

# Jiwei Zhou

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## EDUCATION

Purdue University, West Lafayette, IN

Ph.D. in Technology

May 2023

GPA: 3.98/4.0

Shanghai Jiao Tong University, Shanghai, China

M.Eng. in Software Engineering

June 2016

Zhuhai College of Jilin University (now Zhuhai College of Science and Technology), Guangdong, China

B.E. in Mechanical Design & Manufacture and Automation

July 2012

## JOURNAL PUBLICATIONS

- J1. **Zhou, J.**, Camba, J. D., Company, P. (2026). CADialogue: A Multimodal LLM-Powered Conversational Assistant for Intuitive Parametric CAD Modeling. *Computer-Aided Design*, 191, 104006. <https://doi.org/10.1016/j.cad.2025.104006>
- J2. **Zhou, J.**, & Camba, J. D. (2025). The status, evolution, and future challenges of multimodal large language models (LLMs) in parametric CAD. *Expert Systems with Applications*, 282, 127520. <https://doi.org/10.1016/j.eswa.2025.127520>
- J3. **Zhou, J.**, Camba, J. D., Li, X. (2025). An Approach to Drawing Automation of Ship Stiffeners in the Shipbuilding Industry. *Computer-Aided Design and Applications*, 22(1), 26-41. <https://doi.org/10.14733/cadaps.2025.25-41>
- J4. **Zhou, J.**, & Hartman, N. W. (2024). A Model-Based Visual Inspection System (MBVIS) for Critical Plastic Bottle Dimensional Measurements. *Computer-Aided Design and Applications*, 21(2), 270-280. <https://doi.org/10.14733/cadaps.2024.270-280>
- J5. **Zhou, J.**, & Hartman, N. W. (2024). Development and Evaluation of a Vision Inspection System for Plastic Bottle Measurement. *Advances in Science and Technology*, 149, 41-50. <https://doi.org/10.4028/p-HPT9vc>
- J6. **Zhou, J.**, & Camba, J. D. (2021). Computer-aided process planning in immersive environments: A critical review. *Computers in Industry*, 133, 103547. <https://doi.org/10.1016/j.compind.2021.103547>

## PEER-REVIEWED CONFERENCE PROCEEDINGS

- C1. Company, P., Camba, J. D., Contero, M., **Zhou, J.** (Accepted). From conceptual to embodiment design using Sketch-Based Modeling and Feature Recognition Techniques. *23rd annual International CAD Conference (CAD'26)*.
- C2. **Zhou, J.**, Camba, J. D., Company, P., Contero, M. (Accepted). Drawing-Checker: A Vision RAG Framework for Automated Comparison of Engineering Drawings. *36th CIRP Design Conference (CIRP Design 2026)*.
- C3. **Zhou, J.**, Gupta, D., & Camba, J. D. (Accepted). Prompt2CAD: A Lightweight LLM Framework for Conversational CAD Generation and Iterative Refinement. *2025 International Conference on Industry of the Future and Smart Manufacturing (ISM)*.
- C4. Gupta, D., Camba, J. D., Fuerst, T., & **Zhou, J.** (2025). WIP: An AI-Based Virtual Assistant for Supporting a Large Engineering Course. *2025 IEEE Frontiers in Education Conference (FIE)*, <https://doi.org/10.1109/FIE63693.2025.11328408>
- C5. **Zhou, J.**, & Hartman, N. W. (2023). A Framework for Model-Based Visual Inspection: A Case Study of Bottle Dimensional Measurements in the Plastics Industry. *2023 CAD Conference and Exposition* (pp. 74-79). <https://doi.org/10.14733/cadconfP.2023.74-79>
- C6. **Zhou, J.**, Camba, J. D., Hartman, N. W., & Li, Z. (2022). An Approach to Extend the Digital Thread From Requirements to Model Geometry. *Manufacturing Science and Engineering Conference (MSEC) 2022*. <https://doi.org/10.1115/MSEC2022-80857>
- C7. **Zhou, J.**, Camba, J. D., & Fuerst, T. (2022). A Comparative Study on the Use and Interpretation of Annotated 3D Models. IFIP International Federation for Information Processing 2022. *18th International Conference on Product*

*Lifecycle Management*. O. Canciglieri Junior et al. (Eds.): PLM 2021, IFIP AICT 640, 1-14. Curitiba, Brazil. July 11-14, 2021. **Best Paper Award Nominee**. [https://doi.org/10.1007/978-3-030-94399-8\\_23](https://doi.org/10.1007/978-3-030-94399-8_23)

## **MANUSCRIPTS UNDER REVIEW**

- J1. Camba, J.D., **Zhou, J.** (Under Review). GenAI-Aided Design in Engineering Education: Competencies, Challenges, and Opportunities. *Computer-Aided Design*.
- J2. Gupta, D., Camba, J.D., Fuerst, T., **Zhou, J.** From Queries to Conversations: Exploring AI-Based Virtual Assistant Adoption, Usability, and Impact in Engineering Education. *ASEE Computers in Education*.
- C1. **Zhou, J.**, & Camba, J. D. (Under Review). EngDraw-Extractor: A Multi-Agent System for Information Extraction from 2D Engineering Drawings. *International Design Engineering Technical Conferences & Computers and Information in Engineering Conference (IDETC-CIE 2026)*.
- C2. **Zhou, J.**, Camba, J. D., Company, P., Contero, M. (Under Review). AutoDrawVQA: Automated Visual Question Answering Generation from Engineering Drawings. *Manufacturing Science and Engineering Conference (MSEC 2026)*.
- C3. Camba, J.D., Contero, M., and **Zhou, J.** (Under Review). Large Language Models in Digital Manufacturing: An Empirical Study of Verification-Centered Design Cognition. *12th International Conference on Design Computing and Cognition (DCC'26)*.

## **MANUSCRIPTS IN PREPARATION**

- J1. **Zhou, J.**, Camba, J.D., Company, P. ParamDrawCAD: A Multimodal Dataset Linking Parametric CAD Models, Geometry, and Engineering Drawings (Anticipated submission: 2026).
- J2. **Zhou, J.**, Camba, J.D. EngDraw-Annotator: Schema-Aware, LLM-Assisted Annotation for Engineering Drawings (Anticipated submission: 2026).

## **CONFERENCE PRESENTATIONS**

- 1. **ISM 2025 7th International Conference on Industry of the Future and Smart Manufacturing, University of Malta – Malta: Prompt2CAD: A Lightweight LLM Framework for Conversational CAD Generation and Iterative Refinement**
- 2. **2025 North American Plant Phenotyping Network (NAPPN) Annual Conference, Olivette, MO, USA: Integrating Artificial Intelligence in Plant Growth Monitoring for Innovative Rotary Aeroponic Systems**
- 3. **2023 10th International Conference on Mechanics, Materials and Manufacturing, Washington, D.C.: Development and Evaluation of a Vision Inspection System for Plastic Bottle Measurement**
- 4. **2023 20th Annual International CAD Conference (CAD'23), Mexico City: A Framework for Model-Based Visual Inspection: A Case Study of Bottle Dimensional Measurements in the Plastics Industry**
- 5. **2022 17th International Manufacturing Science and Engineering Conference, West Lafayette, IN, USA: An Approach to Extend the Digital Thread from Requirements to Model Geometry**
- 6. **2021 IFIP 18th International Conference on Product Lifecycle Management (Virtual Conference): A Comparative Study on the Use and Interpretation of Annotated 3D Models**

## **PROFESSIONAL EXPERIENCE**

**Heliponix LLC, Evansville, IN**

**June 2023 – Present**

**Computer Vision Scientist**

- Conduct interdisciplinary research in applied AI to drive innovation in engineering design, smart manufacturing, and technology education.
- Lead the deployment of AI-powered vision systems in IoT-enabled smart appliances, enabling real-time crop monitoring and autonomous decision-making.
- Collaborate across hardware and software teams to design cyber-physical prototypes, integrating imaging sensors, edge AI, and cloud-based analytics for scalable smart gardening and precision agriculture solutions.
- Develop and optimize machine learning and deep learning algorithms, influencing the design of computer vision hardware and software.

**Digital Enterprise Center, Purdue University, West Lafayette, IN**  
**Graduate Research Assistant**

**August 2019 – May 2023**

Drug Plastics - Model-based Metrology Project

September 2021 – May 2023

- Developed an innovative and cost-effective Model-Based Visual Inspection System (MBVIS) to enhance the critical dimensional measurement accuracy of plastic bottles in pharmaceutical applications, utilizing Geometric Dimensioning and Tolerancing (GD&T) information extracted from a Model-Based Definition (MBD) dataset, demonstrating high agreement with a commercial visual inspection system through Bland-Altman plot analysis
- Utilized Computer Vision techniques (OpenCV-Python and convolutional neural networks) to develop a more efficient process to measure critical bottle parameters

WHIN - Digital Product Information Project

August 2020 – August 2021

- Implemented RESTful APIs to facilitate interactive work instructions and Bill of Material (BOM) on a Product Data Management (PDM) system with Java
- Customized tooling management, process planning, workflow, project, and organizational structure on the PDM system to demonstrate to industrial partners

**Siemens Industry Software, Shanghai, China**

**July 2012 – July 2019**

**Application Engineer**

- Led testing and development of CAD software (Siemens NX), improving product reliability and reducing customer-reported issues by 15%.
- Collaborated with cross-functional teams to design and automate test workflows, achieving >95% code coverage and improved development efficiency.
- Supported partner universities through Siemens GO PLM initiatives, delivering CAD training and fostering academic-industry collaboration.
- Mentored junior engineers and coordinated quality assurance processes across multiple international projects.

**Siemens Industry Software, Shanghai, China**

**July 2011 – July 2012**

**NX Ship QA Intern**

- Tested on NX Ship Manufacture Module to improve ship product quality
- Created more than 300 reuse CAD parts to support NX Drawing Automation in the shipbuilding industry

**FUNDING & GRANTS**

- **National Science Foundation (NSF) SBIR Phase II (Award No. 2151495)**—Partial support for research activities at Heliponix LLC
- **Project PID2022-137254OB-I00 (MCIN/AEI/FEDER, EU)**—Research support for peer-reviewed publications at Heliponix LLC
- **Wabash Heartland Innovation Network (Grant No. 4019008000 / 8000084103)**—Research support at Purdue University

**PUBLIC SPEAKING & OUTREACH**

*Southwest Ecosystem Exchange*

**Evansville, IN**

**June 2025**

- Represented the company at the inaugural Southwest Ecosystem Exchange, sharing our startup journey and key support resources leveraged—including SBIR/STTR, match funding, and local partnerships—to inspire and connect with regional innovation leaders.

*Generative AI and Programming-Based CAD*

**Purdue University, West Lafayette, IN**

**Apr 2025**

- Delivered a 120-minute guest lecture covering programming-based CAD techniques, aligning with current research in Generative AI-enhanced design automation. Engaged graduate students through practical examples, interactive discussion, and Q&A.

*2025 CCO International Student Workshop – Internationally Friendly Employer Panel*

**Purdue University, West Lafayette, IN**

**Mar 2025**

- Served as a panelist sharing insights on transitioning from international graduate studies to careers in the U.S. tech industry, emphasizing the role of AI and computer vision in practical applications.

*Leveraging Artificial Intelligence for a Competitive Edge in Business*

**Indiana University, Bloomington, IN**

**Jan 2025**

- Delivered a keynote address on how businesses can leverage artificial intelligence for competitive advantage, highlighting opportunities, challenges, and strategies for adoption.

*Growing Smarter: How AI Helps Plants Thrive*

**University of Evansville, Evansville, IN**

**Jan 2025**

- Delivered a presentation on the role of artificial intelligence in enhancing plant growth and agriculture to inspire the next generation of innovators of the UE Explorers program.

*Journey from Academia to Industry*

**Purdue University in Indianapolis, Indianapolis, IN**

**Nov 2024**

- Presented a 30-minute talk to college and graduate students on transitioning from academia to industry, covering skill development, challenges, and career growth.

*Seeing with Smarts: How AI Helps Plants Grow!*

**Heliponix LLC, Evansville, IN**

**Nov 2024**

- Conducted an interactive session introducing core concepts of artificial intelligence and computer vision to middle and high school students, engaging them with practical applications in industry.

## **PROFESSIONAL SERVICE**

### **Technical Program Committee**

- 13th International Conference on Mechanics, Materials and Manufacturing (ICMMM), 2026

### **Session Chair**

- 10th International Conference on Mechanics, Materials and Manufacturing (ICMMM), 2023

### **Conference Reviewer**

- Institute of Industrial and Systems Engineers (IISE) Annual Conference & Expo, 2026
- International Manufacturing Science and Engineering Conference (MSEC), 2026
- American Society for Engineering Education (ASEE) Annual Conference & Exposition, 2023, 2024, 2026
- IEEE Frontiers in Education Conference (FIE), 2025, 2026

### **Journal Reviewer**

- *Applied Soft Computing*
- *Artificial Intelligence and Applications*
- *ASEE Computers in Education*
- *Computer-Aided Design*
- *Computers & Graphics*
- *Computers & Industrial Engineering*
- *Design Studies*
- *Engineering Applications of Artificial Intelligence*
- *Engineering with Computers*
- *Expert Systems with Applications*
- *IEEE Transactions on Computational Social Systems*
- *Image and Vision Computing*
- *SoftwareX*

## **CERTIFICATION & TEACHING EXPERIENCE**

Siemens Certified NX CAD Instructor

September 2011

Siemens Teamcenter Instructor, PLM Product Development Center (PPDC), Shanghai, China

July 2013 – July 2019

- Offered formal training in CAD skills and Teamcenter application to new employees

## **AWARDS AND SCHOLARSHIPS**

Conference Attendance Award

Feb 2025

- NAPPN Conference 2025 Supported by USDA NIFA DSFAS Program

Purdue Graduate Research Assistantship

August 2019 – May 2023

High-Performance Employee Awarded by Siemens PLM Software

2014 & 2016

## **LEADERSHIP EXPERIENCE**

Heliponix LLC, Evansville, IN

June 2023 – Present

*Research Associate Supervisor*

- Supervised a research associate, providing technical guidance and overseeing weekly progress on tasks related to plant science and computer vision

Christian Students at Purdue (CSaP), Purdue University, West Lafayette, IN

January 2020 – May 2023

*Vice President*

- Supervised the business of the organization and organized a weekly Bible study for club members

Siemens Industry Software, Shanghai, China

July 2012 – July 2019

*Mentor*

- Guided junior engineers and interns with professional CAD modeling and PLM application knowledge

## **MEDIA COVERAGE**

- *Southwest Ecosystem Exchange (2025)*. Presentation on Anu's startup journey and ESO partnerships. [\[Link\]](#)
- *Purdue University Center for Career Opportunities & Office of Professional Practice (2024)*. Invited panelist on international student career planning and transitions into U.S. industry roles. [\[Link\]](#)
- *Indiana University Kelley School of Business (2024)*. Invited keynote speaker for MBA consulting project on Food as Medicine, presenting Anu's AI-driven indoor farming approach to health and sustainability. [\[Link\]](#)
- *Purdue University (2022)*. Poster presentation on Realizing the Digital Enterprise projects, highlighted in university media coverage. [\[Link\]](#)