浙江大學信息學部

AnnualReport 2024

FACULTY OF INFORMATION TECHNOLOGY
ZHEJIANG UNIVERSITY

责任编辑：梁莉莉 周立芳 谌群芳

浙江大學信息學部
FACULTY OF INFORMATION TECHNOLOGY,
ZHEJIANG UNIVERSITY

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浙江大學信息學部
Faculty of Information Technology
Zhejiang University

Annual 年报 Report 2024

学部概况 Introduction to FIT

信息学部涵盖了光电科学与工程学院（光电学院）、信息与电子工程学院（信电学院）、控制科学与工程学院（控制学院）、计算机科学与技术学院（计算机学院）、网络空间安全学院（网安学院）、软件学院、生物医学工程与仪器科学学院（生仪学院）、集成电路学院、人工智能学院。学部共有12个本科专业，11个一级学科，其中光学工程、控制科学与工程、计算机科学与技术、软件工程入选国家“双一流”建设学科名单，这四个学科也被教育部评为A+学科。学部拥有5个全国重点实验室，1个国家工程实验室，3个国家工程（技术）研究中心，共有25个研究所，主要开展信息领域科学和工程技术问题的创新研究。

Faculty of Information Technology (FIT) of Zhejiang University (ZJU) comprised of College of Optical Science and Engineering (COSE), College of Information Science and Electronic Engineering (ISEE), College of Control Science and Engineering (CSE), College of Computer Science and Technology (CCST), College of Cyber Science and Technology, College of Biomedical and Engineering and Instrument Science (BME), College of Software Technology (CST), College of Integrated Circuits (CIC) and College of Artificial Intelligence (CAI). Currently, FIT has 12 undergraduate programs and 11 primary disciplines, in which there are 4 disciplines both assessed as A+ by MOE and constructed as National “Double First-Class” discipline, they are Optical Engineering, Control Science and Engineering, Computer Science and Technology, and Software Engineering. There are 5 State Key Laboratories, 1 National Engineering Laboratory, 3 National Engineering Research Centers, 25 research institutes, to devote to the innovation research on information science and technology.

主任：陈 纯
Dean : Chen Chun

副主任：李尔平
Vice-Dean : Li Erping

副主任：邱建荣
Vice-Dean : Qiu Jianrong

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  Sun Lingyun Yang Jianyi Shi Yaocheng Wu Fei
  Wu Hanming Qiu Jianrong Zhang Hong Zhang Zhaoyang
  Chen Gang Chen Hongsheng Chen Jiming Chen Yaowu
  Shao Zhijiang Zhao Minjian Zhang Xianmin Cheng Peng
  Bao Hujun Xiong Rong Pan Gang Dai Daoxin

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  周 泓

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  Zhang Zhaoyang Chen Xi Chen Wei Chen Jiming
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  Lin Xiao Lin Hui Lin Feng Zhuo Cheng Xu Yang

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  Sun Shouqian Li Chunguang Yang Yi Xiao Jun
  Shi Yaocheng He Xiangning Chen Hongsheng Zhou Hong
  Zhao Daomu Huang Zhiyao Yu Xiaopeng

学部学院 COLLEGE OF

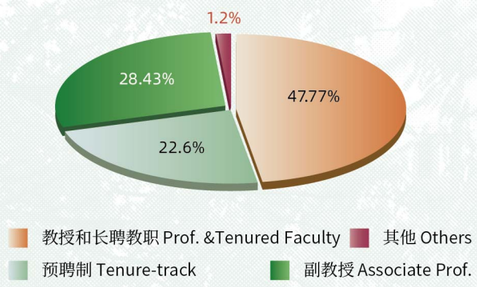
师资队伍
Talent Team

学部教职员工833人，其中专任教师584人，国家级高层次人才76人、优秀青年人才123人。现有中国两院院士6人，浙江省特级专家10人。国家自然科学基金创新群体3个，教育部创新团队2个。

2024年，19位教师入选国家级人才计划，其中国家杰出青年基金获得者1人，国家优秀青年基金获得者2人。2位教师入选享受政府特殊津贴人员名单。2位教师评聘为长聘教授，10位教师评聘为长聘副教授，4位教师晋升教授，1位教师晋升副教授。引进专任教师22人，其中预聘制教师18人。

FIT has 833 full-time faculty and staff members, including 584 faculty members, 76 national high-level talents and 123 national excellent youth talents. There are 6 members of Chinese Academy of Engineering and Chinese Academy of Sciences, 10 Zhejiang Provincial Distinguished Experts, 3 Innovative Research Groups of NSFC and 2 Innovative Research Teams of MOE.

In 2024, 19 teachers were selected into the national talent programs, including 1 winner of NSFC for Distinguished Young Scholar, and 2 winners of NSFC for Excellent Young Scholar. 2 professors won Government Special Allowance. 12 faculty members had got their tenure, 4 teachers were promoted to full professor and 1 teacher was promoted to associate professor. 22 new faculty members joined FIT.



2024年新增 Awarded in 2024

政府特殊津贴专家
Government Special Allowance Winner


陈 刚
Chen Gang


邱建荣
Qiu Jianrong

杰出青年基金获得者
National Distinguished Youth Science Foundation Fellow


章国锋
Zhang Guofeng

优秀青年基金获得者
National Excellent Youth Science Foundation Fellow


詹启伟
Zhan Qiwei


王冠云
Wang Guanyun

教授
Professor


方 伟
Fang Wei


单杭冠
Shan Hangguan


张 宇
Zhang Yu


杨 洋
Yang Yang

长聘教授
Tenured Professor


杨宗银
Yang Zongyin


周晓巍
Zhou Xiaowei

副教授
Associate Professor


向 为
Xiang Wei

长聘副教授
Tenured Associate Professor


马耀光
Ma Yaoguang


高 飞
Gao Fei


刘 安
Liu An


郑友怡
Zheng Youyi


林 峰
Lin Feng


秦 湛
Qin Zhan


林宏焘
Lin Hongtao


李林军
Li Linjun


刘智毅
Liu Zhiyi


郝 翔
Hao Xiang

科学研究
Scientific Research

2024年度财务到校科研经费逾15亿，纵向超65%，其中国家自然科学基金共获批169项，合计经费1.57亿，包含杰青1项，优青2项，重大重点等共21项，另共有5人获得科技部国家重点研发计划青年科学家项目资助。获省部级科技奖一等奖共8项。被SCI收录论文逾1100篇，其中高水平论文超60%。已获授权发明专利350余项。

In 2024, the total research funding of FIT reached over 1500 million RMB. 169 grants with the amount up to 157 million RMB were approved by the National Natural Science Foundation of China (NSFC), including 1 project for distinguished young scholar, 2 projects for excellent young scholar and 21 vital important projects. There are 8 projects achieved significant progress on the list of the 1st prize of Zhejiang Provincial and Ministerial Awards for Science & Technology (Sci. &Tech). 1100+ papers were indexed by SCI and 350+ national patents have been approved this year.

国家研究基地 National Research Base

国家研究基地
National Research Base

- **国家重点（工程）实验室**
  State Key (Engineering) lab
  - 计算机辅助设计与图形系统全国重点实验室
    State Key Laboratory of CAD&CG
  - 极端光学技术与仪器全国重点实验室
    State Key Laboratory of Extreme Photonics and Instrumentation
  - 工业控制技术全国重点实验室
    State Key Laboratory of Industrial Control Technology
  - 脑机智能全国重点实验室
    State Key Laboratory of Brain-Machine Intelligence
  - 区块链与数据安全全国重点实验室
    State Key Laboratory of Blockchain and Data Security
  - 工业控制系统安全技术国家工程实验室
    National Engineering Laboratory for Industrial Control Systems Security & Safety Technology
- **国家工程研究中心**
  National Engineering Research Centre
  - 国家光学仪器工程技术研究中心
    National Engineering Research Centre for Optical Instrumentation
  - 工业自动化国家工程研究中心
    National Engineering Research Centre of Industrial Automation
  - 国家列车智能化工程技术研究中心
    National Engineering Reasearch Centre for Train Intelligent

研究所 Institute

学 院 College of	研究所名称 Institute	所 长 Director
光电科学与工程学院 Optical Science and Engineering	光学工程研究所 Inst. of Optical Engineering	刘 崇 Prof. Liu Chong
	光学成像与检测技术研究所 Inst. of Optical Imaging and Detection Technology	李 奇 Prof. Li Qi
	光学惯性技术工程中心 Center for Optical Inertial Technology	黄腾超 Prof. Huang Tengchao
	光电工程研究所 Inst. of Optical and Photonical Engineering	匡翠方 Prof. Kuang Cuifang
	光及电磁波研究中心 Center for Optical and Electromagnetic Research	钱 骏 Prof. Qian Jun
	微纳光子学研究所 Inst. of Microphotonics and Nanophotonics	张 磊 Prof. Zhang Lei
信息与电子工程学院 Information Science and Electronic Engineering	信息与通信网络工程研究所 Inst. of Information & Communication and Network Engineering	虞 露 Prof.Yu Lu
	智能通信网络与安全研究所 Inst. of Intelligent Communication Network and Security	赵民建 Prof. Zhao Minjian
	信号空间和信息系统研究所 Inst. of Signal Space and Information System	徐 文 Prof. Xu Wen
	微电子集成系统研究所 Inst. of Integrated Microelectronic Systems (IMS)	储 涛 Prof. Chu Tao
集成电路学院 Integrated Circuits	超大规模集成电路设计研究所 Inst. of VLSI Design	黄 凯 Prof. Huang Kai
	先进集成电路制造技术研究所 Inst. of Advanced IC Process and Manufacturing	高大为 Prof. Gao Dawei
控制科学与工程学院 Control Science and Engineering	工业控制研究所 Inst. of Industrial Process Control	陈积明 Prof. Chen Jiming
	智能感知与检测研究所 Inst. of Smart Sensing and Measurement	黄志尧 Prof. Huang Zhiyao
	智能系统与控制研究所 Inst. of Cyber-Systems and Control	苏宏业 Prof. Su Hongye
	工业智能与系统工程研究所 Inst. of Industry Intelligence and Systems Engineering	陈 曦 Prof. Chen Xi
	控制装备及综合安全研究所 Inst. of Control Equipment and Comprehensive Safety	王文海 Prof. Wang Wenhai
计算机科学与技术学院 Computer Science and Technology	人工智能研究所 Inst. of Artificial Intelligence	吴 飞 Prof. Wu Fei
	计算机软件研究所 Inst. of Computer Software	陈 刚 Prof. Chen Gang
	系统结构与先进计算研究所 Inst. of System Architecture and Advanced Computing	潘 纲 Prof. Pan Gang
	现代工业设计研究所 Inst. of Modern Industrial Design	孙凌云 Prof. Sun Lingyun
生物医学工程与仪器科学学院 Biomedical Engineering and Instrument Science	生物医学工程研究所 Inst. of Biomedical Engineering	刘清君 Prof. Liu Qingjun
	数字技术及仪器研究所 Inst. of Advanced Digital Technologies and Instrumentation	周 泓 Prof. Zhou Hong
	医疗健康信息工程技术研究所 Inst. of Medical and Health Information Engineering	叶学松 Prof. Ye Xuesong
	生物医学影像研究所 Inst. of Biomedical Imaging	徐晓音 Prof. Xu Xiaoyin

科研亮点 Research Highlight

1.学部个推青年创新奖 Youth Innovation Award

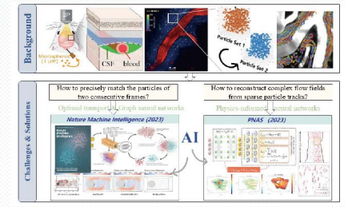
蔡声泽
控制学院

研究方向： 人工智能与科学计算

简介： 主要从事人工智能科学计算、复杂流体智能感知的交叉研究工作。面向航空航天与生物医学领域的流动机理表征需求，针对高维方程算不快、物理对象测不准、多场耦合测不全等问题，提出基于数据与模型双驱动人工智能的加速计算、视觉测量、融合感知方法，为此实现小鼠大脑脑脊液的三维动态流场测量和重建。在*Nature Machine Intelligence*（封面）、*Nature Communications*、*PNAS*等发表高水平论文30余篇，其中ESI高被引论文6篇，入选国家博士后海外引才专项等；相关成果获浙江大学十大学术进展提名奖、被Nature旗下期刊等新闻媒体报道。

Artificial Intelligence and Scientific Computing

Researcher Cai Shengze from CCST focuses on the interface of Artificial Intelligence (AI) and scientific computing, and the smart perception for complex fluid flows. According to the requirements of flow characterization in the fields of aerospace and biomedical engineering, he has made breakthroughs in data and physics-informed AI algorithms and their applications on accelerated computing, vision-based measurement, and fusion-based perception, aiming to address the challenges of low computational efficiency for high-dimensional equations, inaccurate measurement for physical phenomena, and incomplete measurement for coupled multi-physics, respectively. By these techniques, he has achieved dynamic 3D flow field reconstruction of cerebrospinal fluid in the mouse brain. He has published more than 30 academic papers in *Nature Machine Intelligence (cover)*, *Nature Communications*, *PNAS*, etc., including 6 ESI highly cited papers. He was also supported by the National Postdoctoral Overseas Talent Recruitment Project. His research works were reported by news media including Nature Portfolio, one of which was also nominated for the ZJU Top Ten Academic Progress Award.



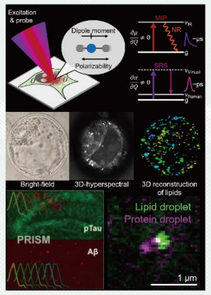
李炫祯
(Lee Hyeon Jeong)
生仪学院

研究方向： 生物医学光子学

简介： 主要从事生物医学光学成像与光谱技术研究工作，致力于可视化和解析生命系统中的生物过程。研究重点围绕开发新型分子振动光谱成像技术，实现对细胞代谢过程和生物分子动态的高分辨率成像，推动从基础机制研究向潜在临床应用的转化。创新性地开发了多项突破性的光谱成像方法，实现了无标记超分辨率成像、多维分子光谱成像，以及生物分子和代谢物在活体环境中的非侵入性检测。多模态成像与深度学习结合应用研究中，在解析生物分子空间动态机制方面取得显著成果。研究成果在*Science Advances*等高水平学术期刊发表多篇论文，并获得多项国际奖项。

Biomedical Optics

Researcher Lee Hyeon Jeong from BME primarily focuses on biomedical optical imaging and spectroscopic techniques, dedicated to visualizing and analyzing biological processes in living systems. Her research centers on developing novel molecular vibrational spectroscopic imaging technologies to achieve high-resolution imaging of cellular metabolic processes and biomolecular dynamics, promoting translation from basic mechanism research to potential clinical applications. Her technical innovations include the development of multiple innovative spectroscopic imaging methods, achieving label-free super-resolution imaging, complementary molecular vibrational spectroscopic imaging, and non-invasive detection of biomolecules and metabolites in living systems. She has made advances in elucidating the spatial dynamic mechanisms of biomolecules by combining multimodal imaging with deep learning. Her research has been published in high-impact journals such as *Science Advances*, and her contributions have been recognized through several international awards.



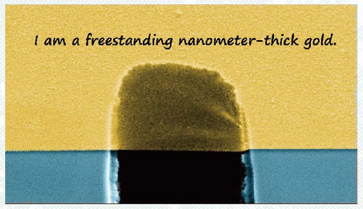
王攀
光电学院

研究方向： 纳米光子技术及应用

简介： 主要从事金属表面等离激元极端光场局域、调控及器件应用研究。首创原子级精度化学刻蚀技术，实现了厚度低至1nm的二维单晶等离激元金属的按需精准制备，获得了损耗接近理论极限的单晶等离激元纳米结构；以此为基础，提出并成功研制电驱动单晶等离激元纳米结构，可实现等离激元的高效电激发及调控，为等离激元纳米光子器件小型化提供新思路。相关创新性成果在*Nature Nanotechnology*、*Nature Communications*、*Science Advances*等期刊发表，引领单晶等离激元研究方向。

Nanophotonics and Its Applications

Researcher Wang Pan from COSE focuses on the extreme confinement and manipulation of optical fields with surface plasmons in metal nanostructures, as well as their nanophotonic device applications. He has developed an atomic-level precision chemical etching approach for the on-demand precise fabrication of two-dimensional single-crystal plasmonic metals with thicknesses down to ~1 nm, resulting in single-crystal plasmonic nanostructures with losses approaching the theoretical limit. Based on this, he proposed and developed electrically driven single-crystal plasmonic nanostructures successfully, achieving efficient electrical excitation and control of plasmons, thereby providing new approach for the miniaturization of plasmonic nanophotonic devices. These innovative achievements have been published in leading journals such as *Nature Nanotechnology*, *Nature Communications, and Science Advances*, positioning the research at the forefront of the single-crystal plasmonic field.



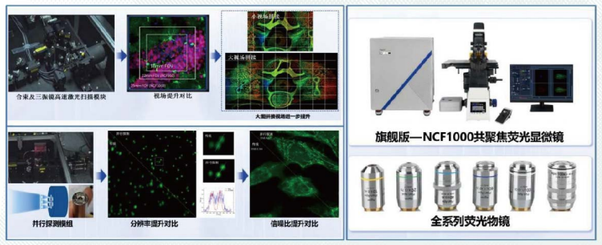
2.重大科研成果及进展 | New Important Projects and Significant Progress

❶ 高端荧光显微镜关键技术及应用

光电学院刘旭教授领衔的该项目获2023年浙江省技术发明奖一等奖。项目围绕高端荧光显微成像关键技术难题开展研究，发明了激发—探测双远心模式的三振镜快速扫描及并行探测等技术；实现了共聚焦显微镜扫描视场和速度2倍提升，图像分辨率和信噪比1.3倍提升，实现全自动切片扫描、活细胞长时程、超大生物组织成像等能力。成果突破了高端荧光显微镜核心器件批量化生产瓶颈，成功研制100%国产化率高端荧光显微镜产品并实现了产业化，构建了我国自主高端荧光显微镜系统，支撑我国在生物医药方面的高端光学显微仪器自主。

Techniques and Applications of Advanced Fluorescence Microscope

This project, led by Prof. Xu Liu from COSE, won the first prize of 2023 Zhejiang Provincial Technology Invention Award. The group focuses on the key technical problems of advanced fluorescence microscopy and invented technologies such as three-mirror rapid scanning and parallel detection in the excitation-detection dual telecentric mode, etc. The group achieved a 2-fold increase in the scanning field and speed of the confocal microscope, and a 1.3-fold increase in image resolution and signal-to-noise ratio, and achieved fully automatic slice scanning, long-term imaging of living cells, and ultra-large biological tissue imaging. The results broke through the bottleneck of mass production of advanced fluorescence microscope core devices, realized the development and industrialization of advanced fluorescence microscope products with 100% domestic production rate, built a national independent advanced fluorescence microscope system, and supported the national independence of advanced optical microscopic instruments in biomedicine.

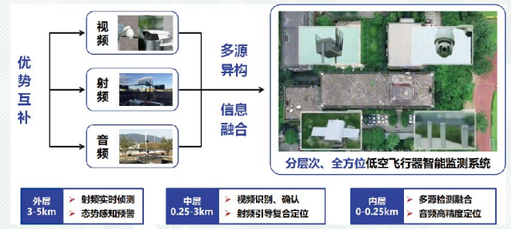


❷ 低空飞行器智能监测关键技术及应用

控制学院陈积明教授领衔的该项目获2023年度浙江省技术发明奖一等奖。针对城市低空“黑飞”、“滥飞”无人机对国家和社会公共安全造成的严重威胁，项目发明了系列无人机智能监测技术并形成低空反无系统，被*IEEE Spectrum*专题报道，获中央军委主办的反无人机挑战赛城区综合防御科目冠军，应用于建国70周年庆典、杭州亚运会等重大活动和三峡集团溪洛渡水电站等重点区域的低空安防，实现了复杂城市场景低慢小无人机的实时监测，为推动以低空经济为代表的新质生产力发展提供了技术支撑。

Key Technologies and Applications of Intelligent Surveillance for Low-Altitude Unmanned Aerial Vehicles

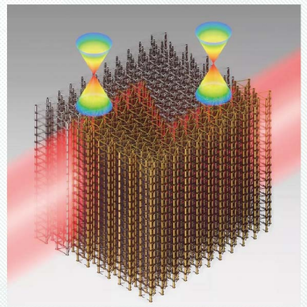
This project, led by Prof. Chen Jiming from CCSE, won the first prize of 2023 Zhejiang Provincial Technological Invention Award. This project has pioneered a series of intelligent UAV surveillance technologies as well as the series of anti-UAV systems. The proposed UAV surveillance technique has been featured in a special report by *IEEE Spectrum* and successfully deployed for critical security operations including the 70th Anniversary Celebration of the People's Republic of China, the Hangzhou Asian Games, as well as national key facilities such as the Three Gorges Group's Xiluodu Hydropower Station. The developed system realizes real-time monitoring of UAVs in complex low-altitude urban environments, providing technical support for developing the low-altitude economy.



❸ 基于新型拓扑人工电磁材料的电磁波调控机理与方法

信电学院陈红胜教授领衔的该项目获2023年度浙江省自然科学奖一等奖。针对拓扑人工电磁材料中三维结构难实现、自旋属性研究不完善、结构体积大且难集成的三大“瓶颈”，该项目建立了三维拓扑人工电磁材料新机理，发现了人工电磁材料中电磁波横向自旋等物理新现象，提出了基板集成拓扑人工电磁材料的设计新方法。相关成果发表在*Nature*、*Nature Photonics*等国际顶尖期刊，被*Physics World*等上百家科技杂志广泛报道，有力推动了人工电磁材料的应用发展。

Mechanisms and Methods for Electromagnetic Wave Manipulation Based on Topological Metamaterials



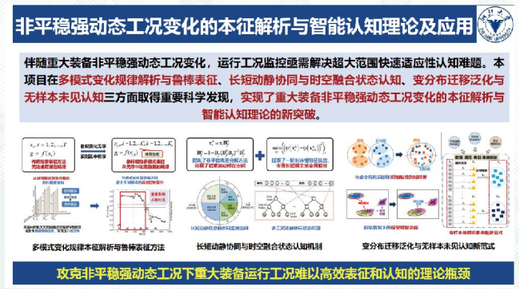
This project, led by Prof. Chen Hongsheng from ISEE, won the first prize of 2023 Zhejiang Provincial Natural Science Award. This project addresses the above three major challenges by establishing for the first time new mechanisms of three-dimensional topological metamaterials, discovering transverse photon spin of electromagnetic waves in bi-anisotropic metamaterials, and demonstrating a new design for substrate-integrated topological metamaterials. These achievements have been published in top international journals such as *Nature* and *Nature Photonics*, which have been widely covered by over a hundred scientific magazines, including *Physics World*. The project enhances the ability of metamaterials to manipulate electromagnetic waves, significantly advancing the development of electromagnetic devices and applications.

4 非平稳强动态工况变化的本征解析与智能认知理论及应用

控制学院赵春晖教授领衔的该项目获2023年浙江省自然科学奖一等奖。运行工况监控亟需解决超大范围快速适应性认知难题。本项目从多重时变过程数据中抽取潜在变化规律，提出了多模式变化表征、长短动静协同监测及未见故障零样本认知等创新理论，形成了非平稳强动态工况变化的本征解析与智能认知理论。成果获得百余位国内外院士和主编的正面评价，引领了工业智能学科发展方向，应用于重大发电装备，部分实现高端监控软件的国产化替代，与原有国外系统相比，显著降低了误报率。

Theory of Intrinsic Analysis and Intelligent Cognition for Non-Stationary Highly Dynamic Condition Variations and Its Application

The project, led by Prof. Zhao Chunhui from CCSE, won the first prize of 2023 Zhejiang Provincial Natural Science. This project extracts underlying variation patterns from multi-scale time-varying process data and proposes innovative theories, including multi-mode variation representation, long-short-term dynamic-static collaborative monitoring, and zero-sample cognition for unseen faults. These advancements establish original foundational research achievements in the intrinsic analysis and intelligent cognition of non-stationary and highly dynamic condition variations. The research achievements have received positive recognition from over 100 domestic and international academicians and editors-in-chief, leading the development direction of the industrial intelligence discipline. The theories have been applied to major power generation equipment, with partial domestic substitution of high-end monitoring software.

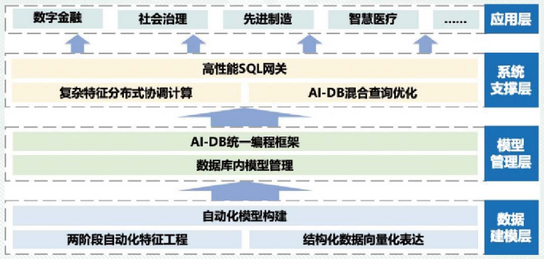


5 大规模结构化数据智能计算平台及产业化

计算机学院陈刚教授领衔的该项目获2023年浙江省科学技术进步奖一等奖。项目提出了将结构化大数据智能与数据库进行系统性融合的思路，突破了跨领域异质结构化数据的统一自动化建模方法、支持智能模型计算的新型关系代数理论及统一编程框架、大规模结构化数据高性能实时计算架构等一系列关键技术，成功研制AITable平台，成果获得CCF A类会议SIGMOD 2023最佳论文奖和SIGMOD 2024最佳系统奖，2个子系统入选著名开源组织Apache顶级项目。该平台可支持原有信息化系统快速智能升级，广泛应用于千余家企事业单位。

Large-Scale Structured Data Intelligent Computing Platform and Its Industrialization

This project, led by Prof. Chen Gang from CCST, won the first prize of 2023 Zhejiang Provincial Sci & Tech Progress Award. The group proposed a systematic integration of intelligent structured big data with databases, breaking through key technologies such as unified automated modeling methods for cross-domain heterogeneous structured data, a novel relational algebra theory supporting intelligent model computation, a unified programming framework, and a high-performance real-time computing architecture for large-scale structured data. This culminated in the successful development of the AITable platform, which earned the Best Paper Award at SIGMOD 2023 and the Best System Award at SIGMOD 2024. Two of its subsystems were recognized as top-level projects by the Apache Software Foundation. The platform have been widely adopted by over 1,000 enterprises and institutions.

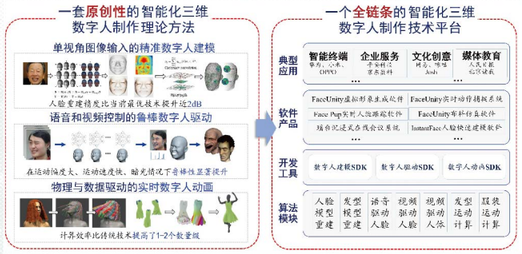


6 智能化三维数字人制作关键技术及应用

计算机学院周昆教授领衔的该项目获2023年浙江省科学技术进步奖一等奖。项目创新了单视角图像输入的精准数字人建模、语音和视频控制的鲁棒数字人驱动、物理与数据驱动的实时数字人动画技术，建立了智能化三维数字人制作关键技术体系，研制了全链条的智能化三维数字人制作技术平台。项目成果应用于华为、小米、网易等2000余家企事业单位，部分技术授权给欧莱雅、迪士尼等欧美头部企业，在智能终端、文化创意等众多领域得到大规模应用，取得了显著的社会和经济效益。

Key Technologies and Applications of Intelligent 3D Digital Human Production

The project, led by Prof. Zhou Kun of CCST, won the first prize of 2023 Zhejiang Provincial Sci & Tech Progress Award. The project has innovated precise digital human modeling from single-view image input, robust digital human driving controlled by voice and video, and real-time digital human animation technology driven by both physics and data. It has established a key technological system for intelligent 3D digital human production and developed a comprehensive intelligent 3D digital human production platform. The outcomes of the project have been applied in over 2,000 enterprises, including Huawei, Xiaomi, and NetEase. Some technologies have been licensed to leading companies in Europe and America, such as L'Oréal and Disney, and have seen large-scale applications in areas such as smart devices, enterprise services, cultural creativity, and online education, achieving significant social and economic benefits.



7 中国乒乓球队数据智能分析平台的关键技术与应用

计算机学院巫英才教授领衔的该项目获2023年浙江省科学技术进步奖一等奖。项目突破时空多模融合与知识增强的乒乓球数据采集技术，乒乓球多元技战术序列挖掘技术和乒乓球比赛模拟推演技术等关键技术，成功研制了中国乒乓球队数据智能分析平台。平台全程为中国乒乓球队备战东京奥运会、世界锦标赛等国际大赛提供有效的科技支撑，为保障球队取得优异成绩做出了突出贡献，获得教练员和运动员的高度认可，得到体育总局和中国乒协的高度肯定，相关工作被中央电视台等媒体详细报道。

Key Technologies and Applications of the Data Intelligence Analysis Platform for the Chinese National Table Tennis Team

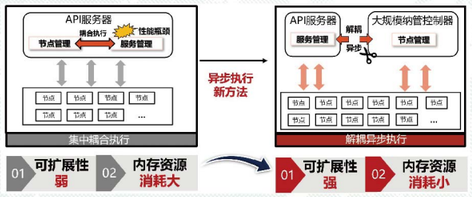
This project, led by Prof. Wu Yingcai from CCST, won the first prize of the 2023 Zhejiang Provincial Sci & Tech Progress Award. It innovatively adopted a human-machine collaborative intelligence approach. Breakthroughs were achieved in critical technologies such as spatiotemporal multimodal fusion and knowledge-enhanced table tennis data acquisition, multi-dimensional technical-tactical sequence mining, etc. The team independently developed the Data Intelligence Analysis Platform for the Chinese National Table Tennis Team, which provided comprehensive technological support during the team's preparations for major international competitions, including the Tokyo Olympics and World Championships, contributing significantly to the team's remarkable achievements. The platform has received high acclaim from coaches and athletes, as well as official recognition. Related work has been covered by media outlets such as China Central Television.

8 基于云原生的大规模云边协同关键技术及应用

计算机学院董玮教授领衔的该项目获2023年浙江省科技进步奖一等奖。项目突破了基于云原生的大规模云边协同关键技术，研制了自主可控的大规模云边协同技术体系与云边一体化平台，开源了业界首个非侵入式边缘云原生平台。在能源、金融、互联网、交通、医疗等多个重要行业推广应用，经济社会效益显著，应用部署广泛。项目奠定了我国大规模云边协同技术的国际领先优势。

Technologies and Applications of Large-scale Cloud-edge Collaboration Based on Cloud Native Architecture

The project led by Prof. Dong Wei from CCST won the first prize of the 2023 Zhejiang Provincial Sci & Tech Progress Award. The project has proposed the key technologies of large-scale cloud-edge collaboration based on cloud native architecture. It has developed a series of self-controllable techniques for large-scale cloud-edge collaboration as well as a cloud-edge integrated platform. It has also open-sourced the industry's first non-intrusive cloud native platform for the edge and cloud. It has been authorized 20 invention patents, published 32 high-quality papers, and led the formulation of 1 national standard. It has been applied in many important industries such as energy, finance, the Internet, transportation, and healthcare, achieving remarkable economic and social benefits, and has been widely deployed in numerous applications.



9 智能图形计算

计算机学院周昆教授负责的该项目获批2024年基金委创新研究群体项目资助。项目聚焦三元空间数字模型的构建、仿真、呈现和可视分析，通过将计算机图形学建立的几何和物理规律与深度学习从大数据中提炼的统计规律结合起来，将机器智能与人类智能结合起来，突破传统图形学理论体系在建模真实度、仿真可信度、绘制一致性以及可视分析智能性方面的局限性，建立面向三元空间融合的智能图形计算理论体系。

Intelligent Graphics Computing

The project, led by Prof. Zhou Kun from CCST, has been supported by the NSFC Innovative Research Group Program in 2024. The project focuses on the construction, simulation, presentation, and visual analysis of digital models in the human-physical-cyber (HPC) space. By integrating the geometric and physical laws established by computer graphics with the statistical patterns extracted from big data through deep learning, and by combining machine intelligence with human intelligence, the project aims to overcome the limitations of traditional graphics theory in terms of modeling realism, simulation credibility, rendering consistency, and visual analysis intelligence.

10 增强现实

计算机学院章国锋教授负责的该项目获批2024年国家杰出青年科学基金资助。章教授一直致力于增强现实技术与系统的创新研究。该项目预期在城市级虚实空间的智能表达构建与交互语义理解、支持多人多机的虚实内容协同创作与融合等关键科学问题和技术方面取得重要突破，形成一整套基于多人、多终端协同和云边端结合的空间计算和虚实内容生成与融合的理论和方法，突破效率、规模、鲁棒性、自然性和智能性上的瓶颈，从而推动增强现实/元宇宙领域的进一步发展。

Augmented Reality

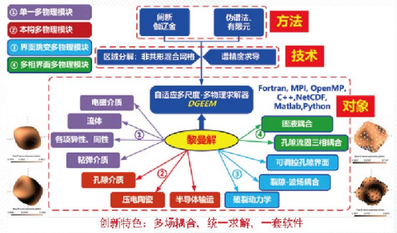
The project, led by Prof. Zhang Guofeng from CCST, was supported by NSFC for Distinguished Young Scholars in 2024. This project further explores collaborative spatial computing and intelligent virtual-real fusion on an urban scale. It focuses on key scientific and technical areas such as the intelligent representation and interactive semantic understanding of urban-scale virtual-real spaces, and the collaborative creation and fusion of virtual-real content supported by multiple users and devices. The project is expected to develop a comprehensive set of theories and methods for spatial computing and virtual-real content generation and fusion, based on multi-user, multi-terminal collaboration, and cloud-edge-device integration. It seeks to overcome bottlenecks in efficiency, scale, robustness, naturalness, and intelligence, thereby driving further development in the fields of augmented reality and metaverse.

11 跨尺度多物理高性能计算方法与应用

信电学院百人计划研究员詹启伟负责的该项目获批2024年优秀青年科学基金项目资助。针对大规模射频3D异质集成，本项目拟开展电磁及多物理场耦合效应仿真中高维不确定性量化研究： (1)创新自适应计算方法，实现3D多尺度–多物理高置信度模拟；(2)提取高通量正则化参数，用于电磁及多物理场耦合效应的联合逆向设计；(3)开展高维度不确定性量化创新性研究，为提高3D异质集成芯片良品率提供理论指导。

The Methods and Applications of Multiscale Multiphysics High-Performance Computing

This project , led by Researcher Zhan Qiwei from ISEE, was supported by the NSFC for Excellent Young Scholars in 2024. This project aims to conduct high-dimensional uncertainty quantification research in electromagnetic and multi-physics coupling effect simulations for large-scale radio-frequency 3D heterogeneous integration: (1) Develop adaptive computational methods to achieve high-fidelity simulation of 3D multi-scale and multi-physics coupling effects; (2) Extract high-throughput regularized parameters for joint inverse design of electromagnetic and multi-physics coupling effects; (3) Perform innovative research on high-dimensional uncertainty quantification to provide theoretical guidance for improving yield rates in 3D heterogeneous integrated chips.



12 可变形实体界面

计算机学院百人计划研究员王冠云负责的该项目获批2024年优秀青年科学基金项目资助。本项目融入仿生学理念，以仿生可变形介质的自感知与自反馈机制、形态与功能耦合为核心科学问题，构建普适性的变形表征与计算模型，研发跨介质的变形设计与实现方法，探索可拓展的功能模块与应用路径，形成以学科交叉融合为驱动力的实体交互界面研究新范式，以可变形的界面“形态”为“手段”，为解决复杂场景需求提供创新性解决方案。

Shape-Changing Interfaces

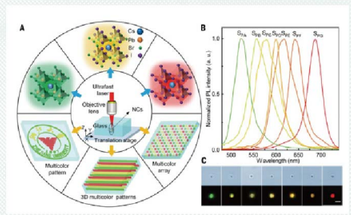
The project, directed by Researcher Wang Guanyun from CCST, was supported by NSFC for Excellent Young Scholars in 2024. This project integrates the concept of bionics, taking the self-sensing and self-actuating mechanisms of bionic shape-changing material, as well as the coupling of form and function, as the core scientific questions. It aims to construct a universal model for deformation representation and computation, develop methods for cross-media deformation design and implementation, and explore scalable functional modules and application pathways. Through interdisciplinary integration, the project will establish a new paradigm for tangible interaction interfaces, using the shape-changing interfaces' "form" as a "mean" to provide innovative solutions for complex scenario needs.

13 基于超快激光的透明介质内部序构直写技术与应用

光电学院邱建荣教授负责的该项目获批2024年国家基金委重点项目资助。项目围绕三维微纳尺度序构的精密控制，研究偏振幅度相位等整形的超快激光诱导空间选择性功能基元形成和分布的时空演变和物理机制以及功能耦合增强原理，开发基于同种或异质功能基元直写集成以及空间光调制器和数字透镜阵列的高效序构构筑技术，实现新型微纳光源、宽带低损耗耦合器等高性能器件，为集成光电子领域的发展奠定基础。

Direct Writing Technique Of The Ordered Structures Inside Transparent Materials Using Fs Laser and It's Applications

The project, led by Prof. Qiu Jianrong from COSE, was supported by the NSFC Key Program in 2024. It aims to realize precise control of three-dimensional micro/nano ordered structures, and will study the spatiotemporal evolution process and physical mechanisms of the polarization, amplitude and phase modulated ultrafast laser induced space-selective formation and distribution of functional units as well as the enhanced performance due to synergetic effects. Effective techniques will be developed for producing ordered structures based on direct writing and integration of the single and multi-material functional units, combined with the use of spatial light modulator and digital mirror devices. The developed technique will enable the fabrication of high performance devices including new micro/nano light sources and broadband low loss couplers, and lay a solid foundation for the advancement of integrated opto-electronics field.

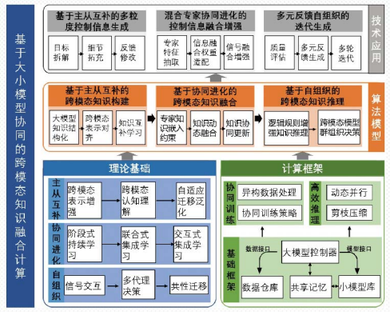


14 大小模型协同的跨模态知识融合计算

计算机学院庄越挺教授负责的该项目获批2024年基金委重点项目资助。本研究提出基于大小模型互补融合、协同进化与组织协调的跨模态协同理论，构建高效的协同框架，融合基础模型、专用模型、专家知识和知识图谱，实现跨模态知识的构建、融合与推理。最终，在AIGC等跨模态任务中，利用大小模型协同实现灵活、高效、精确的细粒度生成能力，构建大模型为基础的跨模态智能体系。

Cross-Modal Knowledge Fusion Computing Via Collaboration of Large and Small Models

The project, led by Prof. Zhuang Yueting from CCST, was supported by the NSFC Key Program in 2024. This study proposes foundational theories for collaborative small-to-large models across modalities, focusing on complementary fusion at multiple granularities, collaborative evolution, and organizational coordination. An efficient collaborative small-to-large model framework is also established, integrating base models, specialized models, expert knowledge, and knowledge graphs. This facilitates the construction, fusion, and inference of cross-modal knowledge, enabling controllable fine-grained generation capabilities in tasks like Artificial Intelligence for General Cross-modal Comprehension (AIGC). Ultimately, this approach aims to realize a flexible, efficient, and effective cross-modal general intelligence system based on collaborative small-to-large models, with the large-scale model serving as the foundation.

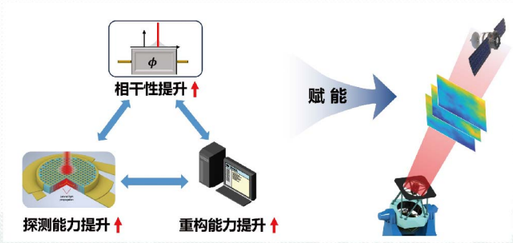


15 远距离地基逆合成孔径激光雷达关键问题研究

光电学院魏凯教授负责的该项目获批2024年基金委重点项目资助。项目从远距离地基逆合成孔径激光雷达全链路系统模型出发，分别开展传输路径退相干抑制方法、高性能平衡光电探测技术、模型驱动的低信噪比运动补偿和成像算法等技术研究，重点突破光场相干性控制、噪声鲁棒多分量非平稳信号分析以及系统性能精确评估三个关键科学技术问题，有望有力推动地基逆合成孔径激光雷达技术从公里级原理验证走向百公里级工程应用。

Research on Key Technologies of Long-Range Ground-Based Inverse Synthetic Aperture Ladar

The project, led by Prof. Wei Kai from COSE, was supported by the NSFC Key Program in 2024. This research will develop solutions through comprehensive system modeling of the entire long-range ground-based ISAL chain. Key investigations include: 1) transmission path de-coherence suppression methods, 2) high-performance balanced photodetection techniques, and 3) model-driven motion compensation and imaging algorithms under low signal-to-noise ratio (SNR) conditions. The research will focus on three critical scientific challenges: optical field coherence control, noise-robust analysis of multi-component non-stationary signals, and precise system performance evaluation. The outcomes are expected to advance ground-based ISAL technology from current kilometer-scale proof-of-concept demonstrations to practical hundred-kilometer-scale engineering applications.

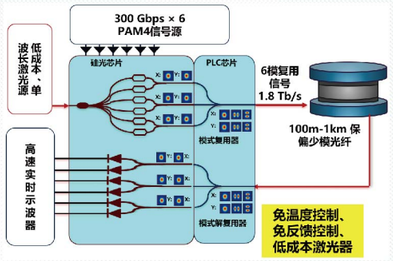


16 基于模式复用的Tbps级超高密度硅基光接口芯片研究

光电学院刘柳长聘副教授负责的该项目获批2024年国家基金委重点项目资助。本项目针对分布式高性能计算和人工智能等国家重点发展的关键战略，开发互连跨度在米至百米的、基于模式复用的光接口芯片，以及其中的光器件和互连架构关键技术，解决西方国家波分复用架构光接口芯片的痛点，实现芯片间的高带宽密度、高能量效率、低成本的新型互连。

Tbps Optical IO Chip on Silicon for High-Density Optical Interconnect Using Mode Division Multiplexing

This project, led by Tenured Assoc. Prof. Liu Liu, was supported by the NSFC Key Program in 2024. It aims to develop optical interface chips based on mode division multiplexing with interconnection spans from centimeters to hundreds of meters, as well as key technologies for optical devices and interconnection architectures inside these chips, to realize novel inter-chip interconnection with high bandwidth density, high energy efficiency, and low cost. This project will also propose several innovative solutions to related scientific issues, focusing on breakthroughs in the multi-field interaction of heterogeneous structures in optical interface chips and the mechanism to improve modulation/detection efficiency, bandwidth, and stability, as well as the mode evolution mechanism and crosstalk control of the optical coupling process between heterogeneous waveguide structures.

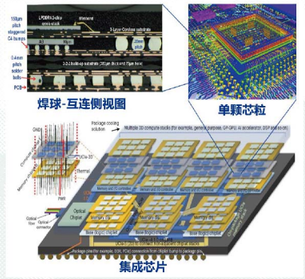


17 面向超大规模芯粒集成的多物理先进计算研究

信电学院百人计划研究员詹启伟负责的该项目获批2024年国家基金委重点项目资助。面向超大规模芯粒集成：1）突破脏几何−动网格−多套网格自动剖分、非线性多场耦合模拟、多物理电路模型降阶三个理论难点；2）攻克超大规模芯粒集成多场模拟中亿级网格−十亿级自由度多场−千万级节点电路一体化万核并行计算技术瓶颈；3） 互通集成网格−多场−电路三大内核，形成多场EDA软件一套，支撑更大规模、更宽频段、更高功率芯粒集成性能有效提升。

Multi-Physics Advanced Computing for Ultra-Large-Scale Chiplet Integration

This project, led by Researcher Zhan Qiwei from ISEE, was supported by the NSFC Key Program in 2024. For ultra-large-scale chiplet integration, the Key objectives include: 1) Breakthroughs in three theoretical challenges, including dirty geometry-dynamic mesh-multiple mesh automatic partitioning, nonlinear multiphysics coupling simulation, and dimensionality reduction of multiphysics circuit models; 2) Overcoming the bottleneck of parallel computing technology for integration of 0.1 billion-level meshes, billion-level degrees of freedom multiphysics, ten-million-level node circuits in ultra-large-scale chiplet integration multiphysics simulations; 3) Interconnecting and integrating the three core components of mesh-multiphysics-circuit to form a software for multiphysics EDA, supporting the effective improvement of the integration performance of chiplets at larger scales, wider frequency ranges, and higher powers.

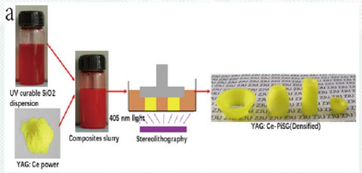


18 面投影光固化与激光直写协同的石英玻璃增材制造

光电学院邱建荣教授负责的该项目获批科技部2024年国家重点研发计划项目资助。项目将研制石英增材制造专用的树脂基光敏复合材料，开发激光直写/面投影/全息多技术集成增材制造新方法，研制首套一体化跨尺度石英玻璃增材制造专用设备，解决关键战略领域等对高性能石英元件的需求。

Additive Manufacture of Silica Glass Based on Cooperative Technique of Plane Projection Light Polymerization and Laser Direct Writing

The project, led by Prof. Qiu Jianrong from COSE, was supported by the National Key R&D Program in 2024. It will develop resin based photosensitive composite materials specifically for quartz additive manufacturing, explore a new method for laser direct writing/surface projection/holographic multi technology integrated additive manufacturing, develop the first set of integrated cross scale quartz glass additive manufacturing specialized equipment, and address the demand for high-performance quartz components in key strategic areas.

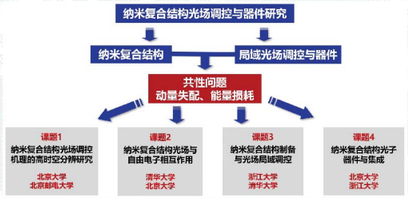


⑲ 纳米复合结构光场调控与器件研究

光电学院童利民教授负责的该项目获批2024年国家重点研发计划项目资助。项目主要开展纳米复合结构局域光场调控机理的高时空分辨实验表征，纳米复合结构光场与自由电子相互作用，超强光场局域纳米复合结构制备与光场局域调控，超低能耗、超快响应纳米复合结构光子器件研制与高密度集成等研究。研究成果将开辟纳米光子学及器件研究新途径，推动纳米科学与技术研究前沿的发展。

Hybrid Nanostructures for Optical-Field Manipulation and Photonic Devices

The project, led by Prof. Tong Limin from COSE, was supported by the National Key R&D Program in 2024. Based on hybrid nanostructures, the project mainly focuses on the high-spatiotemporal-resolution characterization of the confined optical fields, the interaction between the confined optical field and free electrons, the fabrication of hybrid nanostructures for ultratight optical confinement, the manipulation of ultratightly confined optical fields, the development and high-density integration of ultra-low energy consumption and ultrafast response photonic devices. The research results will open up new avenues for nanophotonics and devices, and advance the frontier of nanoscience and technology.



⑳ 基于多模态影像再生技术的腔内肿瘤一体式内窥系统

光电学院钱骏教授负责的该项目获批2024年国家重点研发计划项目资助。项目采用产学研医检结合和多学科交叉的模式，提出一体式框架设计的系统解决方案，突破多模态集成探头、影像融合再生、多模态信号同步采集、肿瘤微环境检测探针等关键技术，实现系统整机集成，通过动物试验验证系统可靠性与安全性。研发成果将推进我国高端内镜“跨代式”发展，提高内镜对腔内肿瘤等重大疾病早期诊断能力，提升患者生存质量。

Integrated Endoscopic System for Intraluminal Tumors Based on Multi-Modal Image Regeneration Technology

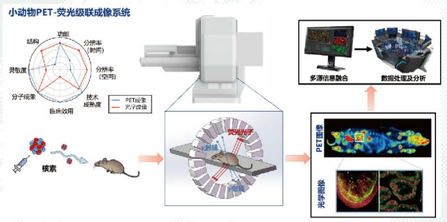
This project, led by Prof. Qian Jun from COSE, was supported by the National Key R&D Program in 2024. Adopting a collaborative model integrating industry, academia, research, medical practice, and regulatory standards through interdisciplinary convergence, the project proposes a systematic solution featuring unified framework design. It seeks to overcome key technical challenges including multi-modal integrated probes, image fusion and regeneration, synchronized multi-modal signal acquisition, and tumor microenvironment detection probes. The research will achieve full-system integration, validate reliability and safety through animal trials. The anticipated outcomes will propel the “generational leap” in China’s high-end endoscopy development, enhancing early diagnostic capabilities for critical conditions like intraluminal tumors while improving patient survival outcomes.

㉑ 小动物PET–荧光级联成像系统

光电学院刘华锋教授负责的该项目获批2024年国家重大科研仪器研制项目资助。项目通过将切伦科夫光子转为红外荧光光子，从新的成像理念和设计思路出发，对红外荧光光子与伽马光子同时探测，基于时间符合技术实现级联成像，并研制适于小动物的PET–荧光级联成像系统。示踪同源的PET和荧光级联成像，有望克服单一成像模态的局限，实现信息的互补互益，助力于众多前沿生物医学研究。

Small Animal PET - Fluorescence Cascade Imaging System

The project, led by Prof. Liu Huafeng from COSE, was supported by the 2024 National Major Scientific Research Instrument Development Program. This project converts Cherenkov photons into infrared fluorescent photons, starting from new imaging concepts and design ideas, and simultaneously detects infrared fluorescent photons and gamma photons. Based on time coincidence technology, cascade imaging is achieved, and a PET fluorescence cascade imaging system suitable for small animals is developed. Tracer based PET and fluorescence cascade imaging have the potential to overcome the limitations of a single imaging modality, achieve complementary and mutually beneficial information, and contribute to numerous cutting-edge biomedical research.



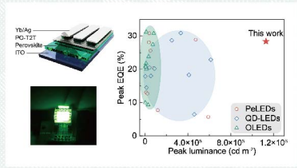
3.年度代表性论文 | Recommended Paper

① Controllable P- and N-Type Behaviours in Emissive Perovskite Semiconductors

作者: Xiong Wentao, Zhao Baodan, Di Dawei; 等

来源: NATURE 卷: 633 期: 8029 页: 344-350 出版时间: SEP 2024

Controllable doping of semiconductors is at the heart of modern electronics. For perovskite semiconductors, mechanisms for reliably controlling charge conduction are yet to be discovered. We report p- and n-type behaviours in a perovskite semiconductor can be adjusted by a molecular dopant. Controlled carrier concentrations, Hall mobilities and Fermi-level movements are achieved. This enables record-high brightness (>1.1×10^6 cd m^{-2}) and exceptional efficiency (28.4%) in perovskite LEDs with a simplified architecture.

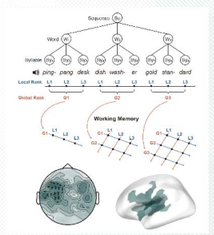


② Two-dimensional Neural Geometry Underpins Hierarchical Organization of Sequence in Human Working Memory

作者: Fan Ying, Wang Muzhi, Ding Nai; 等

来源: NATURE HUMAN BEHAVIOUR 卷: 9 期: 2 页: 360–375 出版时间: NOV 2024

A series of EEG/MEG studies demonstrate that working memory is constructive in nature. Behavioral and neural evidence is provided that a 1-dimensional complex syllable sequence is automatically reformatted into a 2-dimensional representation in working memory, which reflects the hierarchical linguistic organization of syllables into words. The discovered neural representation can predict memory behaviour and is a potential mechanism to overcome the capacity limit of working memory.

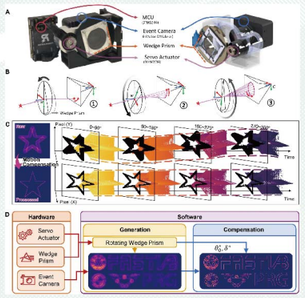


③ Microsaccade-Inspired Event Camera for Robotics

作者: He Botao, Wang Ze, Gao Fei; 等

来源: SCIENCE ROBOTICS 卷: 9 期: 90 出版时间: May 2024

Inspired by microsaccades, we designed an eventbased perception system capable of simultaneously maintaining low reaction time and stable texture. In this design, a rotating wedge prism was mounted in front of the aperture of an event camera to redirect light and trigger events. The geometrical optics of the rotating wedge prism allows for algorithmic compensation of the additional rotational motion, resulting in a stable texture appearance and high informational output independent of external motion. The hardware device and software solution are integrated into a system, which we call artificial microsaccade–enhanced event camera (AMI-EV). Benchmark comparisons validated the superior data quality of AMI-EV recordings in scenarios where both standard cameras and event cameras fail to deliver.

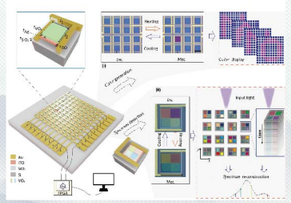


④ Durable and Programmable Ultrafast Nanophotonic Matrix of Spectral Pixels

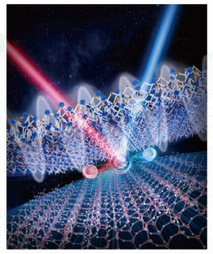
作者: Guo Tingbiao, Zhang Zhi, He Sailing; 等

来源: NATURE NANOTECHNOLOGY 卷: 19 期: 11 页: 1635–1643 出版时间: AUG 2024

We introduce a programmable nanophotonic matrix consisting of vanadium dioxide (VO2) cavities on pixelated microheaters, with pronounced spectral and color modulation even after a million switching cycles. Precise control over the thermal dissipation power facilitates an ultrafast modulation rate exceeding 70 kHz. We demonstrated a video-rate nanophotonic color display and spatiotemporal modulation concept for spectrum detection by electrically addressing a matrix of 12 × 12 pixels



5 Large Second-Order Susceptibility from a Quantized Indium-Tin-Oxide Monolayer

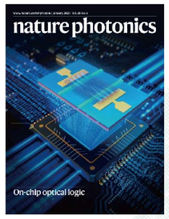


作者: Zhang Yiyun, Chen Hongsheng, Qian Haoliang; 等

来源: NATURE NANOTECHNOLOGY 卷: 19 期: 4 页: 463-470 出版时间: APR 2024

This study reports a breakthrough in enhancing second-order susceptibility (χ2) by engineering an atomically thin (~1.5 nm) ITO film into an air/ITO/SiO2 asymmetric quantum well. Leveraging quantum confinement and interband transition resonance, this structure achieves an unprecedented χ2 value of ~1800 pm V-1—over 20 times higher than traditional LiNbO3 crystals. First-principles calculations and quantum modeling attribute this enhancement to asymmetric potential energy profiles and strong dipole transitions.

6 On-Chip Optoelectronic Logic Gates Operating in The Telecom Band

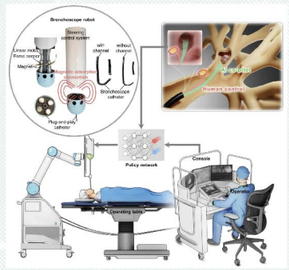


作者: He Ting, Ma Hui, Lin Hongtao; 等

来源: NATURE PHOTONICS (Cover Paper) 卷: 18 期: 1 页: 60-67 出版时间: JAN 2024

On-chip optoelectronic logic gates operating at telecom wavelengths are highly desirable for integration with the growing possibilities offered by silicon-based optoelectronics. we integrate silicon waveguides with black phosphorus for optoelectronic logic, achieving both linear (AND/OR/NOT/NAND/NOR) and nonlinear (XOR/XNOR) operations via optical inputs and electronic readout. This work paves the way for developing novel optoelectronic logic computing circuits.

7 AI Co-pilot Bronchoscope Robot

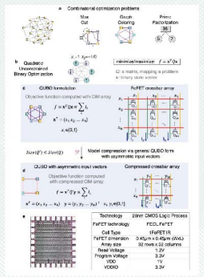


作者: Zhang Jingyu, Liu Lilu, Lu Haojian; 等

来源: NATURE COMMUNICATIONS 卷: 15 期: 1 页: 241 出版时间: JAN 2024

We present an AI co-pilot bronchoscope robot that empowers novice doctors to conduct lung examinations as safely and adeptly as experienced colleagues. The system features a user-friendly, plug-and-play catheter, devised for robot-assisted steering, facilitating access to bronchi beyond the fifth generation in average adult patients. Drawing upon historical bronchoscopic videos and expert imitation, our AI–human shared control algorithm enables novice doctors to achieve safe steering in the lung, mitigating misoperations.

8 Ferroelectric Compute-in-Memory Annealer for Combinatorial Optimization Problems

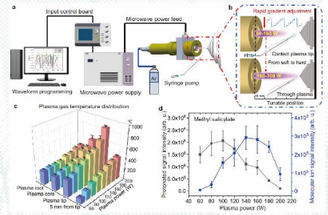


作者: Yin Xunzhao, Qian Yu, Shi Zhiguo; 等

来源: NATURE COMMUNICATIONS (Editor's Highlight)
卷: 15 期: 1 页: 2419 出版时间: MAR 2024

We design the first ferroelectric compute-in-memory chip-based framework for COPs, offering an end-to-end acceleration solution. It includes problem transformation, chip fabrication, lossless matrix compression, and multi-epoch simulated annealing algorithm, significantly improving convergence speed, solution quality, and scalability. This has strategic importance for the semiconductor industry and key areas like embodied intelligence, logistics, finance, and transportation, while also paving the way for practical compute-in-memory chip applications.

9 Wide-Energy Programmable Microwaveplasma-Lonization for High-Coverage Massspectrometry Analysis

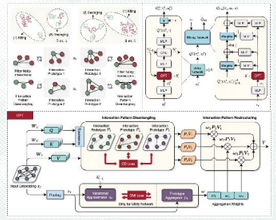


作者: Chu Fengjian, Zhao Gaosheng, Wang Xiaozhi; 等

来源: NATURE COMMUNICATIONS 卷: 15 页: 6075 出版时间: JUL 2024

This study reports a breakthrough in enhancing second-order susceptibility (χ2) by engineering an atomically thin (~1.5 nm) ITO film into an air/ITO/SiO2 asymmetric quantum well. Leveraging quantum confinement and interband transition resonance, this structure achieves an unprecedented χ2 value of ~1800 pm V-1—over 20 times higher than traditional LiNbO3 crystals. First-principles calculations and quantum modeling attribute this enhancement to asymmetric potential energy profiles and strong dipole transitions.

10 Interaction Pattern Disentangling for Multi-Agent Reinforcement Learning

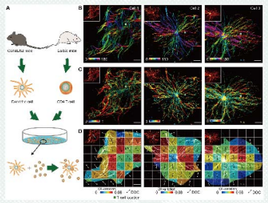


作者: Liu Shunyu, Song Jie, Song Mingli; 等

来源: IEEE TRANSACTIONS ON PATTERN ANALYSIS AND MACHINE INTELLIGENCE 卷: 46 期: 12 页: 8157-8172 出版时间: DEC 2024

We introduce a novel interaction pattern disentangling (OPT) method for cooperative multi-agent reinforcement learning, to disentangle the entity interactions into interaction prototypes, each of which represents an underlying interaction pattern within a subgroup of the entities. OPT facilitates filtering the noisy interactions between irrelevant entities and thus significantly improves generalizability as well as interpretability of multi-agent cooperation on diverse benchmarks.

11 Architecture-Driven Quantitative Nanoscopy Maps Cytoskeleton Remodeling

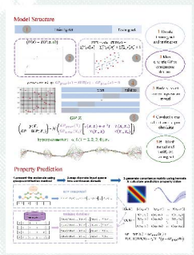


作者: Liu Wenjie, Yao Yushi, Liu Zhiyi; 等

来源: PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA
卷: 121 期: 42 页: e2410688121 出版时间: OCT 2024

We proposed an architecture-driven quantitative (ADQ) framework in spatiotemporal-angular hyperspace, based on a multimodal super-resolution imaging system, to enable identification of the optimal imaging mode with well-balanced fidelity and phototoxicity and post-characterization of microtubule remodeling. The ADQ framework successfully revealed distinct polarization patterns of microtubule remodeling from two migration modes and exhibited potential in predicting migration trajectory.

12 An Improved Machine Learning Model for Pure Component Property Estimation



作者: Cao Xinyu, Gong Ming, Chen Xi; 等

来源: ENGINEERING 卷: 39 页: 61-73 出版时间: AUG 2024

This study presents a Gaussian Process-based modeling framework tailored to manage high-dimensional, discrete input spaces inherent in molecular structure representation for property estimation. A warping function is employed to map discrete inputs onto a continuous domain, thereby enhancing the correlation between different molecular compounds. Moreover, prior selection techniques, including prior elicitation and prior predictive checking, are integrated to incorporate domain knowledge and refine model robustness. The efficacy of the proposed framework is assessed using datasets of varying sizes for 20 pure component properties.

13 3D Shape Regression for Real-time Facial Animation

作者: Cao Chen, Weng Yanlin, Zhou Kun; 等

来源: ACM TRANSACTIONS ON GRAPHICS (ACM SIGGRAPH 2024时间检验奖)

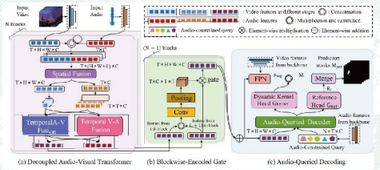
卷: 32 期: 4 出版时间: JUL 2013

We present a real-time performance-driven facial animation system based on 3D shape regression. In this system, the 3D positions of facial landmark points are inferred by a regressor from 2D video frames of an ordinary web camera. From these 3D points, the pose and expressions of the face are recovered by fitting a user-specific blendshape model to them. The main technical contribution of this work is the 3D regression algorithm that learns an accurate, user-specific face alignment model from an easily acquired set of training data, generated from images of the user performing a sequence of predefined facial poses and expressions.

14 CATR: Combinatorial-Dependence Audio-Queried Transformer for Audio-Visual Video Segmentation

作者: Li Kexin, Yang Zongxin, Yang Yi; 等

来源: ACM International Conference on Multimedia (ACM MM 2024) Best Paper Award

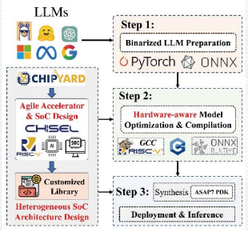


To tackle AVVS challenges—spatio-temporal audio-video misalignment in encoding and insufficient object-level audio constraints in decoding—we propose CATR, an encoding-decoding framework. It features a novel spatio-temporal fusion block for combinatorial audio-visual dependency modeling and introduces audio-constrained learnable queries to enhance object-level decoding. The exceptional performance of CATR enables applications like AR/VR object highlighting and surveillance object mapping.

15 An Agile Framework for Efficient LLM Accelerator Development and Model Inference

作者: Chen Lvcheng, Sun Qi, Zhuo Cheng; 等

来源: IEEE/ACM International Conference on Computer-Aided Design (ICCAD 2024) Best Paper Award



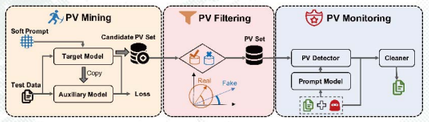
We propose the first agile framework for edge accelerator design tailored to large language models (LLMs). By integrating optimized binarized accelerators, configurable RISC-V SoC, and novel fidelity-driven modeling, our method streamlines EDA workflows and establishes a multi-fidelity accelerator optimization paradigm, improving development efficiency by over three orders of magnitude. Awarded an ICCAD Best Paper, this framework significantly advances edge-AI chip research and EDA methodologies.

16 LMSanitator: Defending Prompt-Tuning Against Task-Agnostic Backdoors

作者: Wei Chengkun, Meng Wenlong, Chen Wenzhi; 等

来源: Network and Distributed System Security (NDSS2024) Distinguished Paper Award

LMSanitator is an efficient approach for detecting and removing task-agnostic backdoors on large language models (LLMs). It explores the novel methodology of backdoor analysis from LLMs gradient space, which is the first to apply fuzzing techniques to LLMs backdoor detection. Exploiting the prompt-tuning’ s property, LMSanitator performs accurate and fast output monitoring. It achieves 92.8% accuracy on 960 real-world models and decreases the attack success rate to less than 1% in NLP tasks.

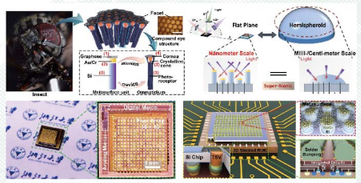


17 First Demonstration of 2.5D Out-of-Plane-Based Hybrid Stacked Super-Bionic Compound Eye CMOS Chip with Broadband (300-1600 nm) and Wide-Angle (170°) Photodetection

作者: Xie Yunfei, Wang Xiaochen, Xu Yang; 等

来源: International Electron Devices Meeting (IEDM 2024) (Highlight by Nature Electronics)

We propose a hybrid stacked CMOS bionic chip. This work enables wide-angle detection in planar chips, incorporating the features of traditional curved structures, while extending the detection spectra of silicon-based chips, suitable for wafer-level production, paving the way for cutting-edge chip integrating broadband and wide-angle detection technology.

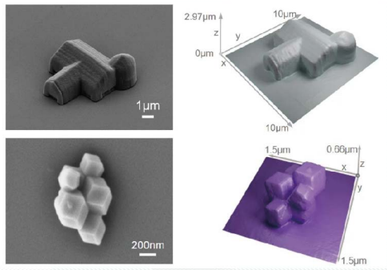


18 Multi-View Neural 3D Reconstruction of Micro- and Nanostructures with Atomic Force Microscopy

作者: Chen Shuo, Peng Mao, Zhang Guofeng; 等

来源: COMMUNICATIONS ENGINEERING (Highlight by Nature Reviews Materials)

卷: 3 文章号: 131 出版时间: SEP 2024



The 3D surface structure of micro-/nanoscale samples is essential in many scientific fields, with AFM widely used for 3D topography measurement. However, conventional AFM scanning often fails to fully capture complex structures and may introduce artifacts due to probe-sample interactions. We propose a neural network based multi-view AFM reconstruction method that enables accurate 3D reconstruction of intricate micro-/nanostructures using only a commercial AFM and a standard probe.

人才培养

Education

学部共有11个一级学科博士学位授予点，12个本科专业，其中10个本科专业入选国家级一流本科专业建设点。在校本科生和研究生共11527人，在国内外各类学科竞赛中成绩优异，本科生深造率超70%。依托学部建设“信息+X”多学科交叉人才培养中心，推进具有多学科交叉创新研究能力的拔尖人才培养。

There are totally 11 doctorate programs of primary discipline, 12 undergraduate programs, ten of which were selected in the country’s construction plan list of first-class undergraduate programs. About 11527 full-time undergraduate and graduate students are enrolled in the faculty. They have made outstanding achievements in various international and domestic disciplinary competitions. More than 70% undergraduate students continue their studies at home or aboard. The "Information + X" Multidisciplinary Talent Training Center is developed to promote the cross-innovation capability of graduate student.

本科专业 UG Program

学 院 College of	本科专业 UG Program
光电科学与工程学院 Optical Science and Engineering	光电信息科学与工程 Optoelectronic Information Science and Engineering
信息与电子工程学院 Information Science and Electronic Engineering	信息工程 Information Engineering
	电子科学与技术 Electronic Science and Technology
	微电子科学与工程 Microelectronic Science and Engineering
控制科学与工程学院 Control Science and Engineering	自动化 Automation
	机器人工程（荣誉项目班） Robot Engineering
计算机科学与技术学院 Computer Science and Technology 软件学院 Software Technology	计算机科学与技术 Computer Science and Technology
	软件工程 Software Engineering
	信息安全 Information Safety
	工业设计 Industrial Design
	人工智能（荣誉项目班） Artificial Intelligence
生物医学工程与仪器科学学院 Biomedical Engineering and Instrument Science	生物医学工程 Biomedical Engineering

学科 Discipline

光学工程 Optical Engineering

光学工程 Optical Engineering
光通信技术 Optical Communication Technique
信息传感及仪器 Information Sensing and Instruments

电子科学与技术 Electronics Science and Technology

物理电子学 Physical Electronics
微电子学与固体电子学 Microelectronics and Solid State Electronics
电路与系统 Circuits and Systems
电磁场与微波技术 Electromagnetic Field and Microwave Technology

信息与通信工程 Information and Communication Engineering

通信与信息系统 Communication and Information Systems
信号与信息处理 Signal and Information Processing

控制科学与工程 Control Science and Engineering

控制理论与控制工程 Control Theory and Control Engineering
检测技术与自动化装置 Detection Technology and Automatic Equipment
系统工程 Systems Engineering
模式识别与智能系统 Pattern Recognition and Intelligent Systems
导航、制导与控制 Navigation, Guidance and Control

计算机科学与技术 Computer Science and Technology

计算机应用技术 Computer Applied Technology
计算机系统结构 Computer Systems Organization
数字化艺术与设计 Digital Art and Design

软件工程 Software Engineering

计算机软件与理论 Computer Software and Theory

生物医学工程 Biomedical Engineering

生物医学工程 Biomedical Engineering
电子信息技术及仪器 Electronic Information Technologies and Instruments

集成电路科学与工程 Integrated Circuit Science and Engineering

集成纳电子科学 Integrated Nanoelectronics
集成电路制造工程 Integrated Circuit Manufacturing Engineering
集成电路设计与设计自动化 Integrated Circuit Design and Design Automation

网络空间安全 Cyberspace Security

人工智能 Artificial Intelligence

设计学 Design

学生（人） Student

学院 College / 学生 Students		光电学院 COSE	信电学院 ISEE	控制学院 CSE	计算机学院 CCST	软件学院 CST	生仪学院 BME	集成电路学院 CIC	合计 Total
在校生 Enrollments	博士生 Doctor	473	560	512	1239	71	260	152	3267
	硕士生 Master	345	561	597	1098	1114	244	279	4238
	本科生 Undergraduate	388	1129	606	1414	/	485	/	4022
招生数 Freshmen	博士生 Doctor	115	136	112	311	22	51	42	789
	硕士生 Master	122	174	175	372	384	83	111	1421
	本科生* Sophomore*	80	232	132	296	/	100	/	840
毕业生 Graduates	博士生 Doctor	67	80	70	131	1	44	5	398
	硕士生 Master	99	155	120	294	371	71	81	1191
	本科生 Undergraduate	94	270	152	533	/	102	/	1151
本科生深造与对外交流 Further Study and International Exchange of Undergraduate	毕业生* Graduate*	92	265	149	448	/	100	/	1054
	出国（境）深造率 Ratio of Further Studies Aboard	14.13%	12.83%	19.46%	18.30%	/	16.00%	/	16.50%
	国内读研率 Ratio of Further Studies at Home	67.39%	56.98%	59.06%	47.77%	/	51.00%	/	53.70%
	对外交流人次 International Exchange	78	174	117	224	/	135	/	728

*不包括竺可桢学院学生 Except the students belong to Chu Kochen Honors College

浙江省优秀博士学位论文 Zhejiang Provincial Excellent Doctoral Dissertation

作者姓名 Author	指导教师 Supervisor	一级学科 Discipline	论文题目 Title
许培臻 Xu Peizhen	童利民 郭 欣 Tong Limin Guo Xin	光学工程 Optical Engineering	冰单晶微纳光纤的制备、特性及应用研究 Single-crystal Ice Microfibers: Preparation, Characterization and Applications
刘禹延 Liu Yuyan	谭年熊 Tan Nick Nianxiong	电子科学与技术 Electronics Science and Technology	高性能低成本增量型Delta-Sigma ADC的研究及其实现 Research on High-Performance and Low-Cost Incremental Delta-Sigma ADC and Its Implementation
胡棋昱 Hu Qiyu	蔡云龙 Cai Yunlong	信息与通信工程 Information and Communication Engineering	基于端到端模型驱动深度神经网络的物理层收发机设计 End-to-End Model-Driven Deep Neural Network for Physical Layer Transceiver Design
冯良骏 Feng Liangjun	赵春晖 孙优贤 Zhao Chunhui Sun Youxian	控制科学与工程 Control Science and Engineering	面向零/少样本场景的弱监督学习方法、应用与实现 Methods, Applications, and Implementation of Weakly Supervised Learning on Zero/Few-Shot Scenarios
王伽臣 Wang Jiachen	巫英才 Wu Yingcai	计算机科学与技术 Computer Science and Technology	乒乓球智能数据分析 Intelligent Data Analysis in Table Tennis
彭思达 Peng Sida	周晓巍 Zhou Xiaowei	计算机科学与技术 Computer Science and Technology	动态三维人体的隐式神经表示方法研究 Implicit Neural Representations for Dynamic Human Bodies
李 鑫 Li Xin	刘清君 Liu Qingjun	生物医学工程 Biomedical Engineering	基于MXene的柔性穿戴式原位气体传感检测技术研究 Research on MXene-based Flexible and Wearable in Situ Gas Sensing Technology
秦 典 Qin Dian	卜佳俊 Bo Jiajun	电子信息 Electronic Information	面向医学影像分析的跨维度知识蒸馏方法研究与实现 Research and Implementation of Cross-dimensional Knowledge Distillation Method for Medical Image Analysis
陈世锜 Chen Shiqi	冯华君 Feng Huajun	光学工程 Optical Engineering	非理想成像系统的极限像质提升技术研究★ Research on Extreme Quality Computational Photography Technology for Non-Ideal Imaging System★

浙江省优秀博士学位论文 Zhejiang Provincial Excellent Doctoral Dissertation (续)

作者姓名 Author	指导教师 Supervisor	一级学科 Discipline	论文题目 Title
齐 俏 Qi Qiao	陈晓明 Chen Xiaoming	信息与通信工程 Information and Communication Engineering	面向边缘智能网络的通信、感知和计算一体化研究★ Research on Integrated Communication, Sensing and Computing for Edge-intelligent Networks★
张圣宇 Zhang Shengyu	吴 飞 Wu Fei	计算机科学与技术 Computer Science and Technology	面向端云协同的因果启发深度学习算法研究★ Causality-inspired Deep Learning Algorithms for Device-cloud Collaboration★
李俊成 Li Juncheng	庄越挺 Zhuang Yueting	计算机科学与技术 Computer Science and Technology	面向跨媒体推理的表征、理解与具身学习方法研究★ Representation, Understanding, and Embodied Learning for Cross-Media Reasoning★
张 硕 Zhang Shuo	尹文言 Yin Wenyan	电子科学与技术 Electronics Science and Technology	新型纳米半导体逻辑元器件量子特性的建模仿真及其应用基础研究★ Research on Modeling and Simulation of Quantum Properties in Novel Nanoscale Semiconductor Logic Devices and Their Applications★
何淑婷 He Shuting	毛维杰 姜 伟 Mao Weijie Jiang Wei	控制科学与工程 Control Science and Engineering	面向零/少样本场景的目标识别与分割★ Object Identification and Segmentation for Zero/Few-shot Scenarios★
宁昱晓 Ning Yuxiao	张韶岷 Zhang Shaomin	生物医学工程 Biomedical Engineering	基于脑机接口的运动皮层时间编码及其机制研究★ The Implementation of Temporal Coding in Motor Cortex Based on Brain-machine Interface★
孙 轲 Sun Ke	邱建荣 Qiu Jianrong	工程 Engineering	超快激光在玻璃内部诱导结构可控钙钛矿纳米晶研究★ Ultrafast Laser Induced Structure Controllable Perovskite Nanocrystals in Glass★
杨 旭 Yang Xu	丁 勇 屈万园 Ding Yong Qu Wanyuan	电子信息 Electronic Information	面向计算设备的高性能混合拓扑电源管理芯片研究★ Research on High-Performance Hybrid Power Management Integrated Circuits for Computing Devices★

★ 浙江省优秀博士学位论文提名论文 Zhejiang Provincial Excellent Doctoral Dissertation Nomination Dissertation

专项奖 Special Award

奖 项 Award	获奖学生 Winners	学 院 College of
2023-2024学年浙江大学竺可桢奖学金 Chu Kochen Scholarship	耿煜宇 Geng Yuyu	光电科学与工程学院 Optical Science and Engineering
	王嘉仪 Wang Jiayi	信息与电子工程学院 Information Science and Electronic Engineering
	蔡泽涛 Cai Zetao	控制科学与工程学院 Control Science and Engineering
	楼嗣威 Lou Siwei	控制科学与工程学院 Control Science and Engineering
	潘昶皓 Pan Changhao	计算机科学与技术学院 Computer Science and Technology
	杨燕鸣 Yang Yanming	计算机科学与技术学院 Computer Science and Technology
	裘博文 Qiu Bowen	生物医学工程与仪器科学学院 Biomedical Engineering and Instrument Science

学科竞赛 Disciplinary Competition

竞赛名称 Competition	奖 项 Award	获奖人员、队名/作品 Winners List	指导教师 Advisor
RoboCup机器人世界杯 RoboCup	小型组亚军 Second Place in Small Size League	ZJUNlict： 余鹏飞 赵安可 王 亮 杨 哲 杨士杰 吴梓非 CALEB CHAI YINN LIANG 王励劼	熊 蓉 周忠祥
RoboCup机器人世界杯中国公开赛 RoboCup China Open	小型组冠军 First Place in Small Size League	ZJUNlict： 余鹏飞 赵安可 王励劼 吴梓非 杨 哲 王家轩 盛其然 付浩然 王 亮 徐洪图 杨士杰	熊 蓉 周忠祥
国际大学生机器人设计大赛 IDC Robocon 2024	冠军 First Place	邱腾跃	王 酉
	亚军 Second Place	汤坤逸	
	八强 Top 8	李子蕖 季书航	
2024 ASC世界大学生超级计算机竞赛 2024 ASC Student Supercomputer Challenge	一等奖 最高计算性能奖 First Prize Highest LINPACK	钱行健 陈楷骐 黄锦骏 谢 俊 耿 华	陈建海
	二等奖 Second Prize	邵可乐 郭佳瑞 李晨潇 苏煜程	张 寅
		丁凯欣 陈书扬 张恒斌 朱宝林	王则可
		麦穗良 陈宏哲 陈锦源 汪佳磊	王总辉
		樊施成 杜宗泽 林 熙 朱 宸	何水兵

学科竞赛 Disciplinary Competition （续）

竞赛名称 Competition	奖 项 Award	获奖人员、队名/作品 Winners List	指导教师 Advisor
2024年国际大学生程序设计竞赛亚洲区域赛 International Collegiate Programming Contest Asia Regional Contest（ICPC）	冠军 Champion	Afterlife: 彭 博 严子轩 张淑阳（南京赛区）	王 灿
	季军 Second Runner-up	World Final Escaped: 李克成 周 转 朱睿哲（成都赛区）	
		Plenty of Penalty: 吴与伦 徐锐扬 万 弘（亚洲区决赛）	
	金牌 Gold Medal	Cheek Support: 陈君林 王子尧 黄旭彬（成都赛区）	
		Illusionary Dominance： 张志心 谭思成 柯怀俊（上海赛区）	
		Whispering Snowflakes: 徐敏睿 靳鹏举 朱天煜（沈阳赛区）	
		Another Day of Sun： 王楚淏 王羽立 高宏钧（亚洲区决赛）	
		Lavender Field： 潘伦可 黄 钰 邹宇涵（沈阳赛区）	
	银牌 Silver Medal	urayaha yahaura： 丁思韬 余承恩 金政羽（沈阳赛区）	
2024中国高校计算机大赛—人工智能创意赛 2024 China Collegiate Computing Contest Artificial Intelligence Innovation Contest	特等奖 Grand Prize	敦煌文献学研究工具集： 朱双赫 韩越 李航奇	吴 飞
	二等奖 Second Prize	喵喵汪汪—纸质作业留痕批改机器： 张洪申 李昕瑾 范鹏飞	于 飞
2024中国高校计算机大赛—团体程序设计天梯赛 2024 China Collegiate Computing Contest Group Programming Ladder Tournament	一等奖 First Prize	我会夺回浙大的一切（珠峰争鼎）： 林响烨 胡家齐 严子轩 周轩熠 樊 睿 谭思成 王楚淏 马熠阳 黄嘉尔 王培成	王 灿
	二等奖 Second Prize	重振浙大荣光，我辈义不容辞（珠峰争鼎）： 徐琪杰 王造时 冯明浩 田宇灼 周楷程 邓铭辉 陈君林 胡思远 叶皓天 李谞远	
		我必须考虑这会不会是我此生仅有的机会（珠峰争鼎）： 楼沁霈 陈科睿 郭一铭 沈哲贝 张志心 王 熠 周 遥 任庭旭 倪晗楚 谢 集	
2024中国高校计算机大赛—移动应用创新赛 2024 China Collegiate Computing Contest Mobile Application Innovation Contest	二等奖 Second Prize	NVWA•女娲我在云端修古籍： 陈铭威 吴皖琪 卢冠廷	张克俊 应超男

学科竞赛 Disciplinary Competition （续）

竞赛名称 Competition	奖 项 Award	获奖人员、队名/作品 Winners List	指导教师 Advisor
2024中国高校计算机大赛—智能交互创新赛 2024 China Collegiate Computing Contest Human-Computer Interaction Innovation Contest	一等奖 First Prize	Scifi Look——AI辅助的科幻文学创作工具： 卢鑫博 王耀章 占灵炜 柯 创	陈柳青
	二等奖 Second Prize	智能体驱动的产品概念设计辅助系统： 蔡逸晨 姚佳怡 李佳阳	陈 培 孙凌云
2024中国高校计算机大赛—网络技术挑战赛 2024China Collegiate Computing Contest(C4) -Network Technology Challenge	二等奖 Second Prize	ChatIoT：基于多模态大模型的云边协同智能物联系统: 李 福 徐伟峰 肖凯杰 黄家名	高 艺 董 玮
		面向可编程网络时延保障的数据包级传输优先级自适应调整方法： 殷子涵 吴奕涵 任竑毅 陈启锐 杜嘉淇	周海峰 王 迪
		基于P4可编程交换机的工业云网络自适应实时传输技术研究: 殷子涵 吴奕涵 任竑毅 杜嘉淇 陈启锐	
		隐私计算节点间网络可观测性系统： 张 广 张锦东 黄皓麟 许智茗 张景轩 黄恩浩	周海峰 吴春明
第十二届全国大学生光电设计竞赛 The 12th National University Students' Opt-Sci-Tech Competition	一等奖 First Prize	神之一锤：戴 乐 李雨杰 林磊磊	林远芳 吕玮阁
		江南第一深情队：林楷深 薛舒文 王培熙	郑臻荣 吕玮阁
		红外之眼：邵晨昕 孙 靓 黄敬轩	吕玮阁
	二等奖 Second Prize	风味205小队：李帅霖 丁博涵 翟乐亿	吴仍茂 吕玮阁
		对对队：史天信 张佳乐 牛 博	刘智毅 吕玮阁
		快乐小队：吴辰浩 颜君键 潘 宁	吕玮阁 刘 东
		小喇叭电赛队：钟 睿 陈永铭 韩 寒	皇甫江涛 汪凯巍
2024年全国大学生电子设计竞赛模拟电子系统设计专题赛 2024 National Undergraduate Electronic Design Contest - Analog Electronic System Design Special Contest	二等奖 Second Prize	集成运放参数测量装置： 秦 原 何嘉劲 莫竣期	张 昱 李惠忠
		具有自动音量控制功能的D类音频功率放大器： 黄镇隆 张鈅阳 徐 柳	马洪庆 张 昱
第十七届全国大学生信息安全竞赛（作品赛） The 17th National College Student Information Security Contest (Work Contest)	一等奖 First Prize	N友小趴菜： 黄恩浩 杨朗骐 胡凯淳 张超然	秦 湛

学科竞赛 Disciplinary Competition （续）

竞赛名称 Competition	奖 项 Award	获奖人员、队名/作品 Winners List	指导教师 Advisor
2024全国大学生机器人大赛 RoboMaster机甲大师超级对抗赛 The RoboMaster University Championship (RMUC 2024)	一等奖 First Prize	高 凯 黄之恒 刘健宇 毛永奇 李企顿 范国锋 陈彦舟 段兴宇 曾奕豪 陈 浩 林豪翔 都奕宁 范一骏等	楼东武 赵 嵩 邓靖靖
	飞镖系统实战奖 一等奖 First Prize	刘澄格 李蔚然 范一骏 都奕宁 李企顿	
	机器人实战奖 一等奖 First Prize	李企顿 毛永奇 张万德 陈彦舟	
	英雄机器人实战奖 二等奖 Second Prize	刘展翔 娄开杨 侯旭东 林豪翔 蔡佳怡 黄之恒 窦泽鑫	
第九届全国大学生生物医学工程创新设计竞赛 The 9th National Biomedical Engineering Innovation Design Competition for College Students	一等奖 First Prize	用于尿液健康监测的移液枪式多孔酶膜电化学传感阵列与集成系统研究： 章绍翔 张学明 林 鹏	万 浩
		“肾生不息”可持续实时肾损伤检测传感： 马灿宇 索明宇 黄子琦 杨赛滨 徐子宜	王 勇
		精准预测胶质瘤进程的“活体病理”磁共振成像技术及应用: 贾银行 谭淑元 戈浩汀 姜 帆 何清平	白瑞良
		基于近红外光刺激和7T-fMRI的猕猴丘脑枕功能连接绘制平台： 冯榆淇 史孙航 平 安 刘美兰 范 伊	Anna Wang Roe 王剑葆
		亥姆霍兹-弹性膜PMUT实现儿童穿颅超声成像诊断系统: 王泽欣 黄 霄 梁 昊 李知非 邹晓宇	郑音飞 叶菁菁
		多肽LUMP——肺癌早诊早治的先行者: 韩佳航 王浩宇 李沐芷	王 本
		基于深度学习的新型肌少症诊疗系统: 陈劲岩 吴 烁 陈 昊 胡志航 卢煜祺	徐 骁 鲁 迪
2024年度大语言模型和智能体安全竞赛 The Competition for LLM and Agent Safety 2024（CLAS2024）	冠军 Champion	大模型越狱攻击赛道： LlaXa：杨亦齐 付弘烨	巴钟杰 王庆龙
		网络智能体后门触发器恢复赛道： W0rld 0ne：陈禹坤 何 宇	李一鸣 郑天航 褚志轩
第四届“网鼎杯”网络安全大赛 The 4th "WangDing Cup" Cybersecurity Competition	亚军 Runner up Award	给小书鱼赚奶粉钱：曹伟思 孙鹏雨	李 松
DataCon2024大数据安全分析竞赛 DataCon2024 Big Data Security Analysis Competition	网络黑产分析赛道 二等奖 Second Prize	Byte_Force：黄飞扬 龙 剑 孔 磊	张 帆

海外交流

International Exchange and Cooperation

学部2024年教师出访参加学术会议、合作交流共617人次，约接待136人次国外学者来访进行学术交流，主办国际会议11次。学部各学院（系）与国外著名大学继续加强学生联合培养，推进教师科研合作，进一步提升了科研与教学水平。

In 2024, about 617 persons visited abroad for academic exchange and cooperation. About 136 world-renowned scholars were invited to visit FIT. Meanwhile, we successfully hosted about 11 international conferences. The colleges of FIT continue to strengthen the international exchange and cooperation in order to enhance the level of teaching and scientific research.

序号 No.	会议名称 Conference	时间 Date
1	第三届过程系统工程创新论坛 The 3rd PSE State of the Art Workshop	4月7日-10日 Apr. 7-10
2	2024年下一代电子与光子学国际会议 The International Conference on Next-Generation Electronics & Photonics (INGEP 2024)	4月11日-14日 Apr. 11-14
3	国际医学磁共振学会围产期儿童大脑磁共振成像技术研讨会 IISMRM Workshop on MRI of the Perinatal Brains	5月10日-12日 May. 10-12
4	第十三届中国国际通信大会 The 13th IEEE/CIC International Conference on Communications (ICCC 2024)	8月7日-9日 Aug. 7-9
5	第11届IEEE智能系统暨机器人国际会议 The 11th IEEE International Conference on Cybernetics and Intelligent Systems (CIS) & the 11th IEEE International Conference on Robotics, Automation and Mechatronics (RAM)	8月8日-11日 Aug. 8-11
6	2024真空光镊技术及其应用研讨会 2024 LeviNet Conference on Optical Tweezers in Vacuum	8月19日-22日 Aug. 19-22
7	2024智能物联网系统国际会议 2024 International Conference on Artificial Intelligence of Things and Systems（AITS2024）	10月17日-19日 Oct. 17-19
8	IEEE国际集成电路技术与应用学术会议 2024 IEEE International Conference on Integrated Cireuits Technologies and Applications(ICTA2024)	10月25日-27日 Oct. 25-27
9	第22届ACM嵌入式网络传感器系统会议 The 22nd ACM Conference on Embedded Networked Sensor Systems	11月4日-8日 Nov. 4-8
10	2024 IEEE 国际先进互连研讨会 The International Workshop on Advanced Interconnects（WAI 2024））	11月6日-8日 Nov. 6-8
11	2024 “一带一路”与“金砖五国”先进光子学研讨会 2024 Belt-Road & BRICS Forum for Advanced Photonics	12月11日-12日 Dec. 11-12

2024要闻

News 2024

Mar.2024

3月1日，教育部党组成员、副部长，中国工程院院士陈杰来浙江大学调研，并参加了控制学院工控所教工党支部活动。

On Mar. 1st, Prof. Chen Jie, Academician of the CAE, visited ZJU to conduct research as member of the Party Leadership Group and Vice Minister of the MOE. Conveniently, he participated in the activities of the Faculty Party Branch at Institute of Industrial Process Control of CSE.

3月28日，信息学部主办FIT论坛第21期-预聘制青年成长“攻略”交流会，学部学术交流与合作专委会副主任高云君教授主持。

On Mar. 28th, FIT hosted the 21th FIT Forum on Career Development Strategies for tenure-track Young Scholars, which was chaired by Prof. Gao Yunjun, Vice-Dean of the Academic Exchange and Cooperation Committee of FIT.

Apr.2024

4月12日下午，信息学部主办FIT论坛第22期，邀请王中林院士做学术报告。

On Apr. 12th, Prof. Wang Zhonglin, Foreign Academician, was invited to deliver an academic lecture on the 22th FIT Forum.

May.2024

5月11日上午，上海交通大学电信学院一行来信息学部调研交流。

On May 11th, a delegation from the School of Electronic Information and Electrical Engineering at Shanghai Jiao Tong University visited FIT.

Jun.2024

6月22日，首届集成电路智能制造峰会在杭召开。

On Jun. 22nd, the first IC Intelligent Manufacturing Summit was held in Hangzhou.

Jul.2024

7月5日下午，信息学部FIT论坛第23期（浙江大学“智汇•紫金”高端对话第34期）：浙江大学信息学科群科技成果转化对接会暨光谷成果转化奖颁奖典礼由工业技术转化研究院和信息学部共同顺利主办完成。

On Jul. 5th, the 23th FIT Forum, also named the 34th session of ZJU "Zhi Hui•Zi Jin" High-end Dialogue Series, on the theme of Sci & Tech Achievement Transformation and the Optical Valley Achievement Transformation Award Ceremony, was successfully co-organized by Institute of Industrial Technology Transfer and FIT.

7月14日，控制学院空中机器人集群成果荣获2024年国际基础科学大会前沿科学奖。
On Jul. 14th, the achievements in aerial robot cluster by CSE were awarded the 2024 Frontier Science Award at the International Congress of Basic Science.

Sep.2024

9月24日上午，信息学部组织了“关于组织建立玉泉校区学科融合交流机制的建议”教代会提案见面会。
On Sep. 24th, FIT organized a Faculty Congress Proposal Meeting on establishing an interdisciplinary integration and exchange mechanism at Yuquan Campus.

Oct.2024

10月9日上午，信息学部FIT论坛第24期暨首期信息+X博士生学科交叉成果交流评审会在玉泉校区成功举办。
On Oct. 9th, the 24th FIT Forum & the first “Information + X” Doctoral Interdisciplinary Achievement Exchange and Review Session was held at Yuquan Campus.

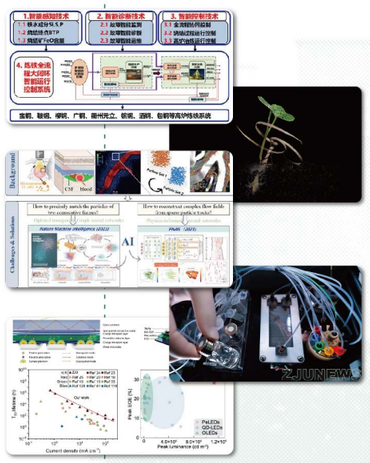
10月14日中午，浙江大学玉泉校区学科交流活动玉泉论坛启动会“优雅”召开。
On Oct. 14th, the opening ceremony of the Yuquan Forum, an interdisciplinary exchange initiative at Yuquan Campus of ZJU, was held with elegance.

10月28日，信息学部副主任李尔平教授在中新工程院首期研讨会做主题报告。
On Oct. 28th, Prof. Li Erping, Vice-Dean of FIT, delivered a keynote report at the first seminar of Academy of Engineering between China and Singapore.

Nov.2024

11月4日下午，“信息+X”交叉中心2023级博士生学习科研进展报告会暨2024年度中期考核审查会顺利举办。
On Nov. 4th, the “Information + X” Interdisciplinary Center successfully hosted the Grade 2023 Doctoral Student Academic Progress Report and 2024 Mid-term Evaluation Review Session.

11月5日，以“优雅·品质·发展”为主题的浙江大学玉泉论坛第一期由轮值主席单位控制学院举办。
On Nov. 5th, the first Yuquan Forum of ZJU, themed "Elegance, Quality, Development," was organized by CSE , which is the rotating chair unit.



11月，信息学部共有5个项目荣获浙江大学2023年度十大学术进展（三类）：生仪学院张宏、控制学院杨春节获十大学术进展项目，控制学院蔡声泽获十大学术进展提名项目，计算机学院王冠云、光电学院狄大卫获青年学者十大学术进展项目。

In November, five projects in FIT were selected as the 2023 top Ten Academic Progress of ZJU(list of three categories), including ten Academic Progress Projects separately led by Prof. Zhang Hong from BME and Prof. Yang Chunjie from CSE, ten Academic Progress Nomination Project led by Cai Shengze from CSE. Young Scholars' Ten Academic Progress Projects separately led by Wang Guanyun from CCST and Di Dawei from COSE.

11月18日-19日，信息学部副主任李尔平教授率团赴深圳高校访问交流（南方科技大学、香港中文大学（深圳）、深圳大学）。

On Nov. 18-19, Prof. Li Erping, Vice-Dean of FIT, led a delegation to visit universities in Shenzhen, including the SUSTech, CUHK-Shenzhen, and Shenzhen University, for academic exchanges.

11月20日下午，信息学部召开学科建设与研究生教育高质量发展大会研讨会，探讨学科汇聚融合发展问题。

On Nov. 20th, FIT held a symposium on Discipline Development and High-Quality Graduate Education, focusing on interdisciplinary integration and collaborative development.

11月27日下午，信息学部FIT论坛第25期AI for X主题研讨会在浙江大学玉泉校区邵科馆举行，探讨构建浙大Model引领学科发展。

On Nov. 27th, the 25th FIT Forum, themed "AI for X", was held to explore the establishment of the ZJU Model for leading the development of disciplines.

11月21日上午，信息学部组织了长聘教职申请经验交流会，助力青年学者发展。

On Nov. 21st, FIT organized an experience-sharing session on tenured faculty position applications to support the development of young scholars.

Dec.2024

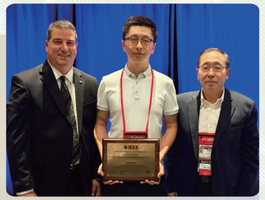
12月26日下午，浙江大学玉泉论坛第二期AI for Engineering在玉泉人工智能创新谷由能源学院轮值顺利举办。

On Dec. 26th, the 2nd Yuquan Forum of ZJU on AI for Engineering were successfully held by the College of Energy Engineering（the rotating chair unit）along with collaborators at the Yuquan AI Innovation Valley.

计算机学院周昆教授获ACM SIGGRAPH 2024时间检验奖。
Prof. Zhou Kun from CCST was honored with the ACM SIGGRAPH 2024 Test of Time Award.

信电学院史治国教授当选IEEE Fellow
Prof. Shi Zhiguo from ISEE was elected as an IEEE Fellow.

信电学院黄崇文研究团队及其合作者荣获2024年度IEEE通信学会伦纳德•亚伯拉罕奖。
The research group led by researcher Huang Chongwen from ISEE along with collaborators were awarded the 2024 IEEE Communications Society Leonard G. Abraham Prize.

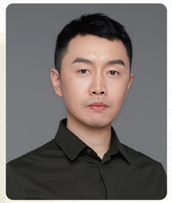


信电学院张岭研究员获内地首个IEEE Herbert Mertel Young Professional Award。
Researcher Zhang Ling from ISEE received the IEEE Herbert Mertel Young Professional Award.

控制学院赵春晖教授荣获第十九届中国青年女科学家奖个人奖
Prof. Zhao Chunhui from CSE was awarded the 19th China Young Female Scientist Award (Individual Category).

计算机学院任奎教授当选美国科学促进会会士
Prof.Ren Kui from CCST was elected as an AAAS Fellow.

计算机学院孙凌云教授获浙江大学永平教学贡献奖
Prof. Sun Lingyun from CCST was awarded the ZJU Yongping Teaching Excellence Award.



信电学院李达研究员和控制学院陆豪健研究员获2024年度浙江大学“小米青年学者”
Researcher Li Da from ISEE and Lu Haojian from CSE, were awarded the 2024 ZJU "Xiaomi Young Scholar" Award.

计算机学院王文冠研究员获2024达摩院青橙奖，控制学院长聘副教授高飞获2024青橙奖“最具潜力奖”。
Researcher Wang Wenguan from CCST won the 2024 Damo Academy Young Fellow Award. Tenured Associate Prof. Gao Fei from CSE received Damo Academy Young Fellow Award for Most Potential Award.