Mengdi JIA

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EDUCATION

Anhui Agricultural University **2020.09 - 2023.06**

- **Major:** *Master of Engineering in Agricultural Engineering*
- **GPA:** 3.62 / 4.0
- **Master thesis:** *Multi-factor experimental investigation of the relationship between cracking and drying characteristics parameters during walnut drying*

Hebei Agricultural University **2014.09 - 2018.06**

- **Major:** *Bachelor of Engineering in Mechanical Design, Manufacturing &Automation*
- **GPA:** 3.52 / 4.0 (**TOP 5%**)

PUBLICATONS AND PATENTS

• KANG Jia, WANG Nan, JIANG Haiyong, XU Pengyun, **JIA Mengdi**, SHAO Limin. (Mar.2021). ***Experimental research on cotton seed depth detection system based on magnetic field.*** JOURNAL OF HEBEI AGRICULTURAL UNIVERSITY Vol.44 No.2 (http: // hauxb. hebau. edu. Cn; DOI:10.13320/j.cnki.jauh.2021.0033)

• **Mengdi Jia**[1 *], Zekun Qi[14 *], Shaochen Zhang[2], Wenyao Zhang[34], Xinqiang Yu[4], Jiawei He[4], He Wang[45], Li Yi[16‡]. (NeurIPS Submitted) ***OmniSpatial: Towards Comprehensive Spatial Reasoning Benchmark for Vision Language Models.***

• Wu Zhen, Wang Xiaojun, Song Hongfei, **Jia Mengdi**, Fang Chenyu.(14th Nov. 2023). ***A device and method for light emission protection of photoacoustic probes based on transparent capacitive films.*** **CN 113827183 B**

• Song Hongfei, Wang Xiaojun, Wu Zhen, Fang Chenyu, **Jia Mengdi**, Wei Shengyi. (25th Jan. 2022). ***Monitoring devices and methods for visible and invisible light energy of lasers***. **CN 113970371 A**

• Song Hongfei, Wang Xiaojun, Wu Zhen, Fang Chenyu, **Jia Mengdi**, Wei Shengyi. (25th Jan. 2022). ***A differential analog transmission system for the acquisition of photoacoustic signals***. **CN 113966996 A**

• Wu Zhen, Wang Xiaojun, Song Hongfei, **Jia Mengdi**, Fang Chenyu.(24th Dec. 2021). ***A laser emission protection method applicable to photoacoustic imaging systems*** **CN 113827184 A**

• Song Hongfei, Wang Xiaojun, Wu Zhenfang, Chenyu, **Jia Mengdi**, Wei Shengyi.(12th Jan. 2021). ***A differential analog transmission device for photoacoustic signal acquisition.*** **CN 212326383 U**

• Song Hongfei, Wang Xiaojun, Wu Zhen, Fang Chenyu, **Jia Mengdi**, Wei Shengyi. (12th Jan. 2021). ***Monitoring devices for visible and invisible light energy of lasers***. **CN 212340426 U**

• **Jia Mengdi,** Feng Yongfei, Jiang Haiyong, Zhou Yongjie Wang Nan.(12th Apr. 2019). ***A seed depth detection system based on magnetic field.*** **CN 208736340 U**

• **Jia Mengdi.** (27th Apr.2018). ***A Extrusion Device for Additive Manufacturing of Flexible Materials Using Hard Materials.*** **CN 207273878 U**

• Du Yujie, **Jia Mengdi**.(2nd Mar. 2018). ***A Peach Flower Stamen Cutting Mechanism.*** **CN 207054379 U**

RESEARCH EXPERIENCES

OmniSpatial: Towards Comprehensive Spatial Reasoning Benchmark for Vision Language Models 2024/10 - Present

- Achievement: Submitted to NeurIPS
- Procedure: Initially, a brand-new classification framework for visual-spatial intelligence has been introduced. Then, the OmniSpatial dataset has been developed. Finally, the PointGraph method was proposed and its effectiveness in handling complex spatial reasoning tasks was verified.

Experimental Investigation on the Crack Propagation Principle of Pecan under Heating State 2021.11 - 2023.06

- Aim: To improve the shelling efficiency of pecans and explore the principle of crack propagation of woody husks
- Method: Developed an integrated monitoring system featuring: (1) a LabVIEW-based real-time weight-temperature monitoring platform; (2) a YOLOv8 deep learning algorithm for crack detection; (3) a NIR spectroscopy coupled with BP neural network for moisture content prediction.

Single-degree-of-freedom telescopic arm vibration suppression implementation 2018.12 - 2019.04

- Aim: To solve the vibration phenomenon during the extension of a single-degree-of-freedom telescopic motion robotic arm
- Method: Coupled with C++ and control servo motors, implemented Active Disturbance Rejection Control algorithm from MATLAB to achieve precise motor control on multi-axis motion control board.

WORK EXPERIENCES

Beijing Donghong Zhiyuan Medical Technology Co., LTD 2024/09 - Present

Structural Engineer (Project Leader)

- Project Management: Led the high-frequency surgical device project, optimized technical solutions, updated system documentation, and renewed the registration certificates.
- Structural Design: Developed structural designs for high-frequency surgical equipment, spinal endoscope imaging processors, electronic endoscope sheaths, and mass production of optical spinal endoscopes.
- Document Output: Cooperated with the production, quality and system departments to optimize the output of system documents, BOM and drawings maintenance.

Beijing Transeasy Medical Technology Co., LTD 2024/05 - 2024/07

Assistant R&D Engineer

- Product Development: Designed an innovative a mechanism with pure mechanical transmission enabling 5mm-diameter single and continuous suturing and secure patching through comprehensive clinical research.
- Technical Document: Developed and maintained technical documents such as user manuals, product catalogs, and technical specifications.
- Verification Support: Collaborated with process and quality teams on biological testing and shelf-life validation.
- Component Testing and Optimization:Performed mechanical testing and dimensional inspection to optimize component selection and assembly performance.
- Tooling and Label Design: Designed assembly tooling using Creo and product labels via Adobe Illustrator, while managing suppliers communications for printing and machining.

Beijing Precision Medical Technology Co., LTD 2023/07 - 2024/04

R&D Assistant

- Testing & Calibration: Performed robotic arm zero-position correction and recorded end-effector motion paths using PolyWorks software.
- Electromechanical System Integration: Designed and Assembled the electrical cabinet which work in the MRI environment, connected the robotic arm for debugging.
- Tooling Design: Designed and processed an incoming inspection fixture for robotic pressure sensors， incorporating linear motion units, lever mechanisms, sliding cam assemblies, spring linkage, and data-flashing contacts.
- Product Design & Documentation: Designed a puncture needle holding mechanism and a quick release mechanism for connecting the puncture mechanism to the robotic arm, while maintaining BOMs, test records, SOP templates, and 5 patent applications (all granted).

Biophotonics Lab, Dept. of Electronics, Tsinghua University & Tianjin Langyuan Technology Co., LTD & Southeast China Big Data Industrial Park 2019/12 - 2020/09

Intern

- SolidWorks-Based Biomedical Design: Employed SolidWorks to design and manufacture components for a photoacoustic imaging system, including a DAQ sheet metal enclosure, optical arm extension accessories, and a handheld linear-array breast probe housing.

EXTRACURRICULAR ACTIVITIES

Solidreamer 2014/08 - 2017/06

Chief Technology Officer

- Founder of Hebei Agricultural University Maker Space Society: Established school-enterprise collaboration by providing 3D printing services to off-campus companies.
- Educational Program Director: Pioneered a unique student-led business model through organizing teaching activities with startup Solidreamer, achieving consistent profitability.
- Product Developer: Designed and developed educational kits (3D printers, 3D printing pens, youth robotics sets) and STEAM curricula, and collected 80 user feedback reports for improvements.

SKILLS AND PROFESSIONAL CERTIFICATES

Languages:

Chinese: native // English: fluent // Japanese: basic

IT Skills:

Programming Languages: Basic in C++, Python, MATLA, PLC // CAD/CAM Software: Proficient in SolidWorks and basic in Creo, CAXA CAD and Mastercams // Simulation & Analysis: Basic in ABAQUS, LabVIEW // Control Systems: Basic in Beckhoff and Keile

Professional Certificates:

Certificate of 3D CAD Application Engineer// Certificate of CNC vocational qualification (Advanced) // NCRE Level 2 (C++ Programming)

ADDITIONAL INFORMATION

Certificates/Honors:

First class scholarship(2014-2016) // The First prize in the World Robot Olympiad // The Third prize in National College Students Contest of Computer Ability// Third prize in Hebei Province 3D Drawing and Composition Ability Competition // The third prize in the "Internet +" Innovation and Entrepreneurship Competition // Third prize in the China Directional Open Competition

Associations:

Aero Sports Federation of China (ASFC) // Baoding Robotics Sports Association

Hobbies:

Orienteering (National Class 2 Orienteering Referee License; Class 2 Track & Field Referee License of Baoding City) // HEMA // Boxing // Photography