

# Yunzhe Daniel Wang

RESEARCH · MACHINE LEARNING · SOFTWARE

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## Education

### University of Southern California

PHD IN COMPUTER SCIENCE

- Generative AI for Decision Making; 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, 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

### 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 Agent (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 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
- 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
- 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, Human-Robot Interaction, Multimodal Learning, Transfer Learning, Model Predictive Control

New York, NY

Sep 2021 - May 2023

### USC Institute for Creative Technologies

RESEARCH ASSISTANT

- Developed a Multi-Agent Reinforcement Learning System 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 INTERNSHIP

- 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, Tensor Programming, Data Visualization, Deep Learning, Large Language Models   |
| Programming | Python, JavaScript/TypeScript, Node.js, MATLAB, LaTeX, Git, HTML/CSS, Tailwind CSS, SQL, Web Scraping |
| Languages   | English, Chinese  |

## Teaching

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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

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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)*. [↗](#)