Pio Ong

Academic Curriculum Vitae

Department of Mechanical and Civil Engineering
California Institute of Technology (Caltech)

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Education

University of California, San Diego (UCSD) March 2022
PhD, Dynamic Systems and Controls GPA: 4.00
Advisor: Prof. Jorge Cortés

University of Southern California (USC) December 2013
M.S., Astronautical Engineering GPA: 4.00

University of California, San Diego (UCSD) June 2012
B.S., Aerospace Engineering GPA: 3.87

Research Career

Postdoctoral Researcher (January 2022 - current)
Institution: Caltech, Supervisor: Prof. Aaron D. Ames

Teaching Experience

Lecturer
Feedback Systems, Caltech (Spring 2023)

Teaching Assistant
Nonlinear Control, UCSD (Spring 2018, Spring 2019, Spring 2020), Instructor: Prof. Jorge Cortés,

Mentoring

Gilbert Bahati, PhD Candidate (current)

Research Interests

- Event-triggered implementations for resoure-aware controls
- Control barrier functions for safety-critical systems
- Analysis and controls of network systems
- Smoothness analysis of feedback controllers

Awards and Honors

- Outstanding Reviewer 2020
  IEEE Control Systems Letters (L-CSS)
- Teaching Assistant Commendation 2020
  Department of Mechanical and Aerospace Engineering, UCSD

Professional Services

Reviewer for Journals
IEEE Control Systems Letters (L-CSS), IEEE Transactions on Automatic Control, Automatica, IEEE Access, Nonlinear Analysis: Hybrid Systems

Reviewer for Conferences
IEEE Conference on Decision and Control (CDC), IEEE International Conference on Robotics and Automation (ICRA), American Control Conference (ACC), International Symposium on Mathematical Theory of Networks and Systems (MTNS), IFAC Conference on Modelling, Identification, and Control of Nonlinear Systems (MICNON)

Program Committee Member
ICRA21 Workshop on Safe Robot Control with Learned Motion and Environment Models

Workshop Organizer
37th Southern California Control Workshop at UC San Diego
40th Southern California Control Workshop at Caltech
2nd Workshop on Safe Robot Control with Learned Motion and Environment Models at ICRA 2024, Submitted

Publications

Journal Articles

(J-5) M. H. Cohen, P. Ong, G. Bahati, and A. D. Ames. Characterizing smooth safety filters via the implicit function theorem. *IEEE Control Systems Letters*, 2024. Submitted

(J-4) P. Ong and J. Cortés. Performance-barrier-based event-triggered control with applications to network systems. *IEEE Transactions on Automatic Control*, 69(7), 2024. To appear

(J-3) P. Ong, B. Capelli, L. Sabattini, and J. Cortés. Nonsmooth control barrier function design of continuous constraints for network connectivity maintenance. *Automatica*, 156:111209, 2023

(J-2) A. J. Taylor, P. Ong, J. Cortés, and A. Ames. Safety-critical event triggered control via input-to-state safe barrier functions. *IEEE Control Systems Letters*, 5(3):749–754, 2021
(The first two authors contributed equally.)

(J-1) P. Ong and J. Cortés. Opportunistic robot control for interactive multiobjective optimization under human performance limitations. *Automatica*, 123:109263, 2021

Conference Proceedings

(C-10) G. Bahati, P. Ong, and A. D. Ames. Sample-and-hold safety with control barrier functions. In *American Control Conference*, Toronto, Canada, July 2024. Submitted

(C-9) M. H. Cohen, P. Ong, G. Bahati, and A. D. Ames. Characterizing smooth safety filters via the implicit function theorem. In *American Control Conference*, Toronto, Canada, July 2024. Submitted

(C-8) P. Ong and A. D. Ames. Intermittent safety filters for event-triggered safety maneuvers with application to satellite orbit transfers. In *IEEE Conf. on Decision and Control*, Marina Bay Sands, Singapore, December 2023. To appear

(C-7) P. Ong, G. Bahati, and A. D. Ames. Stability and safety through event-triggered intermittent control with application to spacecraft orbit stabilization. In *IEEE Conf. on Decision and Control*, pages 453–460, Cancún, Mexico, December 2022

(C-6) A. J. Taylor, P. Ong, T. G. Molnar, and A. D. Ames. Safe backstepping with control barrier functions. In *IEEE Conf. on Decision and Control*, pages 5775–5782, Cancún, Mexico, December 2022

(C-5) P. Ong, B. Capelli, L. Sabattini, and J. Cortés. Network connectivity maintenance via nonsmooth control barrier functions. In *IEEE Conf. on Decision and Control*, pages 4780–4785, Austin, Texas, December 2021
(The first two authors contributed equally.)

(C-4) A. J. Taylor, P. Ong, J. Cortés, and A. Ames. Safety-critical event triggered control via input-to-state safe barrier functions. In *IEEE Conf. on Decision and Control*, Jeju Island, Republic of Korea, December 2020
(The first two authors contributed equally.)

(C-3) P. Ong and J. Cortés. Universal formula for smooth safe stabilization. In *IEEE Conf. on Decision and Control*, pages 2373–2378, Nice, France, December 2019

(C-2) P. Ong and J. Cortés. Event-triggered control design with performance barrier. In *IEEE Conf. on Decision and Control*, pages 951–956, Miami Beach, Florida, December 2018

(C-1) P. Ong and J. Cortés. Event-triggered interactive gradient descent for real-time multi-objective optimization. In *IEEE Conf. on Decision and Control*, pages 5445–5450, Melbourne, Australia, December 2017