

# Pio Ong

## *Academic Curriculum Vitae*

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

Email:  
Website:

pioong@caltech.edu  
<https://pioong.github.io>

### EDUCATION

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<b>University of California, San Diego (UCSD)</b>	March 2022
PhD, Dynamic Systems and Controls	GPA: 4.00
<i>Advisor:</i> Prof. Jorge Cortés	
<b>University of Southern California (USC)</b>	December 2013
M.S., Astronautical Engineering	GPA: 4.00
<b>University of California, San Diego (UCSD)</b>	June 2012
B.S., Aerospace Engineering	GPA: 3.87

### RESEARCH CAREER

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

### TEACHING EXPERIENCE

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#### **Lecturer**

Feedback Systems, Caltech (Spring 2023)

#### **Teaching Assistant**

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

### MENTORING

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Gilbert Bahati, PhD Candidate (current)

### RESEARCH INTERESTS

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

### AWARDS AND HONORS

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

### PROFESSIONAL SERVICES

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#### **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

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### 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