KUN ZHANG

kun.zhang@connect.ust.hk · (+86) 17681239556 · kunzhang · homepage

EDUCATION

- **Hong Kong University of Science and Technology**, Hong Kong SAR, China 2019.08-present
  Ph.D. Candidate in Electronic and Computer Engineering, **Robotics Institute**; *GPA:* 3.433/4
  Supervisors: Prof. Michael Yu WANG, Prof. Yiwen WANG
- **Southern University of Science and Technology**, Shen Zhen, China 2019.01-present
  Visiting Senior Scholar in College of Engineering
  Supervisor: Prof. Wei ZHANG
- **University of Macau**, Macau SAR, China 2016.09-2019.06
  M.S. in Electromechanical Engineering; *GPA:* 3.52/4
  State Key Laboratory of Internet of Things for Smart City
  Supervisor: Prof. Zhixin YANG
- **Harbin Engineering University**, Harbin, China 2012.08-2016.07
  B.E. in Mechanical Design, Manufacturing and Automation; *GPA:* 84.22/100
  Supervisor: Prof. Jinxing ZHENG

WORK EXPERIENCE

- Tencent Robotics-X Lab Control Center Intern 2021.05-2021.08
- Shenzhen Dorabot Company Robotics Software Intern 2019.08-2019.12
- Helper of the Office of Health, Safety and Environmental Affairs of UM 2016.10-2018.12
- Shenyang Airplane Industry (Group) Limited Company Intern 2016.03-2016.05
- Dalian Shipping Heavy Industry Group Company Intern 2015.07-2015.09
- Header of the Competition Sector of HEU Free-carbon Vehicle Association 2014.05-2016.05

SKILLS

- Programming Languages: Python == Matlab > C++
- 3D Design: Pro/E, Sharp3D, Blender
- Simulation: PyBullet,MuJoCo,Coppeliasim
- Platforms: Linux, LaTeX, ROS, OpenCV, Open3D
- Others: WordPress, VN, Microsoft Offices
- Languages: Mandarin(Native speaker), English(IELTS6), German(A2)， Cantonese(麻麻哋)

RESEARCH PROJECTS

- **Robotics Perception, Manipulation and Hardware Design** 2019.08-present
  ·***Deformable object manipulation: Cloth-like*** 2022.10-present
  ·***Design and test of a novel modular dexterous gripper*** 2022.10-2023.03
  ·***Peg-in-hole manipulation: USB,HDMI,RJ45*** 2021.10-2022.09
  ·***Joggling manipulation: Tossing*** 2021.05-2021.08
  ·***Design and test of a novel mobile manipulator*** 2021.01-2021.05
  ·***Nonprehensile manipulation: Ball balancing*** 2020.07-2020.10
  ·***Design and test of a novel modular force control manipulator*** 2020.02-2020.07
  ·***Grasp manipulation:Best grasp point and self collision detection*** 2019.08-2019.12

- **Machine Tools Recognition System** 2016.10-2018.10
  based on ELM-embedded deep learning

- **Intelligent Energy-saving Automatic Closing Device for Refrigerators** 2014.10–2015.05
  (Principal) National innovation and entrepreneurship training program for college students.

PUBLICATIONS

[1] Zhiming Chen*, **Kun Zhang***, Hua Chen, Michael Yu Wang, Wei Zhang, Hongyu Yu, "DORF: A Dynamic Object Removal Framework for Robust Static LiDAR Mapping in Urban Environments", Submitted to *IEEE Robotics and Automation Letters (RAL)*

[2] **Kun Zhang**, Yuanhang Yang, Zhiming Chen, Hua Chen, Michael Yu Wang, Wei Zhang,"A Modular End Effector with Active Rolling Fingertip for Picking Cloth-like Objects", to appear in Proceedings *IEEE International Conference on Automation Science and Engineering (CASE),2023*

[3] Chen Wang, Haoxiang Luo, **Kun Zhang**, Hua Chen, Jia Pan, Wei Zhang,"POMDP-Guided Active Force-Based Search for Robotic Insertion ", to appear in Proceedings *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS),2023*

[4] Lipeng Chen, Weifeng Lu, **Kun Zhang**, Yizheng Zhang, Longfei Zhao, and Yu Zheng,"TossNet: Learning to Accurately Measure and Predict Robot Throwing of Arbitrary Objects with Proprioceptive Sensing", submitted to *IEEE Transactions on Robotics (T-RO)*

[5] **Kun Zhang**, Chen Wang, Hua Chen, Jia Pan, Michael Yu Wang, and Wei Zhang, "Vision-based Six-Dimensional Peg-in-Hole for Practical Connector Insertion", to appear in Proceedings *IEEE International Conference on Robotics and Automation (ICRA), 2023*.

[6] Luo, Luqing, Zhi-Xin Yang, Lulu Tang, and **Kun Zhang**. "An ELM-embedded deep learning based intelligent recognition system for computer numeric control machine tools." IEEE Access 8 (2020): 24616-24629.

[7] Wang, Xian-Bo, Pu Miao, **Kun Zhang**, Xiaoyuan Zhang, and Jun Wang. "Study on novel signal processing and simultaneous-fault diagnostic method for wind turbine." Transactions of the Institute of Measurement and Control 41, no. 14 (2019): 4100-4113.

[8] Yang, Zhi-Xin, Lulu Tang, **Kun Zhang**, and Pak Kin Wong. "Multi-view CNN feature aggregation with ELM auto-encoder for 3D shape recognition." Cognitive Computation 10, no. 6 (2018): 908-921.

[9] **Zhang. K.** Tang, L.L. Yang. Z.X.* Luo, L.Q. , "Intelligent Machine Tools Recognition Based on Hybrid CNNs and ELMs Networks.", to appear in Proceedings *International Conference on Extreme Learning Machine(ELM),2018.* Singapore. Nov 21-23, 2018. (**Oral**)

[10] 张巍, **张坤**, 杨远航, 谌骅, 一种用于夹取类布料物体的模块化末端执行器 [P]. CN Patent, under processing

[11] 郭清, **张坤**, 祝海波, 孙蓉, 离心式控速闭门装置 [P]. CN Patent CN105,332,583 B. & CN Patent CN205,206,567 U

[12] 郭清, **张坤**, 祝海波, 基于 TRIZ 理论的安全节能闭门装置创新设计 [J]. 科技资讯, 2015, 1(12): 2-2.

ACADEMIC SERVICES

Reviewer for following conferences and journals:

- IEEE International Conference on Robotics and Automation(ICRA) (2021 , 2023)
- Journal of Healthcare Engineering(2022)

Teaching Assistant:

- HKUST ELEC1100 Introduction to Electro-Robot Design 2021 Fall
- HKUST ELEC1030 The Rise of Autonomous Robots 2019 Spring
- UM Undergraduate Final Year Project: Structure design of 3D printer 2017
- UM EMEB221 Computer-Aided Design 2017 Spring,2018 Spring
- UM EMEB350 Advanced Manufacturing 2017 Spring
- UM EMEB312 Control Engineering 2016 Fall

HONORS AND AWARDS

- **Visiting Fellowship of SUSTech** 2023-2024

- **Postgraduate Scholarship of HKUST** 2019-2023
- **Postgraduate Scholarship of Macau Government (CTABE)** 2016-2019
- **Student scholarship of HEU** 2012-2016
- ***2nd Prize***, Award on the 4th Method of TRIZ, college innovation competition 2016.05
- ***2nd Prize***, Award on the Heilongjiang college engineering ability competition 2015.12
- ***1st Prize***, Award on the 3rd HEU college engineering ability competition 2014.12
- ***3rd Prize***, Award on the 2nd HEU physical instrument innovation design competition 2014.10
- ***3rd Prize***, Award on the 19th HEU "54 Cup" college technology innovation competition 2013.10
- ***1st Prize***, Award on the 4th HEU "Sailing Cup" college technology innovation competition 2012.11
- **Academic Proof of APS** (Akademische Prüfstelle Kulturreferat der Deutschen Botschaft Peking) 2015.11
- **Outstanding volunteer**, Award on the 7th International College Snow Sculpture competition 2015.12
- **Outstanding volunteer**, Award on the 3rd Method of TRIZ, college innovation competition 2014.05

张 坤

kun.zhang@connect.ust.hk · 17681239556 · 个人主页

教育背景

- **香港科技大学**，工学院，电子与电脑工程系，机器人研究院 2019.08-现在
  哲学博士候选人; 成绩: 3.433/4; 导师: 王煜教授, 王怡雯教授
- **南方科技大学**，工学院 2019.01-现在
  访问研究生; 导师: 张巍教授
- **澳门大学**，科技学院，机电工程系，智慧城市物联网国家重点实验室 2016.09-2019.06
  理学硕士学位; 成绩: 3.52/4; 导师: 杨志新教授
- **哈尔滨工程大学**，机电工程系，机械设计制造及其自动化专业 2012.08-2016.07
  工学学士学位; *GPA:* 84.22/100; 毕设导师: 郑金兴教授

工作经验

- 腾讯科技（深圳）有限公司，*Robotics-X* 实验室，控制中心实习生 2021.05-2021.08
- 深圳蓝胖子机器人有限公司，机器人算法实习生 2019.08-2019.12
- 澳门大学健康安全与环境事务部学生助理 2016.10-2018.12
- 沈阳飞机工业集团有限公司实习生 2016.03-2016.05
- 大连船舶重工集团有限公司实习生 2015.07-2015.09
- 哈尔滨工程大学无碳小车协会竞赛部部长 2014.05-2016.05
- 哈尔滨工程大学机电工程学院团委组织部部长 2013.05-2014.05

个人技能

- **编程**: Python == Matlab > C++
- **三维设计**: Pro/E, Sharp3D, Blender
- **机器人仿真**: PyBullet, MuJoCo, Coppeliasim
- **操作平台**: Linux, LaTeX, ROS, OpenCV, Open3D
- **其它**: 网页制作, 视频剪辑, 微软办公软件
- **语言**: 普通话, 英语 (IELTS6), 粤语 (入门), 德语 (A2)

研究项目

- **机器人操作与感知算法的研究及硬件设计制作** 2019.08-present
  - 机器人软物体操作的算法研究 2022.10-present
  - 机器人模块化灵巧手的设计制作与测试 2022.10-2023.03
  - 机器人接口智能识别与插拔操作算法的研究 2021.10-2022.09
  - 机器人抛接操作算法的研究 2021.05-2021.08
  - 移动操作机器人的设计制作与测试 2021.01-2021.05
  - 机器人非抓取平衡操作算法的研究 2020.07-2020.10
  - 模块化力控机械臂的设计制作与测试 2020.02-2020.07
  - 机械臂最优抓取点选取及自身碰撞检测算法的研究 2019.08-2019.12

- **基于卷积神经网络的机床刀具识别系统** 2016.10-2018.10

  该项目旨在运用卷积神经网络对机床的刀具进行识别，运用 *Pro/E* 软件建立了包含 *5* 个类别的 *500* 个刀具三维模型数据库，搭建基于卷积神经网络的识别系统，系统虚拟生成 *12* 个视角的摄像头对三维模型进行图像采集，然后对图像进行类别识别，最终判断该刀具类型。

- **冰箱冰柜用智能节能自动关门装置** 2014.10–2015.05

  国家级大学生创新创业训练计划 *(*负责人*).* 中国：*201410217077* 指导教师：郭清

学术文章

[1] Zhiming Chen*, **Kun Zhang***, Hua Chen, Michael Yu Wang, Wei Zhang, Hongyu Yu, "DORF: A Dynamic Object Removal Framework for Robust Static LiDAR Mapping in Urban Environments", Submitted to *IEEE Robotics and Automation Letters (RAL)*

[2] **Kun Zhang**, Yuanhang Yang, Zhiming Chen, Hua Chen, Michael Yu Wang, Wei Zhang,"A Modular End Effector with Active Rolling Fingertip for Picking Cloth-like Objects", to appear in Proceedings *IEEE International Conference on Automation Science and Engineering (CASE),2023*

[3] Chen Wang, Haoxiang Luo, **Kun Zhang**, Hua Chen, Jia Pan, Wei Zhang,"POMDP-Guided Active Force-Based Search for Robotic Insertion ", to appear in Proceedings *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS),2023*

[4] Lipeng Chen, Weifeng Lu, **Kun Zhang**, Yizheng Zhang, Longfei Zhao, and Yu Zheng,"TossNet: Learning to Accurately Measure and Predict Robot Throwing of Arbitrary Objects with Proprioceptive Sensing", submitted to *IEEE Transactions on Robotics (T-RO)*

[5] **Kun Zhang**, Chen Wang, Hua Chen, Jia Pan, Michael Yu Wang, and Wei Zhang, "Vision-based Six-Dimensional Peg-in-Hole for Practical Connector Insertion", to appear in Proceedings *IEEE International Conference on Robotics and Automation (ICRA), 2023.*

[6] Luo, Luqing, Zhi-Xin Yang, Lulu Tang, and **Kun Zhang**. "An ELM-embedded deep learning based intelligent recognition system for computer numeric control machine tools." IEEE Access 8 (2020): 24616-24629.

[7] Wang, Xian-Bo, Pu Miao, **Kun Zhang**, Xiaoyuan Zhang, and Jun Wang. "Study on novel signal processing and simultaneous-fault diagnostic method for wind turbine." Transactions of the Institute of Measurement and Control 41, no. 14 (2019): 4100-4113.

[8] Yang, Zhi-Xin, Lulu Tang, **Kun Zhang**, and Pak Kin Wong. "Multi-view CNN feature aggregation with ELM auto-encoder for 3D shape recognition." Cognitive Computation 10, no. 6 (2018): 908-921.

[9] **Zhang. K.** Tang, L.L. Yang. Z.X.* Luo, L.Q. , "Intelligent Machine Tools Recognition Based on Hybrid CNNs and ELMs Networks.", to appear in Proceedings *International Conference on Extreme Learning Machine(ELM),2018.* Singapore. Nov 21-23, 2018. (**Oral**)

[10] 张巍, **张坤**, 杨远航, 谌骅, 一种用于夹取类布料物体的模块化末端执行器 [P]. CN Patent, under processing

[11] 郭清, **张坤**, 祝海波, 孙蓉, 离心式控速闭门装置 [P]. CN Patent CN105,332,583 B. & CN Patent CN205,206,567 U

[12] 郭清, **张坤**, 祝海波, 基于 TRIZ 理论的安全节能闭门装置创新设计 [J]. 科技资讯, 2015, 1(12): 2-2.

学术服务

学术期刊及会议评审员:

- IEEE International Conference on Robotics and Automation(ICRA) (2021，2023)
- Journal of Healthcare Engineering(2022)

课程助教:

- 香港科技大学本科生课程：ELEC1100 Introduction to Electro-Robot Design 2021 秋季
- 香港科技大学本科生课程：ELEC1030 The Rise of Autonomous Robots 2019 春季
- 澳门大学本科生毕业设计：*3D* 打印机的结构设计，窦玉童 *(DB326998),* 程中昱 *(DB327201)* 2017
- 澳门大学本科生课程： EMEB221 Computer Aided Design 2017，2018 春季
- 澳门大学本科生课程： EMEB350 Advanced Manufacturing 2017 春季
- 澳门大学本科生课程： EMEB312 Control Engineering 2016 秋季

荣誉奖励

奖学金:

南方科技大学访问研究生奖学金	2023-2024
香港科技大学研究生奖学金	2016-2023
澳门政府研究生全额奖学金	2016-2019
哈尔滨工程大学一等奖学金	一次，前 3%
哈尔滨工程大学二等奖学金	两次，前 10%
哈尔滨工程大学三等奖学金	两次，前 20%

科技竞赛:

二等奖, 第四届全国“TRIZ”杯大学生创新方法大赛	2016.05
二等奖, 黑龙江省大学生工程训练综合能力竞赛	2015.12
一等奖, 哈尔滨工程大学第三届大学生工程训练综合能力竞赛	2014.12
三等奖, 哈尔滨工程大学第二届物理仪器创新设计大赛	2014.10
三等奖, 哈尔滨工程大学第十九届“五四杯”大学生学术科技创新作品竞赛	2013.10
一等奖, 哈尔滨工程大学第四届“启航杯”大学生科技创新普及竞赛	2012.10

志愿者及其它:

第七届国际大学生雪雕大赛优秀志愿者	2015.12
第三届全国“*TRIZ*”杯大学生创新方法大学优秀志愿者	2014.05
哈尔滨工程大学优秀共青团员	2016.05
哈尔滨工程大学优秀学生干部	2015.05
机电工程学院优秀共青团员	2014.05
机电工程学院优秀共青团干部	2014.05
暑期“三下乡”社会实践活动先进个人	2013.10
军政训练优秀学员称号	2012.09