CHENG CHEN

Tel:321-305-1613 | Cheng.C@uga.edu | LinkedIn | GitHub | Website | ResearchGate | ORCID

EDUCATION

Ph.D. (Candidate) in Mechanical Engineering May 2022
Dissertation: *Realization of Inter-Model Connections: Linking Requirements and Computer-Aided Design*
University of Georgia, Athens, GA

Master of Science in Aerospace Engineering Nov 2016
Emphasis in Combustion and Propulsion
Florida Institute of Technology, Melbourne, FL

Bachelor of Engineering in Mechanical Engineering May 2012
Central College of BUPT, Beijing, China

RESEARCH EXPERIENCE

University of Georgia – College of Engineering Athens, GA
Research Assistant Aug 2019 – Present

- Worked alongside advisor to lead the charge on the development of a new research lab in design and manufacturing. This included identifying a location, resources, equipment, and infrastructure required
- Published multiple papers (both journal and conference proceedings) while also supporting junior graduate students in learning how to write
- Presented at multiple conferences in front of leading researchers from across the world at ASME International Design Engineering Technical Conference (IDETC) and ASEE's National Conference
- 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
- Assisting in writing a program description and program proposal to start a graduate program with an emphasis in design and manufacturing
- Lead a *writing week* at the end of the semester where graduate students focused on writing papers
- Supporting advisor with NSF proposal preparation by reviewing the project description and adding content
- Contributing 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. Melbourne, FL
Research Assistant Aug 2018 – Aug 2019

- 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 Aug 2013 – Dec 2016

- Thesis: A Maximum Entropy Approach to Identifying Important Statistical Moments to Best-Represent Spray Distribution Data
- 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
- Discussed best representation of experimental spray data using high-frequency moments with their corresponding lower moment combinations to reduce the heavy computational cost

PROJECTS EXPERIENCE

University of Georgia Athens, GA

UGA Wells Fargo Data Science Competition Mar 2021

- Implement exploratory data analysis, feature selection, and classification using Logistic Regression, Random Forest, and XGBoost
- Delivered 15-pages report and 12-pages presentation slide

Florida Institute of Technology Melbourne, FL
Alstom Mesh Network Exploration Project Sept 2018 – Mar 2019

- Advisor: Dr. Beshoy Morkos
- Investigated of different type of COM for PTC within the mesh network such as the type of sensors, radio technology/communication methods
- Developed a physical, scaled prototype that demonstrates the ability of the wireless mesh network mitigate the challenges associated with the current state of the art

---

WORK EXPERIENCE

Grading Assistant Mar 2014 – Nov 2016

Florida Institute of Technology

- Course subjects: MAE 3161 Fluid Mechanics, MAE 3191 Engineering Thermodynamics 1, MAE 3162 Compressible Flow, MAE 2201 Aerospace Fundamental, MAE 4263 Rockets and Mission Analysis
- Supervisors: Dr. Hamid Hefazi, Dr. Daniel Kirk, Dr. Rusovici Razvan, Dr. Paavo Sepri, Dr. Wilde Markus, Dr. Ju Zhang
- Evaluated 200+ student's homework performance per semester, provided feedback, graded exams, provided office hours, and tabulated grades per semester

---

PUBLICATIONS

Journal Publications (2 published/accepted, 2 submitted, 4 in preparation)

In Preparation

1. **Cheng C.**, Morkos, B., Improving Design Requirements Based on Customer Feedback,
2. **Cheng C.**, Morkos, B., Clustering CAD Geometry Models to Design Subassembly, ASME Journal of Mechanical Design.
3. **Chen, C.,** Farid, M., Morkos, B., et al. Req2CAD: Realizing Inter-Model Connection Between Design Requirements and Computer-Aided Design, ASME Journal of Mechanical Design.
4. **Chen, C.,** Morkos, B., From Text to Images: Linking System Requirements to Images Using Joint Embedding, ASME 2022 International Design Engineering Technical Conferences and Computers and Information in Engineering Conference.

Submitted

1. **Cheng C.**, Morkos, B., 2022, A Study of Generalizing Requirements Document Using Design Topics, ASME Journal of Mechanical Design.
2. Mullis, J., Morkos, B., Ferguson S., **Cheng C.,** 2022, Efficacy of Deep Neural Networks in Natural Language Processing for Classifying Requirements by Origin and Functionality: An Application of BERT in System, ASME Journal of Mechanical Design.

Published/Accepted

1. Htet Hein, P., Kames, **Cheng, C.**, E., Morkos, B., 2022, Computational Representation and Reasoning Support for Predicting Requirement Change Volatility using Complex Network Metrics, Journal of Engineering Design
2. Htet Hein, P., Kames, **Cheng, C.**, E., 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

Conference Proceedings (4 peer-reviewed conference publications)

1. 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)
2. **Chen, C.**, Yang, X., & Morkos, B., A Framework: Linking Design Requirements with Computer-Aided Design Models, In *2022 ASEE Minneapolis, Minnesota,*
3. **Chen, C.**, Mullis, J., & Morkos, B. (2021, August). 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.

4. **Chen, C.**, Olajoyegbe, T. O., & Morkos, B. (2020, June). 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*.

PEDAGOGICAL TRAINING

edX- An Introduction to Evidence-Based Undergraduate STEM Teaching	University of Georgia
Advancing Learning Through Evidence-Based STEM Teaching	University of Georgia
Leadership Development: Reflection on Leadership	University of Georgia
Certificate in Diversity and Inclusion (CDI): Countering Unconscious Bias	University of Georgia
Preparing for the Job Market: The Diversity Statement Workshop	University of Georgia
How Learning Works: Engaging Students with Active Learning Workshop	University of Georgia
Preparing for the Job Market: The Teaching Statement Workshop	University of Georgia
Certificate in Academic Advising (CAA)	University of Georgia

GUEST LECTURE	*UNIVERSITY OF GEORGIA*
ENGR 6990/MCHE 4900 - Advanced Vehicle Manufacturing	Fall 2021
CSCI 1360 - Informatics and Data Analytics	Spring 2022
ENGR 6900/MCHE 4900 - Design Methodologies and Advanced Manufacturing	Spring 2022

RESEARCH SERVICE

Systems Engineering Information Knowledge Management (SEIKM) Technical Committee

Student Committee Member 2021 – Present

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

IDETC/CIE and ASEE LEAD Peer Review Specialist 2019 – Present

- Provide written, unbiased, and constructive feedback based on the intellectual merit of the work

---

HONORS, ACTIVITIES, AND SERVICE

Awards

- EETI Travel Fellowship ($1445) 2022
- Received an honorable mention in the Wells Fargo data science competition 2021
- ASME CIE Design Poster Award 2020
- Central College of BUPT - Third-Class Scholarship for Outstanding Academic Performance 2011

Professional Associations

- Alpha Alpha Alpha Honor Society 2022 – Present
- American Society of Mechanical Engineers, ASME 2018 – Present
- The Design Research Society, DRS 2019 – Present
- American Society of Engineering Education, ASEE 2019 – Present
- National Science Policy Network 2022 – Present
- UGA Engineering Education Transformation Institute, EETI 2019 – Present
- National Center for Faculty Development & Diversity 2017 – Present
- National Postdoctoral Association 2019 – Present
- The American Institute of Aeronautics and Astronautics, AIAA 2014 – 2015

Certificates

- 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 2009 – 2011

SKILLS AND QUALIFICATIONS

Modelling & Simulation Tools		Languages	Programming	Toolkit
▪ AutoDesk AutoCAD	▪ MagicDraw	▪ Mandarin	▪ C/C++	▪ MPI
▪ AutoDesk Fusion360	▪ Solid Works	▪ English	▪ Python	▪ CUDA APT
▪ AutoDesk Inventor	▪ Astah SysMl		▪ Linux	▪ OpenCL
▪ MATLAB Simulink	▪ R Studio		▪ LaTeX	▪ OpenMP
			▪ HTML	▪ Numpy
			▪ JavaScript	▪ Pandas
				▪ Keras
				▪ TensorFlow
				▪ Heroku