CHENG CHEN

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EDUCATION	
Doctor of Philosophy, Mechanical Engineering University of Georgia Discortation: "Poplization of Inter Model Connections: Linking Populationments and Compute	July 2022
Design"	
Master of Science, Aerospace Engineering Florida Institute of Technology Thesis: "A Maximum Entropy Approach to Identifying Important Statistical Moments to Bes Spray Distribution Data"	Nov 2016 t-Represent
Bachelor of Engineering, Mechanical and Automation Central College of BUPT, Beijing, China	May 2012
RESEARCH AND PROFESSIONAL EXPERIENCE	
University of Alabama in Huntsville – Industrial & Systems Engineering and Engineering Management: Assistant Professor	Huntsville, AL Aug 2024 – Present
University of Georgia – College of Engineering: Postdoc and Instructor (50% Research + 50% Teaching) Research:	Athens, GA 2022 – 2024
 Prepared and submitted grant proposals for National Science Foundation (NSF) Led the development of two industry-focused project proposals, resulting in \$135,000 in partnerships with Pharma Tech Industries Managed the publication process for 7 peer-reviewed articles in high-impact journals/concreation and delivery of over 20 presentations at major international conferences Led and mentored a dynamic interdisciplinary research team, consisting of 6 Ph.D. student 5 Bachelor's students from diverse engineering disciplines Designed and implemented experimental data collection on assembly lines, encompassing validation, and exploratory data analysis Participated in key design- and manufacturing-related research discussions at internationat to 2 panel discussions and publishing articles in leading academic journals in the field Mentored a high-impact capstone project in collaboration with General Motors, focusing science techniques for detecting defects in EV battery cells Teaching and Engagement: Designed and delivered an innovative curriculum for ENGR 3140 Thermodynamics and EN credit course, engaging an average of over 50 students per class Participated in faculty training focused on Diversity, Equity, and Inclusion (DEI) and stud departmental (Engineering Education Transformations Institute) and university-wide level Learning) 	a funding and collaborative inferences and oversaw the is, 3 Master's students, and thorough data acquisition, al conferences, contributing on the application of data NGR 2120 Statics, each a 3- dent development, both at is (Center for Teaching and
 Engaged in Faculty Interest Groups, contributing insights to discussions on CURO, including well as on topics of leadership and research resource training Coordinated and hosted 2 educational events, 'Demystifying Graduate School' and 'Baland drawing over 30 participants and fostering insightful discussions among attendees Graduate Research Assistant (Advisor: Dr. Beshoy Morkos) Worked alongside advisor to lead the charge on the development of a new remanufacturing. This included identifying a location, resources, equipment, and infrasti Published multiple papers (both journal and conference proceedings) while also students in learning how to write Presented at multiple conferences in front of leading researchers from across the w Design Engineering Technical Conference (IDETC) and ASEE's National Conference 	seed grant applications, as cing Life in Academia,' each Aug 2019 – July 2022 esearch lab in design and ructure required supporting junior graduate porld at ASME International

- Mentored four junior lab members as they pursued their M.S., provided them with advice concerning work-life balance, expectations, research guidance, and fundamentally taught them how to become researchers
- Served as a paper reviewer for multiple conferences based on areas of design, manufacturing, and design education
- Assisted in writing a program description and program proposal to start a graduate program with an emphasis in design and manufacturing
- Led a writing week at the end of the semester where graduate students focused on writing papers
- Supported PI with NSF proposal preparation by reviewing the project description and adding content
- Contributed to the acquisition of industry-funded projects through site visits, problem discovery, client discussions, and proposal writing

Florida Institute of Technology – Dept. of Mechanical & Aerospace Engr. **Research Assistant**

Worked alongside advisor (PI: Beshoy Morkos) on NSF funded research on requirement change propagation. Moved to UGA (see above) with PI to continue Ph.D. studies

Graduate Student

(Advisor: Dr. Mark Archambault)

- Studied the effect of fourth-order moments to calculate droplet probability density functions using the Maximum **Entropy Formulism**
- Developed and optimized an existing C research code with the implemented Message Passing Interface (MPI)
- . Performed error and frequency analysis to identify the most important fourth order moments
- Investigated best representation of experimental spray data using high-frequency moments with their corresponding lower moment combinations to reduce the heavy computational cost
- Worked as a grading assistant for MAE 3161 Fluid Mechanics (Dr. Paavo Sepri), MAE 3191 Engineering Thermodynamics 1 (Dr. Ju Zhang), MAE 3162 Compressible Flow (Dr. Hamid Hefazi), MAE 2201 Aerospace Fundamental (Dr. Rusovici Razvan and Dr. Wilde Markus), MAE 4263 Rockets and Mission Analysis (Dr. Daniel Kirk)

INDUSTRIAL PROJECTS EXPERIENCE

University of Georgia

UGA Wells Fargo Data Science Competition

- Implemented exploratory data analysis, feature selection, and classification using Logistic Regression, Random Forest, and XGBoost
- Completed a comprehensive 15-page report and developed an accompanying 12-page presentation slide

Florida Institute of Technology

- **Alstom Mesh Network Exploration Project**
 - Investigated various types of Communication Overhead Management (COM) for Precision Timing Control (PTC) within the mesh network model, including sensor types and radio technology/communication methods
 - Developed a scaled physical prototype demonstrating the wireless mesh network's ability to mitigate associated challenges

PROPOSALS:

Funded Industrial Project:

Advancing Pharma Tech's Production Process Through Smart Manufacturing, Pharma Tech Industries Inc., Beshoy Morkos (PI), Cheng Chen (Co-PI), \$135,000

PUBLICATIONS:

Journal Publications (6 published/accepted, 1 submitted, 5 in preparation)

Published/Accepted:

- 1. Buggineni, V., Chen, C., Camelio, J., (2024), Buggineni, V., Chen, C., Camelio, J., 2023, Synthetic Data Generation in Advanced Manufacturing: Opportunities and Applications, Frontiers In Manufacturing Technology, Frontiers In Manufacturing Technology 4: 1320166, doi: 10.3389/fmtec.2024.1320166
- 2. Htet Hein, P., Chen, C., Kames E., Morkos, B., 2023, A Network Interference Approach to Analyzing Change Propagation in Requirements, Journal of Computing and Information Science in Engineering, Journal of Computing and Information Science in Engineering, 1-54. Doi: https://doi.org/10.1115/1.4065273

Athens, GA Mar 2021

Melbourne, FL

Aug 2018 – Aug 2019

Aug 2013 – Dec 2016

Melbourne, FL

Sept 2018 – Mar 2019

- 3. **Chen, C.**, & Morkos, B. (2023). Exploring topic modelling for generalising design requirements in complex design. Journal of Engineering Design, 1-19. https://doi.org/10.1080/09544828.2023.2268850
- Mullis, J., Chen, C., Morkos, B, and Ferguson, S. (2023). Efficacy of Deep Neural Networks in Natural Language Processing for Classifying Requirements by Origin and Functionality: An Application of BERT in System Requirement. ASME. J. Mech. Des. https://doi.org/10.1115/1.4063764
- Htet Hein, P., Kames E., Chen, C., Morkos, B., (2022). Reasoning support for predicting requirement change volatility using complex network metrics, Journal of Engineering Design (2022): 1-27. https://doi.org/10.1080/09544828.2022.2154051
- 6. Htet Hein, P., Kames E., **Chen, C.**, Morkos, B., (2021). Employing Machine Learning Techniques to Assess Requirement Change Volatility, Research in Engineering Design, 32(2), 245-269, DOI: 10.1007/s00163-020-00353-6

Submitted:

1. Yorston, C., Chen, C., Camelio, J., 2023, Optimizing Industrial Data Collection with Interactive Testbed: A Siemens MindSphere Case Study, Journal of Engineering Manufacture

In Preparation:

- 1. **Chen, C.**, Morkos, B., Improving Design Requirements Based on Customer Feedback, Journal of Computing and Information Science in Engineering
- 2. Chen, C., Morkos, B., Clustering CAD Geometry Models to Design Subassembly, ASME Journal of Mechanical Design
- 3. Chen, C., Kudyba P., Enhancing Quality Inspection through Advanced Edge Computing Techniques, Journal of Computing and Information Science in Engineering
- 4. **Chen, C.**, Valdes L., Camelio, J., Proposing a Comprehensive Paper-Making Dataset: An Exploratory Data Analysis Approach, Science of the Total Environment
- 5. **Chen, C.**, Camelio, J., B., Morkos, Information Retrieval for Requirement Management using LangChain, Journal of Manufacturing Design

Conference Proceedings (6 peer-reviewed conference publications)

- 1. **Chen, C.,** Carroll, C., & Morkos, B. (2023). From Text to Images: Linking System Requirements to Images Using Joint Embedding. Proceedings of the Design Society, 3, 1985-1994.
- 2. Mozaffar, F., **Chen, C.**, Morkos, B., & Ma, J. (2023). Development of a Manufacturing Assessment Survey to Promote Entrepreneurial Mindset in Engineering. In 2023 ASEE Annual Conference & Exposition.
- 3. Chen, C., Wei, S., & Morkos, B. (2023). Bridging the Knowledge Gap Between Design Requirements and CAD-A Joint Embedding Approach. In 2023 ASEE Annual Conference & Exposition.
- 4. Farid, M., Chen, C., & Morkos, B., et al. Meta-SeL: 3D-model Shape-Net Core Classification using Meta-Semantic Learning, Computer Science, Computer Engineering, Computer Engineering, & Applied Computing (CSCE 2022)
- 5. **Chen, C.**, Mullis, J., & Morkos, B. (2021). A Topic Modeling Approach to Study Design Requirements. In *International Design Engineering Technical Conferences and Computers and Information in Engineering Conference* (Vol. 85383, p. V03AT03A021). American Society of Mechanical Engineers.
- 6. **Chen, C.**, Olajoyegbe, T. O., & Morkos, B. (2020). The Imminent Educational Paradigm Shift: How Artificial Intelligence Will Reframe how we Educate the Next Generation of Engineering Designers. In 2020 ASEE Virtual Annual Conference Content Access.

TEAC	HING EXPERIENCE:	UNIVERSITY OF GEORGIA
1.	COURSES TAUGHT:	
	ENGR 2120 Engineering Statics	F22
	ENGR 3140 Engineering Thermodynamics	S23, F23, S24
2.	GUEST LECTURE:	
	GITAM School of Business Hyderabad – Intro to NLP: Topic Modeling	F22
	CSCI 1360 - Informatics and Data Analytics	S22
	ENGR 6900/MCHE 4900 - Design Methodologies and Advanced Manufactor	uring S22
	ENGR 6990/MCHE 4900 - Advanced Vehicle Manufacturing	F21
3.	PEDAGOGICAL AND PROFESSIONAL TRAINING:	UNIVERSITY OF GEORGIA
	edX- An Introduction to Evidence-Based Undergraduate STEM Teaching	
	Advancing Learning Through Evidence-Based STEM Teaching	
	Leadership Development: Reflection on Leadership	
	Certificate in Diversity and Inclusion (CDI): Countering Unconscious Bias	

Preparing for the Job Market: The Diversity Statement Workshop How Learning Works: Engaging Students with Active Learning Workshop Preparing for the Job Market: The Teaching Statement Workshop Certificate in Academic Advising (CAA)

RESEARCH SERVICE:

1. Peer-Review Service

- Journal
- Journal of Mechanical Design (JMD)
- Journal of Engineering Design (JED)
- Conferences
- International Design Engineering Technical Conferences (IDETC)
- Manufacturing Science and Engineering Conference (MSEC)
- American Society for Engineering Education (ASEE)

2. SYSTEMS ENGINEERING INFORMATION KNOWLEDGE MANAGEMENT (SEIKM) TECHNICAL COMMITTEE

Role: Student Committee Member

- Provide input on the strategic plans and activities relating to student sections
- Organize publicity and events for SEKIM

3. Mentoring Experience

Past Mentees:

Tomas Arturo Letelier, John Bradley Frericks, Ayoub Heydarzade, Niloofar Rezaei, Cristian Garcia-Ponce, Marcus Antonio Dibattista, Cody Loren Carroll, Brennen Barksdale Sanders, Arjun Matthew Smith, Haden Keith Crawford, Kristy Anne Maliakal, Murad Haider Ali, Cole Jacob Yorston, Vishnupriya Buggineni,

2021 - 2022

HONORS, ACTIVITIES, AND SERVICE

1.	Awards	
-	Provost's Affordable Course Materials Grants (\$5000)	2024
•	EETI Travel Fellowship (\$3125)	2023
•	EETI Travel Fellowship (\$1445)	2022
•	Received an honorable mention in the Wells Fargo data science competition	2021
-	ASME CIE Design Poster Award	2020
•	Third-Class Scholarship for Outstanding Academic Performance - Central College of BUPT	2011- 2012
2.	Professional Associations	
-	Society of Manufacturing Engineers	2023 – Present
•	Alpha Alpha Alpha Honor Society	2022 – Present
-	The Design Research Society, DRS	2019 – Present
-	American Society of Engineering Education, ASEE	2019 – Present
-	UGA Engineering Education Transformation Institute, EETI	2019 – Present
-	National Postdoctoral Association	2019 – Present
-	American Society of Mechanical Engineers, ASME	2018 – Present
	National Center for Faculty Development & Diversity	2017 – Present
•	The American Institute of Aeronautics and Astronautics, AIAA	2014 – 2015
3.	Certificates	
-	Protecting Youth Training	2023-2025
-	USG Code of Conduct	2023-2025
-	Arch Ready Professionalism Certificate	2021
-	Question. Persuade. Refer., QPR Gatekeeper Certificate (NBCC Provider #5889)	2021
•	AutoCAD Senior Application Engineering Certificate	2011

•	Crystal	Digital	Technology	Training	Certificate
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UGA's Non-Discrimination and Anti-Harassment and USG's Sexual Misconduct Policies

2009 – 2011 2023-2025

Skills and Qualifications Modelling & Sim	ulation Tools:	Languages:	Programming:	Toolkit:
 AutoDesk AutoCAD AutoDesk Fusion360 AutoDesk Inventor MATLAB Simulink 	 MagicDraw Solid Works Astah SysMl 	 Mandarin English 	 C/C++ Python Linux LaTeX HTML JavaScript R Studio 	 MPI CUDA APT OpenCL OpenMP NumPy Pandas Keras Scikit-learn TensorFlow PyTorch Heroku