Ray Tang

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Education

University of Illinois Urbana-Champaign — Urbana, IL
B.S. Mechanical Engineering, Grainger College of Engineering — Expected May 2030
- Relevant coursework: MATH 241, PHYS 212

Shoreham Wading River High School — Shoreham, NY
Advanced Regents Diploma with Seal of Biliteracy in Mandarin Chinese — Jun 2026

Research Experience

University of Illinois Urbana-Champaign - Kinetic Materials Research Group — Urbana, IL
Undergraduate Researcher — Sep 2026 - Present
- Prepare wound artificial muscles for integration by extracting internal mandrels, trimming actuators to specified lengths, and bonding conductive wires to their ends.
- Fabricate and assemble artificial muscle actuators for Artlighting - project investigating controlled actuation of parallel artificial muscles to drive LED's in wave-like display.

Stony Brook University – Design Intelligence Lab — Stony Brook, NY
Researcher / Simons Research Fellow — May 2025 - Feb 2026
- Developed computational pipeline for large-scale kinematic synthesis of planar leg mechanisms, generated and evaluated 100 million of candidate mechanisms.
- Implemented geometric filtering and optimization methods to generate dataset of 23,000+ novel walking mechanisms, optimized parallel filtering code on SeaWulf high computing cluster
- Published first-author research paper in Machines on computational synthesis of leg mechanisms.

Frankfurt Institute for Advanced Studies, Goethe University Frankfurt — Frankfurt, Germany
Summer Research Intern — Jul 2024 - Sept 2024
- Wrote scripts to automate data collection for AI model training - automating traffic signals
- Conducted comprehensive experiments and data analysis on model performance via traffic simulations

Publications

- **Tang, R.**, Lyu, Z., & Purwar, A. (2026). Kinematic Synthesis of Planar Leg Mechanisms through Large-Scale Dataset Generation, Geometric Filtering, and Optimization. Machines 2026, 14(3), 253; https://doi.org/10.3390/machines14030253

Engineering Projects

Aircontrol | OpenCV, mediapipe, Python — 2026
- Developed a webcam-based hands-free computer interface using MediaPipe hand landmarks and OpenCV, mapping hand motion to cursor control and gesture shortcuts
- Implemented pinch-distance thresholds, coordinate-history averaging, and deadzone filtering to stabilize cursor movement and distinguish click/drag gestures.

SO-100 Robotic Arm | Python, LeRobot, Control theory, 3D Printing — 2025
- Built and programmed a leader-follower robotic arm system for real-time teleoperation
- Developed and tested a vision-based control pipeline to translate operator movements into coordinated robotic-arm motion.

Leadership

VEX Robotics — Team Captain — Sep 2022 - Jun 2026
- Led team through its first VEX robotics state invitational; tripled team membership and secured funding
- Directed robot design, CAD, programming, fabrication while mentoring new members

MIT Zero Robotics — Founder & Team Lead — Nov 2024 - Mar 2025
- Founded and led a multi-school team for the MIT Zero Robotics competition
- Developed C++ autonomous-navigation and constrained-path algorithms for a free-flyer robot; code was deployed aboard the ISS, team placed 3rd nationally.

Technical Skills

Programming: Python, C++
Tools: Git, Github, OpenCV, mediapipe, Arduino, Fusion360, Solidworks, High-performance computing clusters
Languages: English, Chinese