

Yenho Chen

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Summary I design pretraining objectives that build domain structure into representations to improve label efficiency and generalization. I'm interested in building foundation models for health and science that work in real-world environments.

Education **PhD Machine Learning**, GEORGIA TECH, ATLANTA, GA Aug. 2021 – May 2027 (Expected)
Advisor: Prof. Christopher J. Rozell GPA: 4.0/4.0
Thesis: Dynamics-Based Self-Supervised Learning for Physiological Time Series
Recipient of University Presidential Fellowship
MS Computer Science, GEORGIA TECH, ATLANTA, GA Dec. 2023
BS Physics, UNIVERSITY OF TEXAS AT DALLAS, RICHARDSON, TX May 2019

Selected Papers **Y. Chen**, M. A. Xu, C. J. Rozell, “Learning Self-Supervised Multimodal Health Time Series Representations by Selecting from a Library of Shared Dynamical Systems,” *In Preparation for ICML 2027*.

Y. Chen, M. A. Xu, J. Rehg, C. J. Rozell, “Self-Supervised Dynamical System Representations For Physiological Time-Series,” *In Proceedings of the 43rd International Conference on Machine Learning (ICML)*, 2026.

J. Shi*, **Y. Chen***, K. Daniels, S. Wang, S. Capponi, “Zero-Shot Phenotype Prediction and Screening of Engineered Immune Receptor Variants Using a Contrastive Learning-Based Workflow,” *Computational Intelligence Methods for Bioinformatics and Biostatistics (CIBB)*, 2026.

B. Ancelin, **Y. Chen**, A. Falcon, P. Guan, C. Kaushik, N. Singh, B. Urcelay, “MANGO: Learning Disentangled Image Transformation Manifolds with Grouped Operators,” *Sampling Theory and Applications (SampTA)*, 2025. **(Oral)**

Y. Chen, N. Mudrik, A. S. Charles, C. J. Rozell, “Probabilistic Decomposed Linear Dynamical Systems for Robust Discovery of Latent Neural Dynamics,” *In Advances in Neural Information Processing Systems (NeurIPS)*, 2024.

N. Mudrik*, **Y. Chen***, E. Yezerets, C. J. Rozell, A. S. Charles, “Decomposed Linear Dynamical Systems (dLDS) for learning the latent components of neural dynamics,” *Journal of Machine Learning Research (JMLR)*, 2024.

* denotes equal contribution

Industry Experience **IBM Research** May 2025 - Aug 2026
RESEARCH SCIENTIST INTERN – ACCELERATED DISCOVERY San Jose, CA

- Developed a soft-contrastive pretraining framework that predicts how point mutations affect CAR-T therapy performance by learning functionally important positions from protein database annotations. Patent filed and paper accepted at CIBB 2026.
- Designed new CAR-T variants for cancer therapy with the pretrained model, outperforming the wild type 5x more often than Meta’s ESM-2 (20% vs. 4%), validated in vitro by Stanford experimentalists.
- Built an agentic evaluation harness to test how well LLM agents can retrieve and reason across 10 protein databases (as MCP tools), and co-designed 590 benchmark questions with 5 synthetic biology experts.
- Revealed domain-specific shortcomings of LLM agents in multi-database retrieval and reasoning across 12 models. Findings inform a redesigned harness to improve agent performance on protein research tasks.

Blackstone Real Estate May - Aug 2024
ARTIFICIAL INTELLIGENCE RESEARCH INTERN New York City, NY

- Designed a multimodal transformer that forecasts hotel demand from demand history (time-series) and market reports (text, embedded with Qwen1.5-7B-Chat), reducing prediction error by 26% over internal baselines.
- Led a team of 2 contract engineers to deploy it in production with automated tests and continual retraining, where it currently generates weekly forecasts that inform business decisions.

Travelers Insurance Jan 2024 - May 2024
APPLIED LARGE LANGUAGE MODEL INTERN Atlanta, GA

- Developed and engineered a gradient-based domain reweighting framework for LLM continued pretraining that converged 3x faster on Pythia-1B, now adopted in production to train the 32B TravelersLLM.

Research Experience	Georgia Tech	2021 – Present
	ADVISOR: CHRISTOPHER J. ROZELL	Atlanta, GA
	Led multi-year projects building dynamical systems structure into self-supervised learning for wearable signals, from small interpretable models to large-scale multimodal pretraining. Initiated collaborations with Google, Rice, and JHU.	
	<i>Learning Cross-Subject Dynamics from Multimodal Wearable Signals</i> In preparation	2026 – Present
	- Developed a multimodal contrastive pretraining approach that improves cross-user generalization by learning dynamical features shared across subjects. Set a new state-of-the-art in label efficiency on wearable benchmarks for household activity recognition, wrist-based stress vs. exercise detection, and at-home sleep staging. - Achieved clinical-grade seizure detection on a noisy behind-the-ear wearable by transferring the pretrained features, with 94% sensitivity and 11x fewer false alarms than the best baseline (0.24 false alarms/24h, retrospective).	
	<i>Learning Dynamics from Unlabeled Health Time-Series</i> ICML 2026	2025 – 2026
	- Developed a self-supervised pretraining objective (cross-reconstruction) for recovering dynamical features while removing process noise. Improved label efficiency across human activity recognition, in-hospital sleep staging, and stress and arrhythmia detection, with 12% lower error at 1% labels than the strongest baseline. - Established the first theory linking cross-reconstruction to dynamical systems inference, which predicts what data augmentations will transfer before training (confirmed experimentally).	
	<i>Learning Interpretable Dynamics from Noisy Neural Recordings</i> NeurIPS 2024, JMLR 2024	2022 – 2024
	Introduced an interpretable model for learning dynamics shared across regimes in non-stationary time-series. Extended it into a probabilistic version that discovers consistent brain states across noisy recording sessions.	
	National Institute of Mental Health	June 2019 - Aug 2021
	ADVISOR: FRANCISCO PEREIRA, MACHINE LEARNING TEAM	Bethesda, MD
Selected Leadership	Bioengineering and Bioscience Unified Graduate Students (BBUGS)	2022 – Present
	SOCIAL CHAIR	Georgia Tech
	Quadrupled event frequency (semesterly → monthly) for a 2K+ member community by leading a team of 5 and managing a \$6K annual budget.	
	Computational Neural-Engineering Training Program (CNTP)	2022 – 2024
	COMMUNITY COMMITTEE CHAIR	Georgia Tech
	Coordinated a team of 4 to deliver monthly industry, technical, and social events for a 100+ member computational neuroscience community.	
Reviewer Service	JOURNAL OF NEURAL ENGINEERING (2023), NEURIPS (2024, 2025), ICML (2025, 2026), ICLR (2025, 2026)	
Selected Awards	ICML GOLD REVIEWER AWARD	2026
	NEURIPS TOP REVIEWER AWARD	2025
	IBB “ABOVE AND BEYOND” TRAINEE AWARD	2025
	GT MACHINE LEARNING STUDENT CONFERENCE (2ND PLACE POSTER)	2024
	GEORGIA TECH PRESIDENT’S FELLOWSHIP	2021–2025
	NIH ACADEMY SCHOLAR AWARD	2020
	NIH INTRAMURAL RESEARCH AWARD	2019
Skills	Research: Self-supervised & contrastive learning, pretraining & foundation models, transformers, masked autoencoding, interpretability, graphical models, variational inference, dynamical systems & state-space models Applications: Wearable health AI, LLM agent evaluation (MCP tools, benchmarks), protein language models Software: Python, SQL, PyTorch, Hugging Face, Accelerate, scikit-learn, NumPy, vLLM, Linux, Git, Slurm, AWS	