ERIC JI

GitHub ◇ Homepage ◇ LinkedIn

PERSONAL INFORMATION

Citizenship: U.S. Citizen, **Phone:** +1 (518) 265-5649, **Email:** ericji3@illinois.edu

EDUCATION

University of Illinois Urbana-Champaign August 2024 - Present
Ph.D. in Electrical and Computer Engineering advised by Dr. Minh N. Do GPA: 3.87/4.0

University of Illinois Urbana-Champaign August 2020 - May 2024
B.S. in Computer Engineering with Highest Honors GPA: 3.91/4.0

Relevant Courses: Computer Vision, Deep Learning for Computer Vision, Computational Photography, Digital Signal Processing, Machine Learning, Data Science and Engineering, Random Processes

RESEARCH EXPERIENCE

Computational Imaging Group August 2024 - Present
Advised by Dr. Minh N. Do and in collaboration with Dr. Yaoyao Liu

- Creating a multimodal image feature matching model to accurately identify correspondences between object drawings and real-world images containing the object
- Designing an automated vision-based inspection system for electronic manufacturing to achieve sub-pixel accuracy on measurements at efficient speeds without human intervention
- Improving 3D pose control of objects generated by diffusion models to assist in synthetic data generation

Vision Group August 2023 - May 2024
Advised by Dr. Svetlana Lazebnik

- Developed a multi-class classifier capable of detecting and identifying the source of synthetic images generated by multiple state-of-the-art approaches from both GANs and Diffusion Models
- Utilized the complex-valued phase response from a Fourier transform to study its impact on classification
- Analyzed various state-of-the-art approaches for classification and in-painting detection

NSF Research Experiences for Undergraduates June 2023 - August 2023
Advised by Dr. Boxiang Dong

- Built several CNNs relying on different features capable of accurately detecting synthetic images
- Analyzed the accuracy, robustness, and efficiency of classifiers in both the spatial and frequency domains
- Compiled a comprehensive real/synthetic dataset containing 25,000 contextually aligned image pairs

Distributed Autonomous Systems Laboratory May 2022 - August 2023
Advised by Dr. Girish Chowdhary

- Fine-tuned an object detection algorithm (YOLO) to detect Japanese Beetles for mobile field robots
- Built realistic digital twins of environments using Blender to assist with visual servoing on soft arms
- Designed a path planning algorithm that produces waypoints on point clouds while avoiding obstacles

TEACHING AND LEADERSHIP

Graduate Teaching Assistant
ECE 484: Principles of Safe Autonomy

IEEE-Eta Kappa Nu
Host tutoring sessions, mentor students on their academic goals, and plan educational activities for local community

Illini Bass Fishing Club Treasurer
Organized collegiate tournaments and held recreational events for a community of 100+ student anglers

TECHNICAL SKILLS

Languages	C, C++, Java, Python, SystemVerilog
Tools	Blender, Git, Numpy, OpenCV, Pandas, PyTorch, Scikit-Learn

PUBLICATIONS

E. Ji, B. Dong, B. Samanthula, N. Zhou, *"2D-FACT: Dual-Domain Fake Image Detection Against Text-to-Image Generative Models"* - MIT Undergraduate Research Technology Conference (URTC 2023).

S. K. Kamtikar, **E. Ji**, N. K. Uppalapati, G. Krishnan, G. Chowdhary. *"Realistic Simulation Environments to Achieve Visual Servoing on Soft Continuum Arms in Constrained Environments"* - Fourth International Workshop on Machine Learning for Cyber-Agricultural Systems (MLCAS 2022).