Ray Chen

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Research Interests

Generative and Multimodal Representation Learning; Evaluation and Diagnostics of Large-Scale Generative Systems; Human-in-the-Loop ML for Creative and 3D Content Generation.

Technical Skills

Languages & Systems: Python, C++, CUDA, Linux/Unix, Git, Docker, SLURM, LaTeX

Deep Learning: PyTorch, Transformer architectures, representation learning, large-scale training and evaluation pipelines

Generative Models: Diffusion models, VAEs, multimodal modeling, generative model evaluation

Data & Visualization: Visual analytics, human-in-the-loop systems, Matplotlib, D3.js

Education

University of Florida — *Gainesville, FL*
Ph.D. in Computer Science — *Aug 2024 – May 2029 (Expected)*

University of Washington — *Seattle, WA*
Master of Science in Electrical and Computer Engineering — *Sep 2022 – Jun 2024*

The Ohio State University — *Columbus, OH*
Bachelor of Science in Physics and Astronomy — *Aug 2018 – May 2022*

Experience

University of Florida, Dept. of Computer & Information Science & Engineering — *Gainesville, FL*
Research Assistant (LLM & Interactive AI) — *Aug 2024 - Present*

- Built end-to-end evaluation pipelines in PyTorch for transformer and multimodal models, covering data ingestion, experiment configuration, large-scale inference, and automated metric reporting.
- Developed slice-based and distributional diagnostics to analyze model behavior beyond aggregate metrics, helping prioritize areas for deeper investigation and follow-up experiments.
- Converted high-level research goals into reproducible evaluation workflows, defining baselines and controlled experiments to systematically assess model behavior.
- Executed distributed inference and evaluation workloads on a SLURM-managed GPU cluster, coordinating parallel runs across nodes while improving reproducibility and benchmarking reliability.

University of Florida — *Gainesville, FL*
Teaching Assistant: CIS 4930 Intro to ML — *Jun 2025 - Aug 2025*

- Mentored students on ML fundamentals, neural network architectures, and Python implementation best practices.

Airbus Robotics — *Seattle, WA*
Software Engineer Intern — *Jan 2023 - Jun 2023*

- Built production-grade data pipelines supporting ML-based inspection workflows on large-scale 3D sensing and scanning data.
- Worked with 3D reconstruction, scanning, and AR-related systems, bridging research prototypes with deployed engineering solutions.
- Collaborated cross-functionally to deliver ML-enabled 3D perception features under real-world system constraints.

NR Electric Co., Ltd — *Nanjing, China*
Software & Automation Engineering Intern — *May 2021 - Aug 2021*

- Developed automation software (C++) to monitor low-voltage CPU/PLC testing pipelines, enabling continuous unattended execution and reducing manual intervention by 30%.

Publications, Preprints & Patents

Residual Distributions Capture Details Classical Fairness Metrics Miss — *Under review*
Residual Distribution Fairness: Quantile-Based Auditing for Trustworthy ML — *Under review*
RISE: Interactive Visual Diagnosis of Fairness in Machine Learning Models — *Preprints*
MultiScript30k: Leveraging Multilingual Embeddings to Extend Cross-Script Parallel Data — *Preprints*
Real-time Health Assessment and Early Warning Method — Patent: CN116386840A
Health monitoring system based on wireless perception — Patent: CN116313093A
Daylighting Performance via Plastic Optical Fibers — Int. Conf. on Comp. Innovation

External Service

Reviewer: ACL 2026, ICML 2026, IEEE ICDE 2025, ICMLA 2025, IEEE BigData 2025, ICMLA 2024, IEEE BigData 2024