

# JASON JANGHO CHOI

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## INTERESTS **Safe Robot Autonomy**

- Optimal control theories for nonlinear and hybrid systems.
- Data-driven control methods with safety guarantee.
- Safety frameworks for robot mobility.

EDUCATION **University of California, Berkeley** Aug 2019—Present  
Ph.D. Student in **Mechanical Engineering** Berkeley, CA  
Advisors: Koushil Sreenath, Claire J. Tomlin

**Seoul National University (SNU)** Mar 2012—Aug 2019  
B.S. in **Mechanical Engineering** (*Summa Cum Laude*) Seoul, Korea

## PUBLICATIONS (\* indicates co-first authors.)

**J. J. Choi**, A. Agrawal, K. Sreenath, C. J. Tomlin, & S. Bansal, “Computation of Regions of Attraction for Hybrid Limit Cycles Using Reachability: An Application to Walking Robots”, accepted to *IEEE Robotics & Automation Letters (RA-L)*, 2021

F. Castaneda\*, **J. J. Choi\***, B. Zhang, C. J. Tomlin, & K. Sreenath, “Pointwise Feasibility of Gaussian Process-based Safety-Critical Control under Model Uncertainty”, *IEEE Conference on Decision and Control (CDC)*, 2021.

**J. J. Choi**, D. Lee, K. Sreenath, C. J. Tomlin, & S. Herbert, “Robust Control Barrier-Value Functions for Safety-Critical Control”, *IEEE CDC*, 2021.

S. Herbert\*, **J. J. Choi\***, S. Sanjeev, M. Gibson, K. Sreenath, & C. J. Tomlin, “Scalable Learning of Safety Guarantees for Autonomous Systems using Hamilton-Jacobi Reachability” in *IEEE International Conference on Robotics and Automation (ICRA)*, Xi’an, China, 2021.

F. Castaneda\*, **J. J. Choi\***, B. Zhang, C. J. Tomlin, & K. Sreenath, “Gaussian Process-based Min-norm Stabilizing Controller for Control-Affine Systems with Uncertain Input Effects” in *American Control Conference (ACC)*, 2021.

**J. J. Choi\***, F. Castaneda\*, C. J. Tomlin, & K. Sreenath, “Reinforcement Learning for Safety-Critical Control under Model Uncertainty, using Control Lyapunov Functions and Control Barrier Functions” in *Robotics: Science and Systems (RSS)*, 2020.

H. Ku\* , **J. J. Choi\***, S. Jang\*, W. Do\*, S. Lee, & S. Seok, “Online Social Touch Pattern Recognition with Multi-modal-sensing Modular Tactile Interface” in *International Conference on Ubiquitous Robots (UR)*, Jeju, Korea, 2019.

H. Ku\*, **J. J. Choi\***, S. Lee\*, S. Jang\*, & W. Do\*, “Designing Shelly, a Robot Capable of Assessing and Restraining Children’s Robot Abusing Behaviors”, in *Companion of the ACM/IEEE HRI 2018*, Chicago, IL, USA, 2018.

W. Do\*, S. Jang\*, & **J. J. Choi\***, “Constrained Explicit Model Predictive Control of Two-wheeled Inverted Pendulum Robot under Strong Perturbation”, in *Korea Robotics Society Annual Conference (KRoC)*, Gangwon, Korea, 2018.

H. Ku\*, W. Do\*, S. Lee\*, S. Jang\*, & **J. J. Choi\***, “Shelly: An Educational Robot for Restraining Children’s Abusive Behaviors towards Robots”, in *Korea Robotics Society Annual Conference (KRoC)*, Gangwon, Korea, 2018. (Best Student Paper)

K. Park, E. Lee, G. Ryou, **J. Choi**, Y. Ko, S. Lee, & J. Kwon, “Smart Phone Application on Safety Education for Children with Disabilities”, in *HCI Korea*, Gangwon, Korea, 2014.

WORK  
EXPERIENCE

**MARS AUTO**  
Robotics Engineer

Apr 2018—May 2019  
Seoul, Korea

*Self-driving Technologies for Highway Trucking Automation.*

**NAVER LABS Robotics Group**

Research Intern (Advisor: Dr. Sangok Seok—MIT Biomimetic Robotics Lab)

Jul 2017—Feb 2018  
Seongnam, Korea

*Shelly: A Robotic Tortoise for Children-Robot Interaction* [[Video demo](#)]

- Interviewed by [IEEE Spectrum](#), [FastCompany-Co.Design](#), [NBCNews-Mach](#), and [SNU Press](#). The robot was exhibited in Gwacheon National Science Museum.

*Optimal Balancing Control for Last-Mile Mobility*

REVIEW  
ACTIVITIES

Automatica.

IEEE Transactions on Automatic Control (TAC).

IEEE Robotics and Automation Letters (RA-L).

IEEE Control Systems Letters (L-CSS).

IEEE International Conference on Decision and Control (CDC).

IEEE International Conference on Robotics and Automation (ICRA).

Conference on Robot Learning (CoRL).

Learning for Dynamics and Control (L4DC).

INVITED  
TALKS

Robotics Seminar, UIUC, *Value function-based methods for safety-critical control*, 2021.

Monthly Seminar, NASA University Leadership Initiative—[Safe Aviation Autonomy](#), *Data-driven methods for safety control under model uncertainty*, 2021.

Invited Spotlight Talk, IROS 2021 Workshop on Safe Real-World Robot Autonomy, *Data-Driven Methods for Safety Control Under Model Uncertainty*, 2021. [[Available online](#)]

Semiautonomous Seminar, UC Berkeley, *Value function-based methods for safety-critical control*, 2021.

Institute for Data Science in Mechanical Engineering (DSME) Seminar, RWTH Aachen University, *Learning-based Safety-Critical Controller Design for Systems with Model Uncertainty*, 2021.

Guest Lecture, MAE 207 (Safety for Autonomous Systems), UC San Diego, *Introduction to Control Lyapunov Functions and Control Barrier Functions*, 2021. [[Available online](#)]

Learning for Control, High Confidence Learning-Enabled Systems, DARPA Assured Autonomy Program Virtual Site Visit, *Optimizing Model-Based Controllers With Model-Free Reinforcement Learning*, 2020.

SELECTED HONORS AND AWARDS *Berkeley Fellowship for Graduate Study*, Graduate Division, Fall 2019—Summer 2021  
*Kwanjeong Educational Foundation Scholarship*, Fall 2019—Present  
*National Excellence Scholarship*, Korea Student Aid Foundation, 2012—2018  
*First Place Winner*, ACM/IEEE HRI 2018 Student Design Competition, 2018  
*Gold Medal* in the 32nd Korean Undergraduate Math Contest, 2013

TEACHING **Tutor**

- Basic Calculus 1, Basic Physics 2, Mechanics, Fluid Dynamics, Seoul National University 2014—2018

PATENT KR10-2018-0026268, Korea, Patent Pending—*Methods and devices for processing sensory data related to user's tactile interaction.*