



姓 名：张津阳 簿 贯：天津市  
民 族：汉族 政治面貌：中共党员  
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## 教育经历

浙江大学 农业机械化工程 工学博士（国家奖学金 三好研究生 优秀研究生） 2017年9月-2022年6月  
西北农林科技大学 农业机械化及其自动化 工学学士（GPA:3.66/4.0 专业2/90 国家奖学金 校长奖学金） 2013年9月-2017年6月

## 项目经历

**基于微波自由空间法的谷物含水率在线测量方法及装置的研究（“十三五”国家重点研发计划子课题）** 2017年9月至今  
在开展研究工作过程中，撰写 3篇 学术论文，获得 6项 国家发明专利，申请 1项 PCT国际专利（通过创造性检索），研究内容如下：

- **基于微波传感技术的高水分物料含水率测量方法的研究** 2017年9月-2019年8月
  - 为实现对高含水率物料进行无损、非接触的水分测量，提出多频微波扫描测量方法MFSM，基于MFSM研制出微波含水率测量试验平台，使用深度学习算法(DNN)和机器学习算法(XGBoost、AdaBoost、RF)基于微波特征数据建立含水率预测模型；
  - 以第一作者，在**仪器仪表和电气工程顶刊 IEEE Transactions on Instrumentation and Measurement** 上发表“Development of Multi-frequency Swept Microwave Sensing System for Moisture Measurement of Sweet Corn With Deep Neural Network”（一区, IF 4.016）；
- **微波含水率在线传感系统的研发与微波测量频率优选算法的研究** 2019年9月-2020年5月
  - 为实现含水率的在线测量，模拟产线环境研制出微波含水率在线测量仪OM2S2，基于递归特征消除算法RFE与投票策略MVM提出二阶频率优选框架FSF以压缩测量频率，使用深度/机器学习算法构建含水率预测模型，由非参数检验方法决定最终模型；
  - 以第一作者，在**电气和计算机工程顶刊 IEEE Transactions on Industrial Electronics** 上发表“OM2S2: On-Line Moisture-Sensing System Using Multi-frequency Microwave Signals Optimized by a Two-Stage Frequency Selection Framework”（一区 top, IF 8.236）；
- **与厚度无关的含水率测量方法及微波相移参数校正算法的研究** 2020年6月-2021年4月
  - 为消除物料厚度波动对含水率测量的影响，利用激光传感器捕捉厚度波动，建模时考虑厚度波动对微波衰减、相移的影响，基于相移测量遵循的原则提出相移校正算法PSCA以获取准确的相移值，结合框架FSF与非参数检验同时控制频率的质量和数量；
  - 以第一作者，在**电气和计算机工程顶刊 IEEE Transactions on Industrial Electronics** 上发表“Thickness-Independent Measurement of Moisture Content by Attenuation and Corrected Phase Shift of Microwave Signals at Optimized Frequencies”（一区 top, IF 8.236）。

## 苹果园对靶精量施肥控制系统设计

2016年6月-2017年6月

- 针对人工挖穴施肥低效的问题，开发果园机械施肥控制系统，以Qt(C++)开发上位机软件、单片机研制施肥控制器，实现精量施肥；
- 以本项目为背景完成毕业设计，并获得西北农林科技大学“**优秀毕业论文**”。

## 智能温室喷药机器人设计

2015年10月-2016年12月

- 针对人工施药造成植株受药不均、难以双面受药问题，基于SLAM导航底盘与双向对靶喷药技术开发机器人，实现温室自动化施药；
- 项目获批**国家级“大学生创新创业训练项目计划”**，并在“东方红”杯第二届全国大学生智能农业装备创新大赛获得**全国一等奖**。

## 校园经历

### 浙江大学 生工食品学院 研究生男子篮球队 队长

2019年9月-2020年10月

- 组织队员定期进行训练，积极参加浙江大学“三好杯”篮球比赛，在农生环学部五院篮球比赛中获得二等奖。

### 浙江大学 生工食品学院 智能农业装备研究所研究生第三党支部 组织委员

2017年10月-2018年10月

- 负责党支部各类活动的策划和组织，培养考察积极分子和预备党员，转接党员的组织关系，收缴支部党费。

### 西北农林科技大学 科学技术协会 组织部长

2015年9月-2017年3月

- 组织协会定期交流项目经验、分享科创作品，策划和组织开展校级科技创新成果展示活动一次。

## 技能证书

- **专业技能：**数据分析基础：熟练掌握Python语言，熟练使用PyTorch、Scikit-learn等机器学习库、分析模型建立及部署至C++；  
GUI开发基础：熟练使用Qt软件，熟练掌握Qt的多线程编程、数据库操作、串口通信，熟悉C/C++编程语言；  
嵌入式基础：熟练使用STM32、Arduino系列单片机以及程序开发工具Keil软件，熟悉Linux系统基本操作；

**机械制图基础:** 熟练使用 Solidworks、Pro/E、UG三维建模软件，熟练使用AutoCAD二维制图软件；

**数据 库 相 关:** 熟悉使用MySQL数据库及其数据库管理工具Navicat。

- **语言水平:** 英语 (CET-6)，文献阅读、消化能力强，在学科顶级国际学术会议 ASABE 2021做过英文汇报。

## 自我评价

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- 能够快速学习新知识、融入新环境，并且有较强的应用知识解决问题的能力。
- 善于沟通，有较强的进取心和积极性，喜欢迎接挑战并能承受工作压力，善于合理分配任务和规划时间。

## Zhang Jinyang

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### EDUCATION

**Ph.D., Agricultural Mechanization Engineering, Zhejiang University** (China “First-class universities of the world” Plan) Sep 2017 - Jun 2022

- Dissertation: “Online Detection Method and System for Grain Moisture Based on Selective Multi-Frequency Microwaves Swept (SMFMS)”
- Advisor: Professor Zhenbo Wei, and Professor Jun Wang

**B.E., Agricultural Mechanization and Automation, Northwest A&F University** (China “First-class universities of the world” Plan) 2013-2017

- GPA: 3.66/4.0 (Top 2/90)
- Dissertation: “Design of Target Precision Fertilization Control System for Apple Orchard”
- Advisor: Professor Xiaoli Yan

### RESEARCH INTERESTS

Microwave sensing systems for food internal quality evaluation, Development of miniaturized microwave sensors, Dielectric properties.

### AWARDS & HONORS

- **National Scholarship**, Ministry of Education of China, 2021;
- Outstanding Graduate Student, Zhejiang University, 2020;
- Outstanding Doctoral Post Scholarship, Zhejiang University, 2019;
- Outstanding Graduates, Northwest A&F University, 2017;
- **National Scholarship**, Ministry of Education of China, 2016;
- **Principal Scholarship**, Northwest A&F University, 2015;

### PUBLICATIONS

- [1] **Jinyang Zhang**, Jun Wang, Zhenbo Wei, et al., “Multifrequency Microwave Dielectric Properties-Based Method Coupled with SPA-PLSDA Algorithm for Rapid Discrimination of Grain Mildew,” in **IEEE Transactions on Industrial Informatics (IF=10.215)**. (Under review)
- [2] Zhenbo Wei, **Jinyang Zhang**, Jun Wang, et al., “Fabrication and Application of Three-Dimensional Nanocomposites Modified Electrodes for Evaluating the Aging Process of Huangjiu,” in **Food Chemistry (IFs=7.516)**, vol. 372, pp. 131158, Jan.2022, doi: 10.1016/j.foodchem.131158.
- [3] **Jinyang Zhang**, Jun Wang, Zhenbo Wei, et al., “Thickness-Independent Measurement of Grain Moisture Content by Attenuation and Corrected Phase Shift of Microwave Signals at Multiple Optimized Frequencies,” in **IEEE Transactions on Industrial Electronics (IFs=8.882)**, doi: 10.1109/TIE.2021.3116582.
- [4] **Jinyang Zhang**, Jun. Wang, Zhenbo Wei, et al., “OM2S2: On-Line Moisture-Sensing System Using Multifrequency Microwave Signals Optimized by a Two-Stage Frequency Selection Framework,” in **IEEE Transactions on Industrial Electronics (IFs=8.882)**, vol. 68, no. 11, pp. 11501-11510, Nov. 2021, doi: 10.1109/TIE.2020.3032927.
- [5] **Jinyang Zhang**, Jun Wang, Zhenbo Wei, et al., “Development of Multifrequency-Swept Microwave Sensing System for Moisture Measurement of Sweet Corn with Deep Neural Network,” in **IEEE Transactions on Instrumentation and Measurement (IFs=3.953)**, vol. 69, no. 9, pp. 6446-6454, Sept. 2020, doi: 10.1109/TIM.2020.2972655.

### PATENTS

- [1] Zhenbo Wei, **Jinyang Zhang**, et al. 2020. Second-Order Frequency Selection Method and Apparatus for Microwave Frequency Sweep Data. International PCT Patent. PCT/CN2021/096341, filed May 27, 2021. Patent pending (National stage, USA and Japan).
- [2] Zhenbo Wei, **Jinyang Zhang**, et al. 2021. A Novel Two-Stage Frequency Selection Method and Device Applied to Microwave Frequency Swept Data. China National Invention Patent. CN202010542110.6, filed Jun 15, 2020, and issued Aug 3, 2021.
- [3] Zhenbo Wei, **Jinyang Zhang**, et al. 2020. A Measurement Device for Grain Moisture Content Based on Multi-Frequency Microwaves Swept Measurement Method. China National Invention Patent. CN201910063588.8, filed Jan 23, 2019, and issued Nov 3, 2020.
- [4] Zhenbo Wei, **Jinyang Zhang**, et al. 2020. A Method for Measuring Grain Moisture Content Based on Multi-Frequency Microwaves Swept Measurement Method. China National Invention Patent. CN201910064268.4, filed Jan 23, 2019, and issued Jun 19, 2020.
- [5] Zhenbo Wei, **Jinyang Zhang**, et al. 2020. An Online Measurement Device for Grain Moisture Content Based on Multi-Frequency Microwaves Swept Measurement Method. China National Invention Patent. CN201910064299.X, filed Jan 23, 2019, and issued Apr 17, 2020.
- [6] Zhenbo Wei, **Jinyang Zhang**, et al. 2020. A Microwave Antennas Detection Distance Optimization Method and Device Applied to Grain Moisture Content Detection System. China National Invention Patent. CN201910063654.1, filed Jan 23, 2019, and issued Apr 17, 2020.
- [7] Zhenbo Wei, **Jinyang Zhang**, et al. 2020. A Microwave Antennas Automatic Alignment Device Applied to Grain Moisture Content Detection System. China National Invention Patent. CN201910063629.3, filed Jan 23, 2019, and issued Apr 17, 2020.

## **CONFERENCE PRESENTATIONS**

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### **Oral Presentations**

- Jinyang Zhang. (2021, Jul). "On-Line Moisture-Sensing System using Multi-Frequency Microwave Signals Optimized by Novel Two-Stage Frequency Selection Framework." American Society of Agricultural and Biological Engineers (ASABE) Annual International Meeting 2021, Anaheim, California, United States. (Participated online)
- Jinyang Zhang. (2018, Nov). "Determination of Moisture Content of Sweet Corn by Using Multifrequency Microwaves Swept Measurement." Chinese Society for Agricultural Machinery (CSAM) Academic Annual Conference 2018, Hangzhou, Zhejiang, China.

## **TEACHING EXPERIENCE**

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### **Teaching Assistant, The Principles of Food Engineering**

Autumn 2018, 2019, 2020

*College of Biosystems Engineering and Food Science, Zhejiang University*

- Introduced undergraduates to fluid mechanics experiments, such as fluid flow resistance determination.
- Provided advice and assistance to undergraduates as they conduct work in the lab.

## **UNIVERSITY SERVICE**

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### **Basketball Team Captain**

Oct 2019 - Oct 2021

*College of Biosystems Engineering and Food Science, Zhejiang University*

- Organized regular training and practice games for team members.
- Led teammates participated in the Sanhao Cup of Zhejiang University, and broke into the Top 16.
- Led teammates participated in the department basketball game, and won the second prize.

### **Minister of Organization Department**

Sep 2015 - Mar 2017

*Association for Science and Technology, Northwest A&F University*

- Organized members of the association to regularly exchange project experience and share scientific and technological works.
- Planned and organized a school-level scientific and technological innovation achievement display activity.

## **TECHNICAL SKILLS**

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- **Programming languages and mathematical packages:** Python, Matlab, C, C ++
- **Data analysis and visualization:** OriginPro, Excel, SPSS, SIMCA, Unscramble, GraphPad
- **Machine/deep learning packages:** PyTorch, Scikit-learn, Keras, TensorFlow
- **Computer aided design/engineering:** Solidworks, Pro/E, UG, AutoCAD
- **Embedded systems:** STM32, Arduino, Keil, Linux (Ubuntu)
- **Other:** LaTeX, MySQL, Comsol, Android Studio

## **LANGUAGES**

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English: Proficient

## **REFERENCES**

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### **Zhenbo Wei, Professor and Department Vice-Chair**

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