

# XIAOMENG XU

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## EDUCATION

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**Tsinghua University** 08/2019-07/2023 (expected)  
*Bachelor of Engineering in Automation, Bachelor of Arts in Industrial Design*  
**GPA:** 3.94/4.00, **First Degree GPA:** 3.97/4.00, **Rank:** 1/22  
**Major Courses:**

- **Mathematics:** Calculus (4.0/4.0) | Linear Algebra (4.0/4.0) | Complex Analysis (4.0/4.0) | Stochastic Mathematics and Statistics (4.0/4.0) | Numerical Analysis and Algorithms (4.0/4.0)
- **Computer Science:** C++ Programming (4.0/4.0) | Computer Languages and Programming (4.0/4.0) | Data Structure and Algorithms (4.0/4.0) | Fundamentals of Computer Graphics (4.0/4.0)
- **Electrical Engineering:** Physics(2) (4.0/4.0) | Electric Circuits (4.0/4.0) | Analog Electronics (4.0/4.0) | Signals and System Analysis (4.0/4.0)
- **Mechanical Engineering:** Physics(1) (4.0/4.0) | Engineering Drawing (4.0/4.0) | Engineering Mechanics (4.0/4.0) | Mechanical Design (4.0/4.0)

## PUBLICATIONS

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1. **Xiaomeng Xu\***, Yanchao Yang\*, Kaichun Mo, Boxiao Pan, Li Yi, Leonidas Guibas, *JacobiNeRF: NeRF Shaping with Mutual Information Gradients*. Submitted to CVPR 2023.
  2. **Xiaomeng Xu\***, Yun Liu\*, Weihang Chen, Haocheng Yuan, He Wang, Jing Xu, Rui Chen, Li Yi, *Enhancing Generalizable 6D Pose Tracking of an In-Hand Object with Tactile Sensing*. Submitted to ICRA 2023. [arXiv]
  3. Xueyi Liu, **Xiaomeng Xu**, Anyi Rao, Chuang Gan, Li Yi, *AutoGPart: Intermediate Supervision Search for Generalizable 3D Part Segmentation*. CVPR 2022. [Paper] [Project Page]
  4. Guanhong Liu, Tianyu Yu, Zhihao Yao, Haiqing Xu, Yunyi Zhang, Xuhai Xu, **Xiaomeng Xu**, Mingyue Gao, Qirui Sun, Tingliang Zhang, Haipeng Mi, *ViviPaint: Creating Dynamic Painting with a Thermochromic Toolkit*. MTI 2022. [Paper]

\* authors with equal contribution

## RESEARCH EXPERIENCES

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**NeRF Shaping with Mutual Information Gradients** 06/2022-11/2022  
*3D Vision, Machine Learning* Supervisor: Prof. Leonidas Guibas, Stanford University

- Chinese Undergraduate Visiting Research Program (UGVR)
- Proposed shaping a NeRF to encode mutual correlations of a scene via aligning jacobians. And demonstrated applications in label propagation for semantic and instance segmentation.
- My contribution: Algorithm development and implementation, theoretical derivation, experiments.

**Enhancing 6D Pose Tracking of an In-Hand Object with Tactile Sensing** 12/2021-09/2022  
*3D Vision, Robotics* Supervisor: Prof. Li Yi, Tsinghua University

- Presented a tactile-enhanced 6D pose tracking framework to track previously unseen in-hand objects.
- My contribution: Algorithm development and implementation, main experiments, synthetic and real data generation.

## Generalizable 3D Part Segmentation

09/2021-11/2021

*3D Vision, Machine Learning*

*Supervisor: Prof. Li Yi, Tsinghua University*

- Proposed a generic method that improves the generalizability of 3D part segmentation networks by searching for optimal supervisions automatically.
- My contribution: Domain generalization and 3D part segmentation baselines implementation.

## Thermochromic Toolkit for Creating Dynamic Painting

10/2020-04/2021

*Human Computer Interaction*

*Supervisor: Prof. Haipeng Mi, Tsinghua University*

- Presented a toolkit consisting of a design tool and a set of hardware components that assists artists and enthusiasts in creating thermochromic paintings.
- My contribution: CAD tool design, GUI software development.

## AWARDS

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Comprehensive Excellence Award (Scholarship awarded by Tsinghua University, top 1%)	10/2022
National Scholarship (Highest scholarship awarded by Chinese Government, top 0.1%)	10/2021
129 Scholarship (Highest scholarship for juniors in Tsinghua University, top 1%)	10/2020
Innovation Award of Science and Technology (Awarded to undergraduates with excellent research potentials, top 1%)	10/2020-2022

## VOLUNTEER EXPERIENCES

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Drop-in Tutoring	10/2020-Present
Tutoring volunteer for engineering drawing, programming, electric circuits, physics, calculus, etc.	

## LANGUAGE SKILLS

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<b>TOEFL iBT</b>	111/120 (Reading 29, Listening 29, Speaking 25, Writing 28)
<b>IELTS</b>	8.0/9.0 (Reading 9.0, Listening 9.0, Speaking 7.0, Writing 7.5)

## TECHNICAL SKILLS

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<b>Computer Languages</b>	Python, C/C++, MATLAB, Verilog/VHDL
<b>Software</b>	SolidWorks, AutoCAD, Qt Creator, Multisim, Quartus
<b>Hardware</b>	3D Printing, FPGA, Microcontroller
<b>Tools</b>	PyTorch, ROS, Git, Linux, OpenCV, L <sup>A</sup> T <sub>E</sub> X, Markdown