

# Jiaming Li, Ph.D.

Assistant Teaching Professor

*Mechanical Engineering | Acoustics | CAD and Simulation | Design Optimization | AI-Enabled Engineering Systems*  
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## Research Interests

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- AI-Enabled Acoustic Modeling and Resonator Design
- Natural-Language-Driven CAD and Simulation for Engineering Design
- Smart Manufacturing and AI-Enabled Engineering Systems
- Intelligent Automation, Robotics, and Human-System Interfaces
- Design Optimization and Data-Driven Mechanical Systems

## Education

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- 2017-2022     **Rutgers, The State University of New Jersey-New Brunswick, USA**  
Ph.D. in Mechanical Engineering  
Advisor: Prof. Hae Chang Gea  
Dissertation: "Design and Analysis of a Standing-Wave-Induced Passive Noise Reduction System Based on a Continuous Mass-Spring Model."
- 2015-2017     **Rutgers, The State University of New Jersey-New Brunswick, USA**  
M.S. in Mechanical Engineering  
Advisor: Prof. Hae Chang Gea  
Thesis: "Integrated Optimization Method for Plastic Injection Molding."
- 2011-2015     **Hefei University of Technology, China**  
B.E. in Mechanical Design, Manufacturing and Automation  
Thesis: "Design of a Miniature Piezoelectric Spring Stator Ultrasonic Motor."

## Academic Appointments

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- Apr 2024-  
Present     **Northern Arizona University, School of Informatics, Computing, and Cyber Systems**  
Assistant Teaching Professor
- Develop and teach graduate courses in computer information technology, including data analytics, project management, mobile/web development, and data tools and structures.
  - Taught more than 1,000 students to date across graduate-level courses and project-based learning environments.
  - Supervised more than 400 graduate capstone projects and advised students on research direction, methodology, and technical problem solving.
  - Contributed to the design of a new Ph.D. program in Computer, Artificial Intelligence, and Information Technology, including curriculum development and research-area alignment.
  - Provide academic advising and serve on departmental committees in SICCS and SCE.
- Sep 2023-  
Feb 2024     **Rutgers Business School, USA**  
Adjunct Professor
- Delivered instruction in Management Information Systems (MIS), data science, and AI-enabled tools for business and technical applications.
  - Guided students in SQL querying, database design, data manipulation, analysis, and visualization using MySQL, Excel, and Tableau.
- Sep 2023-  
Apr 2024     **Rutgers University School of Engineering, USA**  
Co-Adjutant, Office of the Dean

- Conducted research on engineering graduate programs and related service units to support program enhancement.
- Developed webpages, social media content, reports, and presentation materials for graduate-program communications and assessment.

Jan 2018-  
Jan 2021

**Rutgers University, Department of Mechanical and Aerospace Engineering, USA**

Primary Course Instructor

- Taught a core undergraduate mechanical engineering CAD Lab course with 700+ total enrollment, covering SolidWorks modeling, engineering drawings, GD&T, BOM, FEA, animation, and motion analysis.
- Supervised additional lecturers and managed student design projects and examinations.

## Research Appointments

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Aug 2018-  
Dec 2022

**Rutgers University, Department of Mechanical and Aerospace Engineering, USA**

Research Assistant

- Developed analytical and computational models for sound-reduction mechanisms in side-branch resonators using analogy mechanical systems.
- Built mass-spring system models, derived governing equations, and designed COMSOL finite-element simulations for resonators with varying geometries.
- Analyzed experimental data, optimized predictive models, and built tools in MATLAB and Excel to improve design accuracy.

Feb 2021-  
Jun 2021

**Rutgers University, Rutgers Packaging Laboratory, USA**

Laboratory Testing Engineer

- Executed vibration testing for printing plates and authored failure-analysis reports.
- Supported ISTA Amazon SIOC certification through compression, drop, vibration, and thermal-control testing, and debugged laboratory equipment and control software.

Jan 2020-  
May 2020

**Rutgers University, Department of Packaging Engineering, USA**

Research Assistant

- Developed a thermal-dynamic model for cold-chain heat transfer and packaging optimization.
- Modeled heat conduction and convection in packaging systems using ANSYS Fluent and optimized designs for low-temperature retention and material efficiency.

May 2016-  
May 2018

**Rutgers University, Department of Mechanical and Aerospace Engineering, USA**

Research Assistant

- Developed an integrated optimization method for plastic injection molding to minimize product shrinkage under design constraints.
- Applied design of experiments to reduce the computational cost of SolidWorks Plastics simulations and identified significant design variables using statistical testing.

Sep 2014-  
May 2015

**Hefei University of Technology, School of Mechanical Engineering, China**

Research Assistant

- Studied and designed a miniature piezoelectric spring stator ultrasonic motor.
- Performed ANSYS simulations, transient vibration analysis, and design optimization.

## Professional Experience

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Jan 2023-  
Sep 2023

**CGG, US Imaging Department, USA**

Seismic Imaging Analyst

- Applied mathematical modeling, data analysis, wavelet processing, and velocity modeling to generate accurate 3D images of the Earth's subsurface.
- Worked on seismic data processing, visualization, and noise-reduction workflows, including signal-processing, machine-learning, and Fourier/Tau-P domain methods.

- Managed client-facing projects, conducted quality control, diagnosed technical problems, and developed solutions for Shell and other energy-sector clients.
- Wrote Python scripts for data management, manipulation, and modeling, and attended IMAGE Conference to stay current with AI-related applications in geophysical imaging.

May 2016-  
Aug 2016      **WABCO Vehicle Control Systems Asia Pacific**  
Intern Product Engineer

- Studied the transition of power and transmission systems from conventional vehicles to electric vehicles.
- Analyzed and optimized cost structures using the DMAIC model of Six Sigma.
- Designed test circuits for laboratory evaluation of the Electric Brake System (EBS).

## Selected Research Projects

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- **Deep Learning + Analogy Mass-Spring Inverse Design of Side-Branch Resonators (ongoing).**  
Developing a physics-informed neural framework that combines analytical resonance models with deep learning for targeted acoustic design.
- **Natural-Language-Driven CAD Foundation Model for Industrial Design and Simulation (ongoing).**  
Building a multimodal framework that translates engineering intent into parametric CAD models and simulation-ready workflows.
- **Embodied AI and Robotics for Industrial and Caregiving Skill Training (ongoing).**  
Exploring evaluation and training frameworks for embodied AI systems in industrial automation and human-centered support settings.
- **Deep Learning Noise Suppression for Seismic Data Interpretation (past).**  
Developed a data-driven denoising workflow for complex seismic noise patterns in raw field data.
- **Systematic Optimization of Plastic Injection Molding Parameters (past).**  
Developed an optimization workflow to minimize shrinkage under design and process constraints.
- **Thermal Optimization of Cold-Chain Packaging Materials (past).**  
Conducted CFD-based analysis and optimization of heat transfer in packaging materials for low-temperature retention.
- **Piezoelectric Spring Stator Ultrasonic Motor Design (past).**  
Performed finite-element modeling and parameter optimization of piezoelectric stators for precision ultrasonic motors.
- **Digital Twin and AI-Based Industrial Design Projects (advised).**  
Supervised graduate projects involving digital twins, AI-assisted industrial design validation, and collaborative manufacturing systems.

## Publications

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“\*” indicates my corresponding author role

### Peer-Reviewed Journal Articles

- **J. Li\***, X. An, and H. C. Gea, (2026) “Systematic Design of Side-Branch Resonators for Targeted Noise Reduction Using an ASPMSS Analytical Model,” *Acta Acustica*, 10, 64.
- **J. Li\***, X. An, and H. C. Gea, (2025) “An Enhanced Analogy Serial-Parallel Mass-Spring System Analytical Model for Sound Reduction Frequency of Resonators With Multiple Necks,” *Journal of Vibration and Acoustics*, 147 (6), 061003.
- X. An, D. Li, and **J. Li**, (2025) “An Improved Chaos Control with Adaptive Active Set Approach Combined in Reliability-Based Design Optimization,” *Scientific Reports*, 15 (1), 42790.
- **J. Li\*** and H. C. Gea, (2025) “An Innovative Analogy Serial-Parallel Mass-Spring System Model for Sound Reduction Frequency Prediction of Asymmetric Resonators,” *Journal of Vibration and Acoustics*, 147 (2), 021001.
- **J. Li\***, B. Huang, and H. C. Gea, (2024) “A General Analogy Mass-Spring System Analytical Model for Sound Reduction of Side-Branch Resonators,” *The Journal of the Acoustical Society of America*, 156 (6), pp. 4153–4168.
- **J. Li\*** and H. C. Gea, (2024) “Sound Reduction of Side-Branch Resonators: An Energy-Based Theoretical Perspective,” *AIP Advances*, 14 (3), 035248. **Editor’s Pick.**

- X. An, S. Jin, D. Zhao, L. Wang, and **J. Li**, (2024) “Accelerated PMA and Its Application in Reliability-Based Design Optimization,” *Structures*, 66, 106878.

### Conference Proceedings

- **J. Li**, H. C. Gea, and E. Lee. "A Systematic Optimization Method for Plastic Injection Molding Operational Parameters." *21st IAPRI World Conference on Packaging: Driving a Sustainable Future*. DEStech Publications, 2019.

### Preprints

- He, L., E. E. Wang, X. Wang, J. Xu, and **J. Li**\*. "Edge-Side Residual Timing and Frequency Control for Software-Defined Ground Stations in 5G NTN Uplinks." *arXiv preprint* arXiv:2604.13984 (2026).
- Zhang, Q., E. E. Wang, **J. Li**, and X. Wang. "Burn-After-Use for Preventing Data Leakage Through a Secure Multi-Tenant Architecture in Enterprise LLM." *arXiv preprint* arXiv:2601.06627 (2026). *IEEE Access*. Under review.
- Ou, Z., E. E. Wang, **J. Li**, and X. Wang. “On the Evolution of CI/CD Smells in Open-Source Android Applications.” *SSRN preprint* (2026). *The Journal of Systems & Software*. Under review.

### Manuscripts Under Review

- An, X., Z. Hu, and **J. Li**. "An Improved Inverse Reliability Method for Identifying MPTP and Its Application to Reliability-Based Design Optimization in Packaging Engineering." *Structures*. Under review.

## Teaching Experience

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2024-Present    **Northern Arizona University, School of Informatics, Computing, and Cyber Systems, USA**  
Assistant Teaching Professor

- CIT 500/2: Applications of Computer Hardware and Software in Management (graduate core course; enrollments: 690 in AY 2024-2025 & 656 in AY 2025-2026).
- CIT 610/1: Project Management and Methodologies (graduate course; enrollment: 158 in AY 2024-2025).
- CIT 610/2: Project Management Ethics and IT Lifecycle (graduate course; enrollment: 158 in AY 2024-2025).
- CIT 630/1: Mobile and Web Development (graduate course; enrollments: 137 in AY 2024-2025 & 98 in AY 2025-2026).
- CIT 630/2: Mobile and Web Application Design (graduate course; enrollments: 137 in AY 2024-2025 & 98 in AY 2025-2026).
- CIT 642/1: Data Management Planning (graduate course; enrollments: 136 in AY 2024-2025 & 203 in AY 2025-2026).
- CIT 642/2: Data Tools, Technologies, and Structures (graduate course; enrollments: 136 in AY 2024-2025 & 203 in AY 2025-2026).
- CIT 691: Project Management Capstone (graduate capstone course; enrollments: 234 in AY 2024-2025 & 242 in AY 2025-2026).
- CIT 692: Information Security and Assurance Capstone (graduate capstone course; enrollments: 50 in AY 2025-2026).
- CIT 693: Mobile and Web Application Development Capstone (graduate capstone course; enrollments: 44 in AY 2025-2026).
- CIT 694: Advanced AI and Data Analytics Capstone (graduate capstone course; enrollments: 113 in AY 2025-2026).

Fall 2023        **Rutgers University Business School, USA**  
Adjunct Professor

- Management Information Systems (33:136:370) (undergraduate course, taught two sections, 112 students enrolled in total).

2018-2021      **Rutgers University, Department of Mechanical and Aerospace Engineering, USA**  
Primary Course Instructor

- CAD in Mechanical Engineering (14:650:388) (undergraduate core course; 700+ students taught in total).  
*Primary course instructor: supervised three additional lecturers each semester.*

- Summers 2018 & 2019     **Rutgers University, Department of Packaging Engineering, USA**  
Course Instructor & Program Co-Coordinator
- Engineering Design, CAD, and 3D Printing  
(summer program, managed 100+ students academically and administratively)
- Spring 2018     **Rutgers University, Department of Packaging Engineering, USA**  
Teaching Assistant
- Simulation Modeling and Analysis in Packaging Engineering (16:731:541)  
(graduate course, 24 students enrolled).

## Student Supervision and Advising

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### Selected recent graduate capstone projects supervised (2025-2026):

- Jun 2026: DDPM-Based Generative AI Project for Image Generation
- May 2026: Causal Forests and Double ML Project for Heterogeneous Treatment Effect Estimation
- May 2026: Differentially Private FedAvg Project for Non-IID Federated Learning
- Apr 2026: Masked Autoencoder Project for Self-Supervised Image Learning
- Apr 2026: LoRA-Based Transformer Fine-Tuning Project for Text Classification and NLP Tasks
- Mar 2026: AI-Based Smart Energy Management System for Urban Buildings
- Feb 2026: In-Vehicle Voice Interaction System
- Dec 2025: Smart Construction Site Information System
- Dec 2025: Industrial Software MES Project
- Dec 2025: In-Vehicle Infotainment System for a New-Energy Vehicle
- Nov 2025: AI Medical Imaging Intelligent Diagnostic System
- Nov 2025: DIA Internet Deployment for a New Saudi Factory of a PC Manufacturer
- Oct 2025: Low-Altitude UAV Comprehensive Service Platform
- Oct 2025: 3D Vehicle Configuration Project for an Automotive Website
- Oct 2025: Integrated Smart Community Platform
- Oct 2025: IT Project for an Ultrasonic Equipment Spare Parts System
- Oct 2025: EPC Engineering Material Coding System
- Sep 2025: IoT-Enabled Hospital Informatization Platform
- Sep 2025: High-Performance Memory Chip Testing Equipment Project
- Aug 2025: Urban Flooding Intelligent Monitoring Project
- Aug 2025: Enterprise Disaster Recovery Optimization Project
- Jul 2025: AI Companion Agent App with Gamification and Multimodal Interaction
- Jul 2025: Photovoltaic Cleaning Robot Development Project
- Jul 2025: Power Plant DCS Multi-Protocol Communication Gateway Integration Project
- Jul 2025: Cloud-Based NC Programming and Collaborative Manufacturing Platform
- Jun 2025: Low-Altitude Intelligent Sensing and Intrusion Warning System
- Jun 2025: Large-Language-Model Product for Intelligent Q&A in the Construction Industry
- Jun 2025: AI Platform for a Lithium Battery Enterprise
- Jun 2025: SAP Implementation Project for the Automotive Industry
- May 2025: Reengineering Project for an Enterprise Medical Device Management System
- May 2025: End-to-End Highway Monitoring System
- May 2025: Digital Twin Project for a BMW Manufacturing Plant
- Apr 2025: Central Integrated Control Unit Project
- Apr 2025: Intelligent Logistics Management System
- Mar 2025: Airport Terminal Operations Management System Upgrade
- Mar 2025: AI-Based Industrial CAD and Simulation Software Project

## Program and Curriculum Development

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Led the development of the DCAIT program, a research-oriented online Ph.D. degree designed to connect advanced academic research with real-world industry applications.

- Participated in program marketing, curriculum design, definition of research focus areas, degree requirements, program presentations, and supporting materials for proposal approval and launch.

- Developed a curriculum framework comprising 28 proposed courses spanning AI/ML, IoT and robotics, software/hardware systems, information systems, advanced analytics, bioinformatics, computer architecture, cybersecurity, IT project management, digital platforms, and human-AI collaboration.

## **Academic and Professional Service**

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### **Institutional Service**

- Comprehensive Review Committee Member, Northern Arizona University (2025-2026).
- Ph.D. Admissions Committee Member, Northern Arizona University (2025-2026).
- PL Faculty Workload Subcommittee Member, Northern Arizona University (2025-2026).
- Graduation Ceremony Participation, Northern Arizona University (December 2024).

### **Journal Peer Review**

- Reviewer, Rapid Prototyping Journal (2025).
- Reviewer, Acta Acustica (2026).
- Reviewer, Scientific Reports (2026).

### **Mentoring, Outreach, and Invited Talks**

- Mentor, Harvard Venture Club Mentorship Program (May-Jul 2024); mentored Lavonda Li on entrepreneurship development.
- Research Collaborator, Harvard Medical School/MGH research group (May 2024–present); provided engineering insights and interdisciplinary support for AI, clinical, and biomedical research.
- Invited talk at the University of Oxford (May 2025): "Landing the Job, Living the Life: a Faculty Journey Before and After."
- Invited speaker, Next-Generation AI & Machine Learning Conference (Nxt AI-2026), Boston, USA, November 2026.
- Invited speaker, Global Meeting on Artificial Intelligence & Machine Learning (Global AI-2026), Barcelona, Spain, October 2026.

## **Skills**

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### **Engineering:**

Acoustics; Mechanical Design; CAD; FEA/CFD; Analytical & Computational Modeling; Design Optimization; AI-Enabled Engineering; Smart Manufacturing; Embodied AI & Robotics; Robotics Benchmarking; Data Analytics; Information Systems; Project Management; Web/Mobile App Development; AI/ML.

### **Software and Programming:**

SolidWorks; COMSOL; ANSYS Fluent; MATLAB/Simulink; AutoCAD; CATIA; Minitab; Python; C/C++; Perl; SQL/MySQL; Tableau; JavaScript/React; TensorFlow; Jupyter; Unix/Linux; LaTeX.