

Zewn (Anthony) Chen

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EDUCATION

Columbia University

New York, NY

MS in Mechanical Engineering, Concentration in Robotics, 4.165/4.00

Expected Jun 2026

Course: Applied Robotics, Robotics Studio, Robot Learning, Reinforcement Learning, Modern Control Theory, Model Predictive Control

Zhejiang University

Hangzhou, CN

MS in Design Science, N/A

Jun 2024

Course: Affective Computing and Design, Innovation Design, Informatics for Design, Integrated Design

Zhejiang University

Hangzhou, CN

MS in Automation, Concentration in Robotics, 3.95/4.00

Jun 2021

First-class scholarship of Zhejiang University

Course: Robotics, Design and Practice of Robot, Embedded System, Artificial Intelligence, Principles of Automatic Control 1&2

RESEARCH EXPERIENCE

Robotic Manipulation and Mobility Lab, Columbia University

New York, NY

Miniature Bimanual End-Effector

Apr 2025 - Present

- Designed and refined a novel 8-DOF robotic platform with dual end-effectors, enabling dexterous bimanual manipulation and extending the workspace when mounted on a larger industrial robot.
- Implemented an interactive GUI, allowing individual joint position control, Cartesian velocity control, sample-based singularity avoidance, motor torque control, trigger to gripper mapping control, camera preview, etc.
- Built a data collection pipeline and trained diffusion policies for diverse bimanual manipulation tasks.
- Completed a manuscript submitted to ICRA 2026 as co-first author.

Compact LED-Based Displacement Force/Torque Sensor

Jan 2025 - Jul 2025

- Designed a Gaussian-based heuristic classification model for the contact detection.
- Trained a transformer based model and tuned the hyperparameters for the force and torque regression.
- Performed the ablation studies for the model performance by using fewer LED signals for training.

Next Lab, Zhejiang University

Hangzhou, CN

Chinese Font Generation Process and Technology Optimization

Sep 2022 - Jun 2024

- Developed a novel AI-assisted interactive paradigm for Chinese font design in collaboration with Apple Inc.
- Collected stroke annotations and constructed a labeled database using graphical and structural features.
- Developed algorithms leveraging graphical features to extract and match strokes from Diffusion model-generated character images, enabling reconstruction of vectorized Chinese characters.
- Conducted user studies demonstrating that the proposed paradigm improves design efficiency by 30% while preserving the quality.
- Completed a manuscript published in ESWA as the third author, and my master's thesis.

Transformer-Based Chinese Characters Generation

Sep 2021 - Aug 2022

- Led the design and implementation of spatial cross-attention modules to capture long-range pixel interactions between style and content features, serving as a content-style mixer for one-shot font generation.
- Performed extensive experiments and user studies, demonstrating performance in one-shot font generation and visualizing spatial correspondences.

AI Seal

Oct 2019 - Aug 2020

- Collected and restored raw data from ancient documents, formalizing them using a polynomial-parameterized font model.
- Trained a generative adversarial network (GAN) to generate styled Chinese character images.
- Collaborated in designing a seal engraving platform, enabling users to create personalized real-world seals in under 20 minutes.

Undergraduate Thesis, Zhejiang University

Hangzhou, CN

Generation of Chinese Characters using Deep Learning

Nov 2020 - May 2021

- Proposed a "character-creation" method for automatic generation of Chinese characters using the ideographic description sequences (IDS, a semantic sequence that can describe the structure and components of Chinese characters).
- Developed a dynamic combining algorithm and a subsequent deep learning-based optimization network, which demonstrated 24-48% improvements in NRMSE and PSNR relative to the baseline dynamic combining method.
- Demonstrated ability to generate rare and artistic "novel characters," expanding potential applications in AI art.

Undergraduate Group Research, Zhejiang University
Computer Vision Based Fruit Sorting Robot

Hangzhou, CN
Sep 2020 - Jan 2021

- Revitalized a software and hardware architecture for a robotic arm and prototyped it using Raspberry Pi, Arduino, and vision & pressure sensors, allowing it to detect different types of small fruits and sort without damage.
- Organized weekly discussions with team members and wrote progress reports to ensure project scheduling.

PROFESSIONAL EXPERIENCE

Columbia University
Teaching Assistant

New York, NY
Sep 2025 - Present

- Assisted with course Modeling & Identification of Dynamic System by grading homework, exams, assisting students, etc.

PUBLICATIONS

- Sharfin Islam*, Zewen Chen*, Zhanpeng He*, et al. (2026). MiniBEE: A New Form Factor for Compact Bimanual Dexterity. Submitted to IEEE International Conference on Robotics and Automation (ICRA 2026) (arXiv preprint available). [*Equal contribution]
- Bolin Wang, Kejun Zhang, Zewen Chen, et al. (2025). An intelligent font generation system based on stroke inference, mitigating production labor and enhancing design experience. Expert Systems with Applications, 263, 125657. [Elsevier]
- Yehang Yin, Zewen Chen, et al. (2020). Automated Chinese seal carving art creation with AI assistance. In 2020 IEEE Conference on Multimedia Information Processing and Retrieval (MIPR) (pp. 394–395). IEEE.

PROJECTS

Modern Control Theory, Columbia University
Balancing a Unicycle Robot on the Slope

Mar 2025 - May 2025

- Modeled and linearized the nonlinear dynamics of an on-slope unicycle robot using the Euler–Lagrange method.
- Built simulations in MATLAB/Simulink to analyze the linearized and nonlinear system stability under slope conditions.
- Designed advanced controllers (Lyapunov-based, H_2 optimal, H_∞ optimal) for stabilizing both linearized and nonlinear models.

Model Predictive Control, Columbia University
Refined Disturbance Rejection MPC

Mar 2025 - May 2025

- Reproduced a benchmark MPC controller in mobile robot "Disturbance Rejection MPC".
- Extended the Simulink implementation for continuous-time simulation.
- Developed asynchronous control simulation and shortened-horizon refinement, improving real-time applicability of MPC in practice.

Robotics Studio, Columbia University
Bipedal Robot Design

Sep 2024 - Dec 2024

- Devised and built a bipedal robot capable of stable walking with custom mechanical structure (CAD modeling and 3D printing).
- Programmed integrated control system enabling smooth walking (cubic polynomial trajectories), posture adjustment, self-checking, and wireless voice interaction with expressive feedback.
- Simulated and optimized gaits in a physics engine, validating stable walking performance.

Design and Practice of Robot, Zhejiang University
Algorithm Design for Mobile Robot and Articulated Robot

Mar 2020 - Jul 2020

- Implemented path planning, localization, tracking, and map reconstruction for a mobile robot in ROS using Python/C++ (A*, DWA, ICP, EKF, Particle Filter, and Hybrid Bayesian Network-based laser mapping), enabling real-time navigation.
- Programmed a 6-DOF robotic arm with kinematics algorithms (forward & inverse), achieving precise trajectory control.
- Completed a bell-tolling robotic task with full credits, demonstrating reliable integration of planning and control.

AWARDS

- First-class scholarship of Zhejiang University (Top 5% in 152 in the program) Jan 2020
- Third-class scholarship of Zhejiang University (Top 5% in 152 in the program) twice, Dec 2018, Jan 2021
- Outstanding Graduates of Zhejiang University Jun 2021
- Award of Honor for Graduate of Zhejiang University Dec 2022
- Excellent Postgraduate Students's Award of Zhejiang University Jun 2024

LEADERSHIP EXPERIENCE

Student traditional handicraft art club, Zhejiang University
Minister of Technology Department

Hangzhou, CN
Sep 2018 - Jul 2019

- Organized handicraft courses, winning first prize for teaching twice
- Responsible for coordinating large-scale activities such as "Intangible Cultural Heritage Crafts " and "Club Culture Festival"

SKILLS

- C, C++, Python, MATLAB, PyTorch, ROS, SOLIDWORKS, PyBullet, 3D-Printing