Yubo Wang

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Education

New York University, *Bachelor's degree in Mathematics* Sept 2022 – May 2026

- GPA: 3.82/4.0 **(Dean's List, Cum Laude)**
- Undergraduate Coursework: Calculus, Linear Algebra, Abstract Algebra, Discrete Math, Topology, Analysis, Data science.
- Graduate Coursework: Deep Learning, Machine Learning, NLP, Computer Vision, Information Theory, Probability Theory, Numerical Method, Random Algorithm, Differential Geometry.

Research Experience

Efficient and Long-Horizon Planning with JEPA-Based World Models Jun 2026 – Present
Research Intern, Shanghai Academy of AI for Science (SAIS) Shanghai, China

- Studied and reproduced a class of JEPA-based world models, examining their representation learning, latent dynamics prediction, and planning components.
- Investigating computational bottlenecks in model predictive control (MPC) for JEPA-based world models and exploring more efficient planning algorithms.
- Exploring hierarchical world models to address the challenges of long-horizon planning through prediction and planning at multiple temporal scales.

End to end building task-specific JEPA World Models Apr 2025 – May 2025
Deep Learning Project, NYU New York, NY

- Ranked #2 overall and achieved the best model performance in the course competition for NYU's graduate Deep Learning course taught by Yann LeCun.
- Designed and trained a 3.63M-parameter JEPA world model on 2.5M offline trajectories, building separate agent and layout encoders and an action-conditioned predictor for a two-room environment with varying wall and agent layouts.
- Developed a three-stage anti-collapse training pipeline combining Barlow Twins warmup, MSE alignment, and agent-encoder freezing; achieved coordinate-probe MSEs of 0.325 (`probe_normal`) and 0.742 (`probe_wall`).
- Conducted ablations on long-horizon rollouts and out-of-distribution layouts, evaluating trajectory slicing, flips, and Gaussian noise augmentation for generalization.

Ablation study of DINO-World Model Nov 2025 – Dec 2025
Computer Vision Project, NYU New York, NY

- Reproduced the DINO-WM pipeline for Push-T manipulation, including latent dynamics training, goal-conditioned MPC/CEM planning, and closed-loop evaluation.
- Extended the pipeline with DINOv3 and conducted encoder and decoder ablations, comparing DINOv2- and DINOv3-based variants in latent prediction and downstream planning.
- Observed that lower latent prediction loss did not translate into better planning performance: DINOv3-based models achieved lower prediction loss than the DINOv2 baseline but did not outperform it under a fixed MPC/CEM configuration.
- Investigated latent representation geometry, goal-distance calibration, compounding rollout error, and representation-dependent planner hyperparameters as possible contributors to the prediction–control mismatch.

A Data-Centric Survey in 3D Vision Jul 2025 – Oct 2025
Survey Co-author, CVPR 2026 OpenSUN3D Workshop New York, NY

- Co-authored a peer-reviewed survey of 3D vision, developing a data-centric taxonomy connecting representations, datasets, and learning paradigms across reconstruction, generation, and embodied intelligence.

- Analyzed 50 representative 3D datasets and synthesized developments in neural fields, 3D Gaussian Splatting, geometric foundation models, and 4D world models.
- Co-maintain the open-source companion repository, curating datasets, papers, project pages, and implementations, and mainly work on the world model's part.

Credit Default Prediction by Feature Engineering and Gradient Boosting Oct 2024 – Dec 2024
Machine Learning Project, NYU New York, NY

- Built a credit-risk prediction pipeline on the Kaggle Home Credit dataset, integrating seven relational tables through multi-table aggregation, missing-value handling, and categorical feature engineering.
- Compared logistic regression, random forests, and LightGBM; trained the final model with five-fold cross-validation and focal loss, improving ROC-AUC from 0.7918 to 0.8175.

Price Prediction and Stock Selection by models Jun 2024 – Aug 2024
Quantitative Research Intern, Shenwan Hongyuan Securities Shanghai, China

- Implemented a martingale-based estimator for short-horizon futures prices using order-book data, comparing its performance with machine-learning baselines for mid-price prediction.
- Built a Python factor-research pipeline covering 87 fundamental factors; trained a gradient-boosting stock-selection model with time-decayed sample weights, achieving an information coefficient (IC) of 0.11.

Publications

A Cookbook of 3D Vision: Data, Learning Paradigms, and Application
Hongyang Du, Zongxia Li, Dawei Liu, Runhao Li, Haoyuan Song, Qingyu Zhang, **Yubo Wang**, Jingcheng Ni, Shihang Gui, Congchao Dong, and Tao Hu.
CVPR 2026 OpenSUN3D Workshop, 2026. [Paper] [Repository]

Seminars

Information Theory for Statistics and Machine Learning Fall 2025
PhD-Level Advanced Topics Course, NYU New York, NY

- Coursework covered information-theoretic tools for statistical estimation and learning, including divergence measures, minimax risk, and sample complexity.
- Presented *Information Theory and Mixing Least-Squares Regressions* by Leung and Barron (2006) and reproduced the derivation of its key oracle inequality for exponential-weight model averaging.

Randomized Algorithms and Monte Carlo Methods Spring 2025
PhD-Level Advanced Topics Course, NYU New York, NY

- Coursework covered Monte Carlo sampling, randomized numerical linear algebra, and stochastic optimization.
- Presented *Piecewise Deterministic Markov Processes for Continuous-Time Monte Carlo* by Fearnhead et al. (2018), worked through derivations of the generator and invariance conditions, and implemented a Zig–Zag sampler using event-time thinning, tested on a 2D Gaussian target.

Honors and Awards

Cum Laude May 2026
New York University, College of Arts and Science

Latin honor recognizing high academic achievement based on cumulative GPA.

Dean's List 2022–2023, 2023–2024
New York University, College of Arts and Science

The Dean's List is an honor roll of matriculated students who have achieved an average of 3.65 or higher for the previous academic year in at least 28 graded credits.

Teaching Experience

Grader, Analysis (MATH-UA 325) Spring 2025
New York University New York, NY

Skills

Technical skills: Pytorch, Linux, Git, C++, JAVA
Languages: English(Professional); Chinese(Native)