

Chenyu Zhang

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EDUCATION

School of Electronic Information Engineering, Beihang University (BUAA), Beijing, China

Bachelor of Engineering in Electronic Information Engineering Sep. 2016 – Jun. 2020

- **Major:** Electronic Science and Technology
- **GPA:** 3.67/4.0
- **Rank:** 2/35
- **Core Courses:** Calculus (96/100), C Language Design (96/100), Linear Algebra (99/100), Fundamental Physics (100/100), Complex Function (98/100), Analog Circuit, Digital Circuit, Digital Signal Processing, Stochastic Process Theory, Microwave Technology, Communication Theory, Information Theory

National University of Singapore (NUS), Singapore

Jul. – Sep. 2019

Department of Electrical and Computer Engineering

Offers 2020 fall: Johns Hopkins University Robotics M.S.E., Columbia University MSEE, Duke University MSECE, Northwestern University MSEE, Washington University in St. Louis MSEE, Tufts University MSEE

RESEARCH PUBLICATIONS

- 1) **Chenyu Zhang**, Weiyi Zhang, Ting Wang, Tuo Xie, and Chun Zhang. “Application of Improved K-means Algorithm in Multi-track Clustering”, submitted to *IEEE International conference on Image Processing (ICIP 2021)*.
- 2) Zheng Zhang, Cunjun Ruan, **Chenyu Zhang**, Ayesha Kosar Fahad, Yiyang Su, Pengpeng Wang, Wenlong He, “Multiple Beam and Double-mode Staggered Double Vane Travelling Wave Tube with Ultra-wide Band”, submitted to *Scientific Reports*.
- 3) Zhonghan Zhang, Yanco Jiang, **Chenyu Zhang**, Chun Zhang, and Xiangyu Li. “The Optimization of Localization and Navigation for Vision-Based Robot”, accepted for lecture presentation by *IEEE International Conference on Integrated Circuits, Technologies and Applications (ICTA 2019)*, full paper in press.
- 4) **Chenyu Zhang**, Cunjun Ruan, “Investigation of W-band High Power TWT Amplifier with Broadband Output Window”. accepted by *Photonics & Electromagnetics Research Symposium (PIERS 2019)*, full paper in press.
- 5) Renjie Li, Cunjun Ruan, Ayesha Fahad, **Chenyu Zhang**, and Shasha Li. “Broadband and High-power Terahertz Radiation Source Based on Extended Interaction Klystron”, *Scientific Reports*, issue 9, no. 4584, Mar. 2019.

RESEARCH EXPERIENCES

Computer Vision Learning and Research, Tsinghua University

Apr. 2020 – Jul. 2020

Advisor: Professor Chun Zhang

- Reimplemented ORB SLAM2 and modified the camera parameters
- Learned basic theoretical knowledge about SLAM
- Learned about CNN and YOLO, and their application on object detection

Design of Scanning Sensor for Ground Flatness Measurement, NUS

Jul. – Sep. 2019

Research Assistant | Advisor: Prof. Loh Ai Poh

- Designed and built scanning sensor based on Lidar, which can calculate ground flatness based on distances and angles of returned signal
- Performed detailed analysis on Lidar sensing resolution by developing program in MATLAB
- Constructed experimental system consisting of Lidar connected with Raspberry Pi, performed hardware experiment, and processed collected data
- Successfully demonstrated feasibility of developed sensor and achieved agreement between experimental results and theoretical analysis

An Improved K-means Algorithm in Multi-track Image Recognition, Tsinghua University

Advisor: Professor Chun Zhang

Mar. 2019 – Feb. 2020

- Identified deficiencies of traditional K-means algorithm and proposed new clustering algorithm to solve multi-track image recognition problem
- Implemented proposed algorithm, performed experiment, and benchmarked its performance with state-of-the-art clustering algorithm
- Analyzed down-sampling performance of proposed algorithm thoroughly
- Broadened algorithm into clustering circles and curves; analyzed thoroughly the anti-noise performance, accuracy and efficiency of total algorithm
- First-author paper (submitted to ICIP 2021)

Design of Broad-band Slow Wave Structure and Output Window for 94GHz Staggered Double-vane Traveling Wave Tube, BUAA

May 2018 – Sep. 2019

Advisor: Professor Cunjun Ruan

- Designed and developed a planar distributed three-beams SDV-SWS with broadband input/output diamond windows at center frequency of 95GHz
- Achieved good dispersion characteristics and transmission properties with ultra-wide band
- Used electromagnetic simulation software like CST Studio to design, simulate and test model
- Demonstrated a high output power and a broad band for W-band SDV-TWT without any oscillation
- Completed first-authored paper (accepted by PIERS 2019) and a co-author paper (submitted to IEEE Transactions on Terahertz Science and Technology)

AWARDS AND HONORS

- *Jun 2019*, Yuanhang Undergraduate Summer Overseas Research Scholarship
- *May 2019*, Third Prize in Class B of Innovation and Entrepreneurship Scholarship by Ministry of Industrialization Information
- *Nov 2018*, **Excellent Ranking** in National Undergraduate Training Program for Innovation and Entrepreneurship

- *Dec 2018*, Special Award of Academic Scholarship (top 3%)
- *May 2018*, Led team to win **First Prize** in China Undergraduate Physics Tournament in North China Division
- *Feb 2018*, Honorable Prize of MCM/ICM
- *Dec 2017*, **First Prize** in the Physics Competition in Beihang University
- *Dec 2017*, Outstanding Scholarship (top 5%)
- *Nov 2017*, **First Prize** of Outstanding Study Scholarship (top 5%)
- *Oct 2017*, Competitive-world Scholarship (top 1%)

SKILLS AND INTERESTS

Language: English (fluent), Chinese (native)
TOFEL: 104 (29+25+25+25) | **GRE:** 323 (V156+Q167+3.0)

Computer: C/C++, Python, MATLAB, Verilog

Mathematics: Calculus, Complex Analysis, Differential Equation, Linear Algebra, Probability Theory

Interests: Social Sciences (Game Theory, Psychology), enjoy reading books on Deep Learning;
 Volunteer as science teacher at the local primary school; school chorus, school band II (violinist)

张琛煜

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教育经历

电子信息工程学院, 北京航空航天大学, 中国, 北京

工学学士学位

2016.9 – 2020.6

- 专业: 电子科学与技术
- GPA: 3.67/4.0
- 排名: 2/35
- 核心课程: 数学分析(96/100), C 程序设计(96/100), 高等代数(99/100), 基础物理学(100/100), 复变函数与积分变换(98/100), 模拟电路, 数字电路, 数字信号处理, 随机过程理论, 微波技术, 通信原理, 信息论

新加坡国立大学(NUS), 新加坡

2019.7 – 2019.9

ECE 学院暑期学术交流

2020 秋季申请结果: Johns Hopkins University Robotics M.S.E., Columbia University MSEE, Duke University MSECE, Northwestern University MSEE, Washington University in St. Louis MSEE, Tufts University MSEE

学术成果

- 1) **Chenyu Zhang**, Weiyi Zhang, Ting Wang, Tuo Xie, and Chun Zhang. “Application of Improved K-means Algorithm in Multi-track Clustering”, submitted to *IEEE International conference on Image Processing (ICIP 2021)*.
- 2) Zheng Zhang, Cunjun Ruan, **Chenyu Zhang**, Ayesha Kosar Fahad, Yiyang Su, Pengpeng Wang, Wenlong He, “Multiple Beam and Double-mode Staggered Double Vane Travelling Wave Tube with Ultra-wide Band”, submitted to *Scientific Reports*.
- 3) Zhonghan Zhang, Yanco Jiang, **Chenyu Zhang**, Chun Zhang, and Xiangyu Li. “The Optimization of Localization and Navigation for Vision-Based Robot”, accepted for lecture presentation by *IEEE International Conference on Integrated Circuits, Technologies and Applications (ICTA 2019)*, full paper in press.
- 4) **Chenyu Zhang**, Cunjun Ruan, “Investigation of W-band High Power TWT Amplifier with Broadband Output Window”. accepted by *Photonics & Electromagnetics Research Symposium (PIERS 2019)*, full paper in press.
- 5) Renjie Li, Cunjun Ruan, Ayesha Fahad, **Chenyu Zhang**, and Shasha Li. “Broadband and High-power Terahertz Radiation Source Based on Extended Interaction Klystron”, *Scientific Reports*, issue 9, no. 4584, Mar. 2019.

科研经历

计算机视觉学习和调研, 清华大学

2020.4 – 2020.7

指导老师: 张春 副教授

- 复现了 ORB SLAM2 并优化了相关相机参数
- 学习 SLAM 的基础理论知识
- 学习 CNN 和 YOLO, 以及它们在目标检测方面的应用

用于地面平整度测量的扫描传感器设计, NUS

2019.7 – 2019.9

研究助理 | 指导老师: Prof. Loh Ai Poh

- 设计并建造了基于激光雷达的扫描传感器, 可根据返回信号的距离和角度计算地面平整度
- 通过在 MATLAB 中编写程序, 对激光雷达传感分辨率和检测精度进行了详细分析
- 构建了由激光雷达与树莓派连接组成的实验系统, 进行了硬件实验, 并对采集到的数据进行了处理
- 证明了所开发传感器的可行性, 实验结果与理论分析一致

一种改进的 K-means 多轨迹图像识别算法, 清华大学

2019.3 – 2020.2

指导老师: 张春 副教授

- 指出了传统 K-means 算法的不足, 提出了新的聚类算法来解决多航迹图像识别问题
- 实现了提出的算法, 进行了实验, 并用将其与其他聚类算法进行了定性分析和定量分析对比
- 分析了所提出算法的降采样性能
- 将算法扩展为聚类圆和曲线; 深入分析了总体算法的抗噪性能、精度和效率
- 第一作者文章 (准备投稿 ICIP 2021)

94GHz 交错双栅行波管宽带慢波结构及输出窗设计, 北京航空航天大学

2018.5 – 2019.9

指导老师: 阮存军 教授

- 设计了中心频率为 95GHz 的平面分布三波束 SDV-SWS, 以及具有宽带输入/输出金刚石窗片
- 通过超宽带获得良好的色散特性和传输特性
- 使用 CST Studio 等电磁仿真软件设计、仿真和测试模型
- 展示了 W 波段 SDV-TWT 的高输出功率和宽频带, 无任何振荡
- 完成了一篇第一作者文章 (已被 PIERS 2019 接收) 和一篇合作作者文章 (已投稿至 Scientific Reports)

奖励和荣誉

- Jun 2019, 远航本科生暑期科研奖学金
- May 2019, 工信部创新创业奖学金三等奖
- Nov 2018, 主持全国大学生创新创业项目, 并获得**优秀结题**
- Dec 2018, 学科竞赛奖学金特等奖(top 3%)
- May 2018, 全国大学生物理学术竞赛 (CUPT) 华北赛区**一等奖**, 北航二队队长
- Feb 2018, 美国大学生数学建模竞赛 MCM/ICM 获得 H 奖
- Dec 2017, 北航校物理竞赛**一等奖**
- Dec 2017, 校优秀生(top 5%)
- Nov 2017, 学习优秀**一等奖**(top 5%)
- Oct 2017, 北航之友竞技世界奖学金(top 1%)

技能和兴趣

语言: 英语 (流利), 中文 (母语)

TOFEL: 104 (29+25+25+25) | **GRE:** 323 (V156+Q167+3.0)

编程语言: C/C++, Python, MATLAB, Verilog

数学: 微积分, 复变函数, 微分方程, 线性代数, 概率论

兴趣: 社会科学 (博弈论、心理学); 在本地小学当科学老师志愿者; 校合唱团, 校乐团 II 团 (小提琴手)