FSC Newsletter Winter 2024

May 3, 2024

University of Toronto Institute for Aerospace Studies

Acclaimed Research Contributions

This winter, the research produced by the FSC Lab has been recognized for it's outstanding quality! Shichen Fan's paper, "Multi-UAV Cooperative Hunting in Cluttered Environments Considering Downwash Effects" received the 2023 GNC Best Paper Award from *Guidance, Navigation and Control*. Chao Qin's paper "Time-Optimal Gate-Traversing Planner for Autonomous Drone Racing", co-authored by our 2023 summer students Max Michet and Jingxiang (Harry) Chen, also was nominated for ICRA Best Paper Award on Unmanned Aerial Vehicles. Congratulations on the great work!

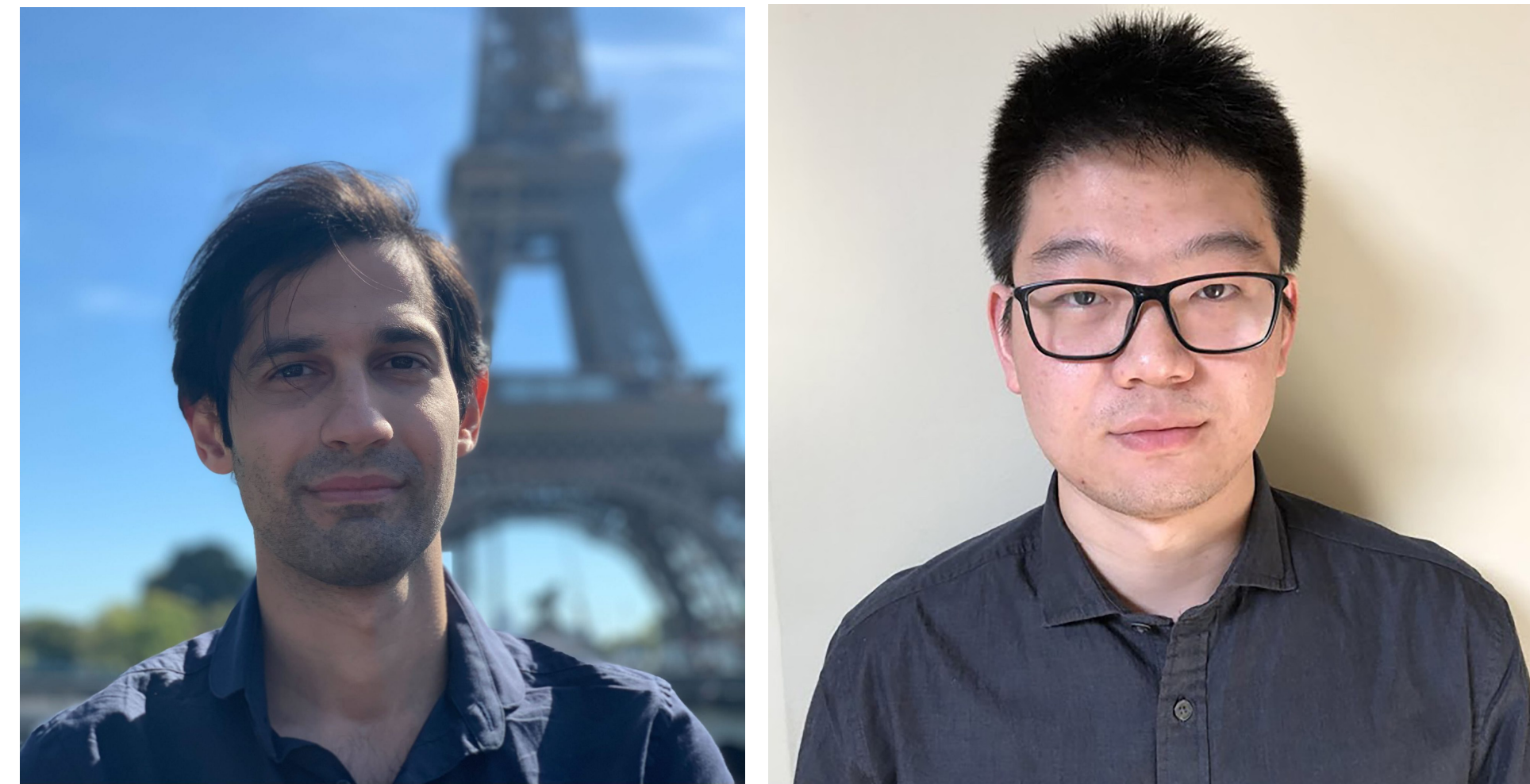**2024 IEEE International Conference on Robotics and Automation**

New Publications

We continue our active research contributions with two new papers: Dr. Longhao Qian and Yi Lok Lo's "A Path Planning Algorithm for A Crop Monitoring Fixed-wing Unmanned Aerial System", and Darya Zanjanpour and Sana Kokate's " Quantifying Trust in Human-Robot Interaction for Advanced Air Mobility Systems." Good job team!

New Post-Doctoral Fellows

We are proud to announce two new Postdoctoral Fellows, Dr. Aryo Jamshidpey and Dr. Kunwu Zhang, have joined the FSC Lab! Dr. Jamshidpey receieved Ph.D.s from the Universite Libre de Bruxelles and the University of Ottawa, and his research interests focus on multi-robot systems, swarm robotics, and machine learning/artificial intelligence. Dr. Zhang received his Ph.D. from the University of Victoria, and specializes in adaptive control, model-predictive control, and optimization for robotic systems. Welcome to the FSC!

Panel on Ethical Use of AI

In March, David Dunwoody gave a presentation and joined the panel discussion on the Ethical and Legal Implications of Artificial Intelligence at the Royal Canadian Military Institute. His presentation showcased various benefits and challenges in integrating AI, with a specific focus on defense applications.

The AI Global Arms Race
a presentation by
Dr. Jeremy Wang and LCol David Dunwoody
1930 Wednesday, March 6, LIVE in the Medals Room

FSC Abroad

Helson Go visited RWTH Aachen University in Germany, and gave a talk on his research "Observability-Aware Control for Cooperatively Localizing Quadrotor UAVs," which is ongoing at the FSC Lab. He also had the chance to meet with FSC alumnus Chih-Chun Chen, who seems to be doing well across the pond!
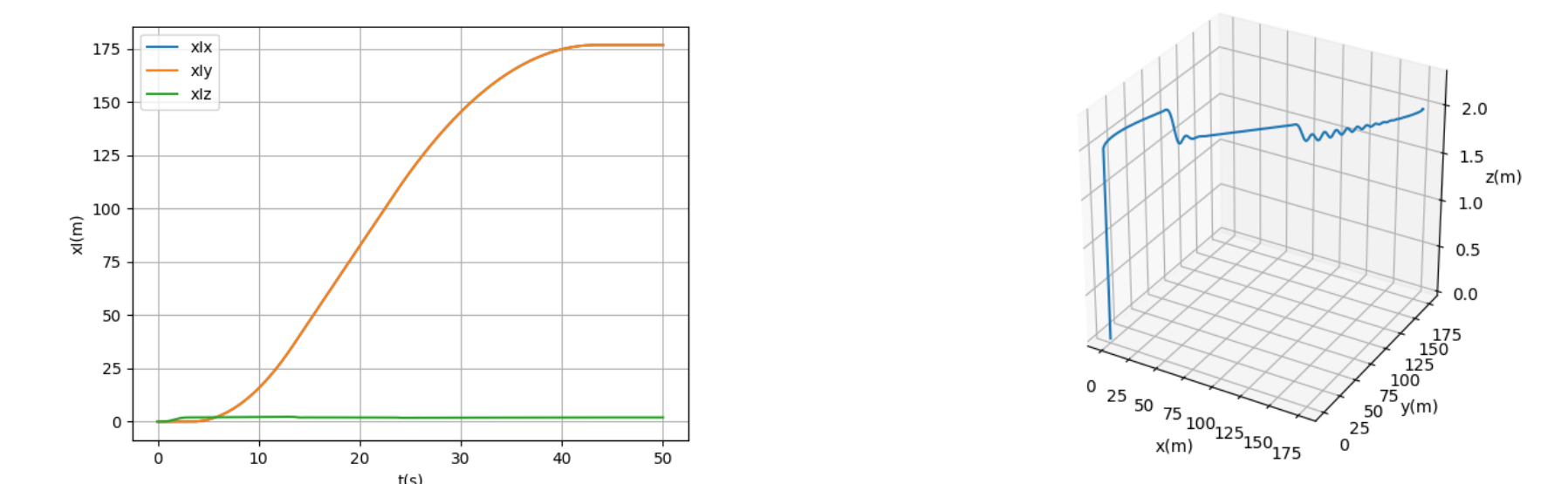

A New Pilot in the Skies

This March, Zaheed Elahi passed his flight test and received certification to fly Boeing 737-800NG and 737-MAX8 aircraft. After passing his Ph.D. qualifying exam, he received Professor Liu's blessing allowing him to pursue an amazing opportunity as an airline pilot for Sunwing Airlines, while still completing his studies. Congratulations Zaheed!

ORCHiD: FSC's High Speed Control Framework

Through the hard work and collaborative effort of FSC members, a unified ROS-based control framework has been developed for rapid control of flight platforms. FSC is proud to present ORCHiD, our Optimal Real-time Controller for High-speed Drones. This control framework allows for the easy implementation of high-speed drone flight, used at FSC for autonomous drone racing and GNSS-denied robust control. Check it out on our Github page!

Research Visit to IIT Bombay

This February, sponsored by CGEN (Centre for Global Engineering) of the UofT, Professor Liu visited IIT Bombay to attend the workshop of "Challenges and Trends in Water Quality Monitoring of Rivers".