

# XIHANG YU (JIMMY)

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## EDUCATION

UNIVERSITY OF MICHIGAN, COLLEGE OF LITERATURE, SCIENCE, AND THE ARTS	ANN ARBOR, MI
B.S. in Computer Science with Honors, B.S. in Mathematics, GPA: 4.0 /4.0	Jan 2022 – May 2024(Expected)
COLUMBIA UNIVERSITY, COLUMBIA COLLEGE	NEW YORK, NY
Visiting Student Program in Computer Science track, GPA: 4.0/4.0	Sep 2021 - Dec 2021
CHINESE UNIVERSITY OF HONG KONG, DEPT. OF COMPUTER SCIENCE	HONG KONG
Major in Artificial Intelligence: Systems and Technologies, GPA: 3.869/4.0	Sep 2019 - May 2021

## SELECTED COURSES:

**Graduate Level:** Hybrid Control, Continuous Optimization Methods, Mobile Robotics, Nonlinear Dynamics and Geometric Mechanics, Deep Learning for Robot Perception, Principles of Machine Learning

**Undergraduate Level:** Analysis and Optimization, Combinatorics and Graph Theory, Linear Programming, Introduction to Autonomous Robotics, Natural Language Processing, Computer Vision, Computational Aspects of Robotics, Introduction to Computer Systems, Computer Science Theory, Introduction to Cryptography

## RESEARCH INTERESTS

Optimization, Robot Perception, Vision-based Control

## PUBLICATION

X. Yu, S. Teng, T. Chakhachiro, W. Tong, T. Li, TY. Lin, S. Koehler, M. Ahumada, JM. Walls, M. Ghaffari, “Fully Proprioceptive Slip-Velocity-Aware State Estimation for Mobile Robots via Invariant Kalman Filtering and Disturbance Observer”, 2023 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) (acceptance rate: 43.3%)[\[arXiv\]](#)

X. Yu, H. Yang, “SIM-Sync: From Certifiably Optimal Synchronization over the 3D Similarity Group to Scene Reconstruction with Learned Depth”. In submission. [\[arXiv\]](#)

B. Wang, F. Yang, X. Yu, C. Zhang, H. Zhao, “APISR: Anime Production Inspired Real-World Anime Super-Resolution”. In submission.

## RESEARCH AND INTERNSHIP

MANIPULATION AND ROBOT PERCEPTION | ROBOTICS INSTITUTE, UNIVERSITY OF MICHIGAN

Research Assistant Supervised by Dr. Chad Jenkins (Lab for Progress) Jan 2023– Present

- Honors Thesis: Developing language-conditioned object grasping algorithm (In development)

CERTIFIABLE ALGORITHM AND SEMIDEFINITE PROGRAMMING | HARVARD UNIVERSITY

Visiting Scholar Supervised by Dr. Heng Yang (Computational Robotics Lab) May 2023– Aug 2023

- Developed certifiably correct camera trajectory estimation algorithm using semidefinite programming

MOBILE ROBOT | ROBOTICS INSTITUTE, UNIVERSITY OF MICHIGAN

Research Assistant Supervised by Dr. Maani Ghaffari (Curly Lab) Jan 2022 – Dec 2022

- Conducted research on state estimation using Invariant Extended Kalman Filter

REHABILITATION ROBOT | MECHANICAL ENGINEERING DEPT., COLUMBIA UNIVERSITY

Research Assistant Supervised by Dr. Sunil K Agrawal (ROAR Lab) Dec 2021 – May 2022

- Contributed kinematics and dynamic libraries to wheelchair robot for active postural support using rospy. [\[website\]](#)

AV SIMULATION | CIVIL ENGINEERING AND ENGINEERING MECHANICS DEPT., COLUMBIA UNIVERSITY

Research Assistant Supervised by Dr. Sharon Di (DitecT Lab) Sep 2021 - Dec 2021

- Integrated MmWave communication in TraCI framework for NS3 and SUMO Coupling in the COSMOS project

SOFTWARE ENGINEER INTERNSHIP | HUAWEI TECHNOLOGIES CO., LTD

June 2021 - Aug 2021

- Contributed to code auto-generation frame on HUAWEI OptiX OSN1800 OTN communication platform

LYAPUNOV STABILITY AND FINITE-TIME CONTROL | CUHK SUMMER RESEARCH INTERNSHIP

Research Assistant Supervised by Dr. Dongkun Han May 2020 - Aug 2020

- Designed CBF-based coordination controller in Multiagent Systems with Matlab simulation [\[video\]](#)

## EXTRACURRICULAR ACTIVITIES AND SERVICE

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REVIEWER | TRANSACTION ON MECHATRONICS (TMECH)

TEACHING ASSISTANT | ROB 530 MOBILE ROBOTICS, UNIVERSITY OF MICHIGAN

Instructor: Dr. Maani Ghaffari

Jan 2023 - Apr 2023

- Developed homework and quizzes and organized office hour sessions in the graduate course with 158 students

GRADER, MATH 465 COMBINATORICS AND GRAPH

Oct 2022 - Dec 2022

AUTONOMOUS VEHICLES DEVELOPMENT | COLUMBIA UNIVERSITY ROBOTICS CLUB

Motion Planning Subteam Leader

Sep 2021 - Dec 2021

## HONORS AND COMPETITION AWARDS

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LEUNG SIU KOI SCHOLARSHIP, CUHK Academic Merit

Dec 2021

ELITE STREAM SCHOLARSHIP, CUHK Academic Merit

Oct 2021

DEAN'S LIST, CUHK Top 10% in the department

Aug 2021, Aug 2020

CHUNG CHI COLLEGE CLASS SCHOLARSHIP, CUHK Best student in the class of a department

Nov 2020

TALENT DEVELOPMENT SCHOLARSHIP, HONG KONG GOVERNMENT EDUCATION BUREAU

May 2020

NATIONAL CREATIVE COMPOSITION COMPETITION Grand Prize (10 awards in total, National-level)

Aug 2018

SECOND PRIZE CHINESE MATHEMATICAL OLYMPIAD (CMO) 35<sup>TH</sup>, CHINESE MATHEMATICS SOCIETY

Oct 2018

SECOND PRIZE CHINESE PHYSICS OLYMPIAD 35<sup>TH</sup>, NATIONAL PHYSICS COMPETITION COMMITTEE

Oct 2018

## SKILLS

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- Programming Tool: C/C++, Python, MATLAB
- Robotics Tool: ROS, CUDA, NVIDIA Isaac Gym, PyBullet