

Yunzhe Daniel Wang

RESEARCH · MACHINE LEARNING · SOFTWARE

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Education

University of Southern California

PHD IN COMPUTER SCIENCE

- Tactical AI; Advisor: Prof. William Swartout

Los Angeles, CA

Aug 2024 - Present

Columbia University

MS IN COMPUTER SCIENCE, MACHINE LEARNING TRACK (GPA: 3.96/4.00)

- Machine Learning and Robotics Research at Creative Machines Lab under Prof. Hod Lipson

New York, NY

Aug 2021 - May 2023

University of Southern California

BA IN APPLIED MATHEMATICS, BS IN COMPUTATIONAL NEUROSCIENCE, MINOR IN COMPUTER SCIENCE (GPA: 3.84/4.00)

- Machine Learning and Cognitive Architecture research under Dr. Volkan Ustun and Prof. Paul Rosenbloom

Los Angeles, CA

Aug 2017 - May 2021

Relevant Coursework: Machine Learning, Unsupervised Learning, Natural Language Processing, Reinforcement Learning, Computer Vision, Robotics, Autonomous Systems, Artificial Intelligence, Cognitive Neuroscience, Sensation and Perception, Brain Architecture, Neurobiology, Cellular and Molecular Neuroscience, Statistics, Probability Theory, Numerical Methods, Calculus, Optimization, Computer Networks, Social Networks, Databases, Data Structure, Algorithm Analysis, Advanced Algorithms

Experience

University of Southern California

GRADUATE RESEARCH ASSISTANT

- Conducted PhD Research in Machine Learning, focusing on enhancing Reinforcement Learning performance through the integration of generative models and human data under multi-agent scenarios
- Developed a 3D multi-agent simulation environment in a geospatial terrain using Unity, laying the groundwork for reinforcement learning and Human-AI collaboration research.
- Keywords: Multi-Agent Reinforcement Learning, Graph Neural Networks

Los Angeles, CA

Aug 2024 - Present

Bubble Group, Inc.

AI RESIDENT → SOFTWARE ENGINEER II

- Led Generative AI Research and Development for UI/UX Generation in No-Code Platform through Large Language Models and Diffusion Models
- Developed and launched 🧠 Bubble AI PAGE DESIGNER from-zero-to-one, generating customized and responsive interfaces from text prompt
- Designed the overall Large Language Model Agentic (LLM-Agent) architecture and Domain-Specific Language (DSL). These components plan and communicate to generate full-stack web apps while interacting with users, serving as the core backend of the Bubble AI service
- Keywords: Large Language Models, Retrieval-Augmented Generation, AI-Assisted Design

New York, NY

Jul 2023 - Jul 2024

Creative Machines Lab at Columbia University

RESEARCH ASSISTANT

- Developed and implemented a novel deep learning algorithm capable of identifying 12-DOF quadruped robot morphologies from intrinsic motion dynamics (kinaesthesia), enabling control and planning on robots with unseen morphologies 🧠 Paper
- Developed a conversational face robot with co-expressive facial dynamics and can generate lip-synced speech-driven talking faces through novel deep learning algorithms, bridging the gap to enable non-verbal communication capabilities in robots 🧠 Paper
- Led machine learning in both projects, utilized GAN, LSTM, and Transformer Architectures, handling modalities in speech, videos, 3D keypoints, pointcloud, and timeseries (IMU)
- Keywords: Generative AI, Multimodal Learning, Transfer Learning, Model Predictive Control, Human-Robot Interaction

New York, NY

Sep 2021 - May 2023

USC Institute for Creative Technologies

STUDENT WORKER/RESEARCHER

- Developed a Multi-Agent Reinforcement Learning Algorithm that efficiently and approximately solves Traveling Salesman Problem variants for Search-and-Rescue tasks using Graph Transformers, creating a Social AI-Agent that enhances Human-AI teaming 🧠 Paper
- Software development for the Graphical Model aspects of the (Py)Sigma Cognitive Architecture

Los Angeles, CA

Feb 2020 - Aug 2021

Institute of Computing Technology, Chinese Academy of Science

RESEARCH ENGINEER INTERN

- Natural Language Processing Research under Prof. Cungen Cao, focused on Knowledge Extraction
- Developed a rule-based system to improve Chinese Part-of-Speech tagging, boosting downstream knowledge extraction accuracy, integrating heuristic and data-mined rules through pattern matching

Beijing, China

May 2019 - Aug 2019

Skills

AI/ML	PyTorch, Scikit-Learn, PyG, Tensor Programming, Data Visualization, Deep Learning, Large Language Models
Programming	Python, JavaScript/TypeScript, Node.js, MATLAB, LaTeX, Git, C#, Unity, HTML/CSS, Tailwind CSS, SQL, Web Scraping
Languages	English, Chinese

Teaching

Applied Computer Vision (COURSE ASSISTANT)

Columbia - Spring 2023

Introduction to Natural Language Processing (COURSE ASSISTANT)

Columbia - Fall 2022

Introduction to Natural Language Processing (COURSE ASSISTANT)

Columbia - Summer 2022

Publications

1. Yuhang Hu, Yunzhe Wang, Ruibo Liu, Zhou Shen, Hod Lipson. “**Robot Configuration Identification from Motion Data.**” *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2024)* (oral). [↗](#)
2. Yuhang Hu, Boyuan Chen, Jiong Lin, Yunzhe Wang, Yingke Wang, Cameron Mehlman, Hod Lipson. “**Human-Robot Facial Co-expression.**” *Science Robotics*, 2024. [↗](#)
3. Volkan Ustun, Ronit Jorvekar, Nikolos Gurney, David Pynadath, Yunzhe Wang. “**Assessing Routing Decisions of Search and Rescue Teams in Service of an ASI Agent.**” *International Conference on Agents and Artificial Intelligence (ICAART 2024)*. [↗](#)
4. Yunzhe Wang, Nikolos Gurney, Jincheng Zhou, David Pynadath, Volkan Ustun. “**Route Optimization in Service of a Search and Rescue Artificial Social Intelligence Agent.**” *Association for the Advancement of Artificial Intelligence 2021 Fall Symposium Series (AAAI FSS 2021)*. [↗](#)