

Shutong Zhang

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EDUCATION

Stanford University

Sep 2024 - Jun 2026 (Expected)

Master of Science in Computer Science

Palo Alto, CA, US

- Specialized in Visual Computing Track

University of Toronto

Sep 2019 – Jun 2024

Bachelor of Applied Science and Engineering (Graduated with the Highest Honor)

Toronto, ON, Canada

- Major in Computer Engineering, minor in Artificial Intelligence; CGPA: 3.94/4.00
- Core Courses: Deep Learning and Neural Networks, Computer Vision, Algorithms & Data Structures, Computer Graphics, Software Engineering, Computer Networks, Database Systems, Computer Organization

PUBLICATIONS AND PAPERS

- [1] K. Tzevelekakis, **S. Zhang**, L. Van Gool, C. Sakaridis. Sun Off, Lights On: Photorealistic Monocular Nighttime Simulation for Robust Semantic Perception [↗](#); **WACV 2025**
- [2] **S. Zhang**, T. Zhang, J. Cheng, S. Zhou. Who to Blame: A Comprehensive Review of Challenges and Opportunities in Designer-Developer Collaboration; **CSCW 2025**
- [3] **S. Zhang**. NPSim: Nighttime Photorealistic Simulation From Daytime Images With Monocular Inverse Rendering and Ray Tracing [↗](#); **Thesis at ETH Zurich Computer Vision Lab**
- [4] **S. Zhang***, Y. Qiao*, G. Zhu*, E. Heiden, D. Turpin, M. Lin, M. Macklin, A. Garg. HandyPriors: Physically Consistent Perception of Hand-Object Interactions with Differentiable Priors [↗](#); **CVPRW 2023, ICRA 2024**
- [5] D. Turpin, T. Zhong, **S. Zhang**, G. Zhu, E. Heiden, M. Macklin, S. Tsogkas, S. Dickinson, A. Garg. Fast-Grasp'D: Dexterous Multi-finger Grasp Generation Through Differentiable Simulation [↗](#); **ICRA 2023**

RESEARCH EXPERIENCE

ETH Zürich - Computer Vision Lab

Apr 2023 – Apr 2024

Research Assistant supervised by Prof. Luc Van Gool and Dr. Christos Sakaridis

Zurich, Switzerland

- Designed and implemented NPSim: A data generation pipeline that transforms daytime images into simulated nighttime images for semantic scene understanding tasks.
- Implemented the Geometric Mesh Reconstruction part of the pipeline, including the normal-guided depth refinement kernel, depth-based mesh reconstruction, and mesh post-processing kernel

University of Toronto - Vector Institute/PAIR Lab

May 2022 – Apr 2024

Research Assistant supervised by Prof. Animesh Garg, with Prof. Ming C. Lin

Toronto, ON, Canada

Project: Diffusion-based Grasp Generation

- Designed a contact-conditioned diffusion model for multi-finger robotic affordance grasp generation that achieved 2x desired contact regions and 20x generation speed
- Implemented an end-to-end grasp generation pipeline that generates language-guided functional grasps from single view RGB images

Project: Physics-based Hand-object Pose Estimation

- Designed an integrated differentiable rendering and simulation pipeline to estimate the hand-object interaction that achieved 50% lower object error and 25% lower hand error than the state-of-the-art model
- Generalized the pipeline to robotic hand manipulation and human-object pose estimation in the wild
- Proposed a lightweight filtering-based tracking pipeline that uses differentiable priors and an Extended Kalman Filter that achieved 40fps running speed

Project: Multi-finger Robot Hand Grasp Generation

- Developed a grasp generation pipeline based on differentiable simulation that is 10x faster than the previous grasp generator "Graspit!" with 10x contact area and 2x epsilon quality
- Generated DexGrasp-1M dataset of one million unique grasps with multi-modal visual input for vision-based multi-finger robotic grasping using Nvidia Replicator Composer

University of Toronto - Forcolab

Apr 2022 – Sep 2023

Research Assistant supervised by Prof. Shurui Zhou, with Prof. Jinghui Cheng

Toronto, ON, Canada

- Conducted a systematic literature review on collaboration between software development engineers (SEs) and UX designers (UXDs) and identified three collaboration challenges and six potential best practices from 44 papers
- Investigated SEs and UXDs collaboration challenges by mining four online forums and the VScode GitHub project
- Served as a sub-reviewer for ASE 2022, ECSE/FSE 2023, and ICSE 2024

WORK EXPERIENCE

Intel Corporation

May 2022 – Apr 2023

Software Engineer Intern

Toronto, ON, Canada

- Developed an auto-triage tool using Perl and MySQL to analyze test failures, achieved over 90% accuracy rate
- Refined and enhanced a compile statistic visualization tool using ReactJS and redesigned the system-viewer: A kernel events visualizer of Intel oneAPI FPGA Reports Tool using a React-based graphics engine
- Enabled screenshot test in the CI/CD pipeline that detects illegal frontend changes to improve design integrity
- Ported typed pointers to opaque pointers in the Intel LLVM FPGA compiler codebase

University of Toronto - Teaching Assistant (Contract part-time)

Sep 2021 – May 2023

Supervised by Prof. Natalie Enright Jerger and Prof. Jonathan Rose

Toronto, ON, Canada

- Worked as a teaching assistant for ECE243: Computer Organization (Winter 2022, Winter 2023) and ECE253: Digital and Computer Systems (Fall 2021, Fall 2022)
- Supervised 15 student teams during their design projects, led lab sessions for groups with 30 students, held office hours, and graded exams

SELECTED PROJECTS

Smart Forks-Insight - Capstone Project [↗](#)

Sep 2023 – Apr 2024

- Developed a fork management Chrome extension that extracts (GitHub API) and summarizes fork information using a Flask-based backend, React-based frontend, and an external Large Language Model (LLM)
- Deployed a pre-trained local pre-processing model to summarize extracted commit messages and code changes, reducing input tokens by 40% thus lowering processing costs.

Geographic Information System Software Program [↗](#)

Jan 2021 – Apr 2021

- Developed a large-scale, Google Maps-inspired application using C++, HTML, CSS, and JavaScript to visualize 35 major cities, incorporating features like public transportation, navigation, and user reviews.
- Implemented Dijkstra, A*, and Simulated-Annealing heuristics for the travelling salesman problem that reduced the shortest path by 33% compared with greedy algorithm and ranked 1 out of 109 in the competition

EXTRACURRICULARS

University of Toronto Association of Engineers

Sep 2020 – Apr 2024

Events Department Leader, Student Mentor

Toronto, ON, Canada

Rural Teaching Volunteer Program

May 2020 – Jul 2020

Volunteer High School Teacher

Baihe Zhen, Hebei, China

AWARDS AND HONORS

International Experience Award (\$3000)

May 2023

Edith Grace Buchan Undergraduate Research Fellowship (\$5400)

Apr 2022

Department of Electrical and Computer Engineering Top Student Award

Oct 2021

University of Toronto In-Course Scholarship (\$1500)

Sep 2021

University of Toronto Scholar

Aug 2021

University of Toronto Summer Research Fellowship (\$5000)

May 2021

Dean's Honour List

2019 – 2022

Faculty Of Applied Science & Engineering Admission Scholarship (\$5000)

Sep 2019