

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. **Zhou, J.**, Camba, J. D., Company, P., Contero, M. (Accepted). EngDraw-VQA: An Agent-Based Framework for Automated Visual Question Answering Generation From Engineering Drawings. *Manufacturing Science and Engineering Conference (MSEC 2026)*.
- C2. 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)*.
- C3. **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)*.
- C4. **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)*.
- C5. 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>
- C6. **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>
- C7. **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>

- C8. **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

MANUSCRIPTS UNDER REVIEW

- J1. **Zhou, J.**, Camba, J.D., Company, P. CADThread: A Multimodal Engineering Design Dataset Linking Feature-Based Parametric CAD, Geometry, and Drawings. *Journal of Mechanical Design*.
- J2. Camba, J.D., **Zhou, J.** (Under Review). GenAI-Aided Design in Engineering Education: Competencies, Challenges, and Opportunities. *Computer-Aided Design*.
- J3. 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. 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

- C1. **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. [\[Link\]](#)