哲南 研究员 中科院自动化研究所 Closing Speech: Zhenan Sun, Professor of Institute of Automation, Chinese Academy of Sciences

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蚂蚁集团是移动支付平台支付宝的母公司，也是全球领先的金融科技开放平台，致力于以科技推动包括金融服务业在内的全球现代服务业的数字化升级，携手合作伙伴为消费者和小微企业提供普惠、绿色、可持续的服务，为世界带来微小而美好的改变。作为全球科技的领先公司，不断创新并与行业开放共享，让科技服务更普惠、更便捷、更有温度。

数据库

计算技术的发展和普及，是实现普惠金融的基础。我们通过十多年的探索和实践，突破一个又一个世界级难题。其中，基于通用硬件的 OceanBase 分布式数据库、SOFA 分布式中间件等创新，开创了国产自主研发和世界级分布式计算的新格局。

蚂蚁自研 OceanBase 卫冕数据库基准性能测试（TPC-C）世界纪录，tpmC 成绩 7.07 亿，比七个月前的自己提升超 11 倍。

区块链

我们致力于用区块链技术构建新一代的信任机制，提高价值流转和多方协同的效率，赋能实体经济，成为推动数字经济发展的引擎。蚂蚁链是我们自主研发、国际领先的金融级联盟区块链平台，具有高性能、高可靠、高安全的特点，能够支撑 10 亿账户 X 10 亿日交易量的超大规模应用。目前，蚂蚁链区块链专利申请和授权量均为全球第一。

2018 年 6 月，AlipayHK 联合菲律宾电子钱包 GCash 上线全球首个区块链跨境汇款服务，为香港和菲律宾居民提供便捷、安全、透明、低成本的汇款服务。

人工智能

人工智能是我们技术战略的重要组成部分，包含机器学习、图识别、人脸识别、NLP 等世界领先的 AI 领域技术。除了提升自身风控决策能力、改善服务体验等，我们还向各行各业输出更快更稳健的核心 AI 技术能力。

凭借我们人工智能技术的应用，网商银行让原先耗费在人工上的成本被计算机与人工智能所取代，不仅提高了效率，更让小微企业降低了贷款成本，实现了 "310"（3 分钟申请、1 秒钟放款、0 人工介入）全流程无接触贷款。

IoT 技术

万物互通互联是 IoT 技术的核心，也是我们重要的技术战略。我们希望使用 IoT 技术，全面提升蚂蚁的金融生活服务能力，为用户创造更便捷的服务和更大的价值。目前，我们已经将 IoT 技术应用到了包括无人值守、无感支付、智慧门店、智慧出行等多个场景。

2016 年 8 月，在支付宝支持下，杭州在全国首次实现刷手机二维码乘公交。

安全科技

我们致力于推动智能风控、生物核身、数据安全三大安全技术领域的研究和探索，依托八大安全实验室展开前沿性安全技术研究，打造全球领先的、全方位的安全防御体系，对用户提供包括资金安全、数据安全在内的、多维度的有效保障。同时携手安全生态合作伙伴，打造最受用户信赖的数字生活开放平台。

支付宝自主研发的智能风控引擎 AlphaRisk，是全球最先进的风控系统之一。在其保护下，支付宝交易风险率不到千万分之 0.64。

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全球步态识别领导者

中科院孵化企业

步态识别
精确度
NO.1

步态
数据库
NO.1

步态识别优势

- 50米远距离识别
- 360度全视角识别
- 无感知识别
- 不受光照影响
- 抗伪装

实战效果

银河水滴步态识别技术已协助武汉、宁波、广州、重庆等多地警方侦破数十起疑难案件

中科虹霸-虹膜识别技术领跑者

北京中科虹霸科技有限公司(中科虹霸)由中科院自动化研究所设立,专业从事生物特征识别、机器视觉等人工智能领域的技术研究、产品开发与成果转化的国家级高新技术企业。

公司独有的虹膜识别核心技术源自中科院自动化所模式识别国家重点实验室谭铁牛院士团队20多年累积的科研成果,荣获国家技术发明二等奖,在国际虹膜识别算法公开竞赛NICE.I和NICE.II中两度夺魁,处于世界先进水平,相关产品和技术已经在公安、金融、智能终端、矿山安全管理等领域应用,并已出口至印度、菲律宾以及非洲、欧洲、中东等国家和地区。

产品介绍

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高清虹膜图像采集设备，1秒快速存储、识别虹膜特征，用于大规模人群虹膜采集和建库。

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柜式虹膜识别机
IR2000

主动视觉反馈的双目虹膜采集设备，可配合闸机使用，可应用于各类办公企业、矿山、医院等门禁、考勤、人员管理。

应用案例

网 站： www.irisking.com

电 话:+86-10-62529086

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