

Jiahe Huang

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Education

- University of Michigan, Ann Arbor** Aug. 2023 – Apr. 2025 (Expected)
B.S.E. in Data Science, Dual Degree Program Michigan, USA
- GPA 4.0/4.0
 - A+ Courses: Computer Vision, Data Mining, Intro Computer Org, Comp Sci Pragmatics
- Shanghai Jiao Tong University** Sept. 2021 – Aug. 2025 (Expected)
B.Eng in Electrical and Computer Engineering Shanghai, China
- GPA 3.9/4.0 (Top 3%)
 - Admitted to the UM-SJTU JI Honors Research Program
 - A+ Courses: Probability Methods in Eng., Linear Algebra, Discrete Mathematics, and 10+ others

Publications

- [1] “DiffusionPDE: Generative PDE-Solving Under Partial Observation” [🔗](#)
Jiahe Huang, Guandao Yang, Zichen Wang, Jeong Joon Park *In Submission*
- Oral Presentation** (Top ~ 3%), *5th AI for Science Workshop @ ICML 2024*
- [2] “SpaceMeta: Global-Scale Massive Multi-User Virtual Interaction over LEO Satellite Constellations” [🔗](#)
Jiahe Huang, Yifei Zhu *IEEE Satellite 2023*

Research Experience

- Neural Solver for Partial Differential Equations under Partial Observation** Nov. 2023 – May. 2024
Advisor: Jeong Joon Park University of Michigan
- **Objectives:** Develop a neural network to simulate partial differential equations (PDEs) using potentially explainable partial data observations. The model should handle multiple instances and be capable of solving both forward and inverse problems simultaneously.
 - **Contributions:** Learned AI for Science works like Physics Informed Deep Learning (PINN), Fourier Neural Operator (FNO) and applied the models on Stochastic PDEs to find their limitations; Trained diffusion models on the joint distribution of coefficient (or initial state) and solution (or final state); Applied diffusion sampling to solve the problem guided by both observation and PDE function.
- Multi-User Virtual Interaction over LEO Constellations** Dec. 2022 – Aug. 2023
Advisor: Yifei Zhu Shanghai Jiao Tong University
- **Objectives:** Select servers based on LEO satellite constellations to lower the end-to-end latency and achieve high synchronization among global-scale users in real-time interactions.
 - **Contributions:** Simulated trajectories of LEO satellites; Reproduced SOTA architecture; Designed LEO-satellite-based relay-selection algorithms for multiuser virtual interaction situations; Applied Reinforcement Learning models like Q-Learning to optimize the selection algorithm.

Selected Projects

- VisionRefine: High-Resolution Image Recovery** Mar. 2024 – Apr. 2024
Final project of Computer Vision (EECS 442) [🔗](#) [🌐](#)
- **Objectives:** Recover and enhance image resolution using deep convolutional networks, diffusion models, and transformers; Compare their outputs to understand each method’s limitations.
 - **Contributions:** Trained the diffusion model using EDM architecture; Guided the diffusion model with alternative form of diffusion posterior sampling to recover the resolution.
- Neural Field Reconstruction** Nov. 2023 – Nov. 2023
Application of the NeRF Architecture to 2D Images [🌐](#)
- **Objectives:** Reconstruct a given image using neural network; Enforce symmetric image output.
 - **Contributions:** Trained a neural network model using positional encoding with Fourier features based on NeRF architecture; Applied other methods like CNN and Transformer for comparison.
- Student Performance Prediction** Nov. 2023 – Dec. 2023
Kaggle competition of Data Mining and Statistical Learning (STATS 415) [🔗](#)
- **Objectives:** Understand how the input variables (self-evaluation, teacher-evaluation, etc.) relate to the response (student performance); Train a model to predict performance to a secret held-out test-set.
 - **Contributions:** Used one-hot encoding and regularization to preprocess data; Designed deep learning architecture and trained an MLP neural network model to achieve high accuracy for the testing set.

Diabetes Prediction

Nov. 2023 – Dec. 2023

Open-ended final project of Data Mining and Statistical Learning (STATS 415)



- **Objectives:** Evaluate the probability of a person having diabetes based on his living habits; Predict the probability of a person having diabetes based on his medical examination results.
- **Contributions:** Preprocessed data; Designed different machine learning models including decision trees, LDA, and QDA to predict the probability; Compared the models and obtained the most suitable one.

Selected Honors & Awards

Jul. 2024	2023 Annual Outstanding Teaching Assistant Award	Shanghai Jiao Tong University
WN. 2024	Dean's Honor List	University of Michigan
FA. 2023	Dean's Honor List	University of Michigan
Jul. 2023	Dual Degree Program (The Cheng Family) Scholarship	Shanghai Jiao Tong University
Apr. 2023	UM-SJTU JI Student Development Scholarship	Shanghai Jiao Tong University
Nov. 2022	SJTU Undergraduate Excellent Scholarship (Class B)	Shanghai Jiao Tong University
Oct. 2022	SJTU Merit Student Award	Shanghai Jiao Tong University

Skills

Programming Languages: C++, C, Python, R, MATLAB, JavaScript, HTML, LaTeX, etc.

Frameworks: PyTorch, TensorFlow, Networkx, OpenCV, OpenGL, etc.

Deep Learning: Diffusion Model, GAN, Transformer, CNN, RNN, MLP, etc.

Teaching Experience

University of Michigan, Ann Arbor		Michigan, USA
FA. 2024	Computer Vision (EECS 442) , Instructional Assistant	
Shanghai Jiao Tong University		Shanghai, China
SU. 2024	Data Structures and Algorithms (ECE2810J) , Teaching Assistant	
SU. 2023	Physics I (PHYS1500J) , Teaching Assistant	
FA. 2022	Honors Calculus II (MATH1560J) , Teaching Assistant	

Seminar Talks

DiffusionPDE: Generative PDE-Solving Under Partial Observation	Jun. 2024
<i>Computer Vision Seminar</i> , University of Michigan	Host: Sangwoo Mo

Selected Community Service

Student Advisor	Mar. 2023 – Present
UM-SJTU Joint Institute Advising Center	Shanghai, China
<ul style="list-style-type: none">• Administrator of UM-SJTU JI Dual Degree program wiki. • Host of 2023 Dual Degree Program Workshop, 2024 Research Workshop.• On duty and managed Piazza to help students schedule their career plans.	
Class Advisor	Sept. 2022 – Aug. 2023
UM-SJTU Joint Institute	Shanghai, China
<ul style="list-style-type: none">• Helped students organize class activities and provided academic advice.	