YUCHENG XING

Stony Brook, NY | ericxing0430@gmail.com | LinkedIn | Personal Website

SUMMARY

Ph.D. in Electrical Engineering from Stony Brook University with research expertise in **Efficient Generative AI (Diffusion Models)** and **Continuous-Time Neural Modeling (Neural ODEs/SDEs)**. Developed novel diffusion, graph learning, and adaptive modeling methods for computer vision and spatio-temporal learning, spanning both generative and predictive tasks, with an emphasis on efficient inference and input-adaptive computation. First-author publications at **ICCV**, **ECCV**, and **ICONIP**, with 9+ years of PyTorch research experience spanning model design, large-scale experimentation, ablation studies, and model evaluation. Scholarly service includes 80+ peer-review assignments for major AI/CV venues.

TECHNICAL COMPETENCIES

- **Generative AI:** Diffusion Models, Multimodal Conditional Generation, Adaptive Sampling & Noise Scheduling, Inference Acceleration, Spectral-Domain Modeling.
- **Computer Vision:** Representation Learning, Human Pose & Motion Modeling, Visual Recognition, Image Restoration.
- **Continuous-Time & Spatio-Temporal Learning:** Neural ODEs/SDEs, Irregularly Sampled Sequences, Multi-Horizon Prediction, Spatio-Temporal Dynamics.
- **Graph Machine Learning:** Graph Neural Networks (GNNs), Dynamic Graph Representation Learning, Hierarchical Graph Modeling, Unsupervised Graph Denoising.
- **Efficient & Adaptive Architectures:** Input-Adaptive Neural Networks, Model Compression, Efficient Neural Operators, Adaptive Computation.
- **Engineering & Systems:** PyTorch, Python, C/C++, Linux, Git, Large-Scale Experimentation, Profiling & Inference Optimization.

EXPERIENCE

Research Associate *May 2026 – Present*
Stony Brook University, Stony Brook, New York, United States

- Continued research on **Spectral Diffusion**, refining frequency-domain modeling strategies for efficient image restoration and generative inference.
- Refined **N-Tree Diffusion, a tree-structured diffusion framework** with shared denoising trajectories to reduce computational redundancy in multi-horizon spatio-temporal forecasting.
- Advanced a **scale-flexible graph learning framework (Ripple-GAT)** based on localized graph modeling and adaptive spatial updates for scalable and transferable graph prediction.

Research Assistant *Nov 2021 – Dec 2025*
Stony Brook University, Stony Brook, New York, United States

- **Generative AI & Diffusion Models**
- Developed an **input-adaptive diffusion framework** with sample-specific denoising schedules, reducing redundant sampling relative to fixed-step diffusion baselines.
- Built **a multimodal pose-conditioned video generation framework (DANCER)** with dedicated appearance and rendering modules, reducing FVD by **10–15%** on TikTok-3K.
- **Computer Vision & Adaptive Architectures**
- Developed **HDG-ODE, a hierarchical continuous-time graph model** for multi-person 3D pose forecasting, achieving **75% parameter reduction and 12% MPJPE reduction** under occlusion, irregular observations, and varying motion speeds.
- Designed **Puppet-CNN, an input-adaptive CNN** with Neural-ODE-generated convolutional parameters, achieving **10× parameter compression** with comparable accuracy to standard CNN backbones.

- **Continuous-Time & Graph Learning**
- Developed a **hybrid neural ODE/SDE framework (AGGDN)** for sparse and irregular graph time-series prediction, outperforming discrete- and continuous-time baselines by **10–20%** across multiple datasets.
- Created an **unsupervised online graph denoising framework (∞-Net)**, improving signal quality by **7%** without clean supervision or ground-truth labels.
- **Research Engineering**
- Built end-to-end **PyTorch research pipelines** for data processing, training, evaluation, checkpointing, and large-scale experimentation; conducted extensive ablations, hyperparameter studies, and profiling-driven inference optimization.

Teaching Assistant *Aug 2017 – Dec 2020*
Stony Brook University, Stony Brook, New York, United States

- Supported undergraduate and graduate courses including *Computer and Robot Vision*, *Digital Signal Processing*, *Data Structures*, and *C++ Programming* through labs, office hours, grading, and student project mentoring.

EDUCATION

Stony Brook University, Stony Brook, New York, United States *Aug 2021 – May 2026*
Ph.D. in **Electrical Engineering** GPA: **3.90** / 4.0
Stony Brook University, Stony Brook, New York, United States *Aug 2017 – May 2021*
M.S. in **Electrical Engineering** GPA: **3.89** / 4.0
Shanghai Jiao Tong University, Shanghai, China *Sept 2013 – Jun 2017*
B.S. in **Computer Science & Technology** (**IEEE Honor Class**) GPA: **3.52** / 4.3

SELECTED PUBLICATIONS

[1] **Y. Xing**, X. Wang. "*Puppet-CNN: Continuous Parameter Dynamics for Input-Adaptive Convolutional Networks*". **ECCV 2026**. – Neural-ODE-based kernel generation for input-adaptive CNNs with compact parameterization and dynamic computation.

[2] **Y. Xing**, X. Wang. "*HDG-ODE: A Hierarchical Continuous-Time Model for Human Pose Forecasting*". **ICCV 2023**. – Hierarchical continuous-time graph modeling for multi-person pose dynamics under irregular and occluded observations.

[3] **Y. Xing**, X. Wang. "*Spectral-Structured Diffusion for Single-Image Rain Removal*". arXiv 2026. – Diffusion-based image restoration with structured spectral modeling of high-frequency rain patterns.

[4] **Y. Xing**, X. Wang. "*N-Tree Diffusion for Long-Horizon Wildfire Risk Forecasting*". arXiv 2026. – Tree-structured diffusion with shared denoising trajectories for efficient wildfire risk forecasting.

[5] **Y. Xing**, X. Liu, J. Yin, X. Wang. "*DANCER: Dance ANimation via Condition Enhancement and Rendering with diffusion model*". arXiv 2025. – Pose-conditioned diffusion for human video generation with dedicated appearance conditioning and rendering modules.

[6] **Y. Xing**, X. Liu, X. Wang. "*Input-Adaptive Generative Dynamics in Diffusion Models*". arXiv 2024. – Input-adaptive diffusion with sample-specific denoising schedules for efficient generative inference.

[7] **Y. Xing**, X. Wang. "∞*-Net: An Unsupervised Model for Online Graph Time-Series Denoising*". ICONIP 2024. – Online blind-spot graph neural network for unsupervised graph-signal denoising.

[8] **Y. Xing**, et al. "*AGGDN: A Continuous Stochastic Predictive Model for Monitoring Sporadic Time Series on Graphs*". ICONIP 2023 (conference version) · ICN 2024 (journal extension). – Hybrid neural ODE/SDE framework for stochastic prediction of irregular graph time series.

Full publication list: Google Scholar.