

DAVIDE FALANGA

Director of Engineering, Motion Planning & Controls
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EXPERIENCE

■ Skydio, San Mateo, CA, USA

- ▷ Director of Engineering, Autonomy 05/2024 – Present
 - Head of Planning & Controls.
- ▷ Senior Engineering Manager, Autonomy 05/2023 – 05/2024
- ▷ Engineering Manager, Autonomy 11/2022 – 05/2023
 - Led the Dock Planning team, composed of 6 engineers focusing on the [Skydio Dock](#) to enhance autonomous navigation, vision-based dock detection, state estimation, and flight controls. Unlocked use of remotely deployed drones in production environments, enabling 80 customers to generate more than 30k flights. Improved landing reliability from sub-40% to over 99%.
- ▷ Software Engineer, Autonomy 11/2021 – 11/2022
 - Motion planning and controls for high speed maneuvering and reliable landing in the Skydio Dock in high winds, boosting performance by enabling landing in up to 10 m/s (+350%).

■ Woven Planet North America, Palo Alto, CA, USA

- ▷ Software Engineer - Motion Planning, Autonomous Driving 07/2021 – 10/2021
 - Supported hybrid planner development, integrating data-driven and expert components. Implemented trajectory generation and validation algorithms using classical methods.

■ Lyft Level 5, Palo Alto, CA, USA

- ▷ Software Engineer - Motion Planning, Autonomous Driving 02/2020 – 07/2021
 - Designed and managed arbitration and decision-making modules for multi-lane driving. Developed algorithms for collision checking, violation detection, and trajectory scoring.

■ Swisslog, Buchs AG, Switzerland

- ▷ Robotics Intern 11/2014 – 03/2015
 - Designed a prototype autonomous, vision-based item-picking robot.

EDUCATION

■ Ph.D. Robotics

University of Zurich, Zurich, Switzerland 2015 – 2019
Advisor: Prof. Dr. Davide Scaramuzza. Research interests: Motion planning and controls for high-speed, agile flight with vision-based quadrotors. Graduated Magna cum Laude. [Doctoral thesis](#).

■ M.Sc. Automation Engineering

University of Naples "Federico II", Naples, Italy 2012 – 2015
Specialization in Robotics, Dynamical Systems and Controls. Graduated Summa cum Laude.

■ B.Sc. Automation Engineering

University of Naples "Federico II", Naples, Italy 2008 – 2012
Specialization in Dynamical Systems and Controls.

SKILLS

- **Programming** — C/C++, Python, Java, Bash, HTML/CSS
- **Data Engineering** — SQL, Databricks, PySpark, Pandas
- **Operating Systems** — Linux, MacOS
- **Frameworks & tools** — ROS, OpenCV, PyTorch, Git

ACHIEVEMENTS, AWARDS AND HONORS

- **Science Robotics Cover Feature** — [Dynamic Obstacle Avoidance for Quadrotors with Event Cameras](#)
- **NASA Tech Briefs Contest 2019** — First Place in Aerospace & Defense Category ([Link](#))
- **Drone Hero Europe Award 2019** — First Prize in Innovative Drone Category ([Link](#))
- **NASA Tech Briefs Contest 2020** — Finalist in Aerospace & Defense Category ([Link](#))
- **IROS 2018 Autonomous Drone Race** — First Prize ([Video](#))
- **RSS 2017 Best Student Paper** — Finalist [Link](#)
- **IROS 2017 Autonomous Drone Race** — Second Prize ([Video](#))
- **Media Coverage**
 - Agile Drone Flight through Narrow Gaps with Onboard Sensing and Computing: [MIT Technology Review](#), [IEEE Spectrum](#), [Digital Trends](#), [Robohub](#), [DIYDrones](#).
 - The Foldable Drone: A Morphing Quadrotor that can Squeeze and Fly: [Reuters](#), [BBC](#), [TechCrunch](#), [CNBC](#), [The Verge](#), [IEEE Spectrum](#), [WEF](#), [SlashGear](#), [CNET](#), [Popular Mechanics](#) .
 - Rapid, Dynamic Obstacle Avoidance with an Event-based Camera: [BBC](#), [The Verge](#), [Business Insider](#), [Fox News](#), [PCMag](#), [IEEE Spectrum](#), [CNET](#), [SFGate](#).
 - Dynamic Obstacle Avoidance for Quadrotors with Event Cameras: [Nature](#), [Gizmodo](#), [Futurism](#), [HackADay](#), [New Atlas](#), [Technology.org](#), [PetaPixel](#)

PUBLICATIONS & PATENTS

Peer-reviewed Journal Publications

- J1 M. Faessler, **D. Falanga**, D. Scaramuzza, “*Thrust Mixing, Saturation, and Body-Rate Control for Accurate Aggressive Quadrotor Flight*”, IEEE Robotics and Automation Letters (RA-L), 2017. [[PDF](#)] [[Video](#)] [[Code](#)]
- J2 S. Kim, **D. Falanga**, D. Scaramuzza, “*Computing The Forward Reachable Set for a Multirotor Under First-Order Aerodynamic Effects*”, IEEE Robotics and Automation Letters (RA-L), 2018. [[PDF](#)]
- J3 **D. Falanga**, K. Kleber, S. Mintchev, D. Floreano, D. Scaramuzza, “*The Foldable Drone: A Morphing Quadrotor that can Squeeze and Fly*”, IEEE Robotics and Automation Letters (RA-L), 2018. [[PDF](#)] [[Video](#)]
- J4 H. Moon, J. Martinez-Carranza, T. Cieslewski, M. Faessler, **D. Falanga**, A. Simovic, D. Scaramuzza, S. Li, M. Ozo, C. De Wagter, G. de Croon, S. Hwang, S. Jung, H. Shim, H. Kim, M. Park, T. C. Au, S. J. Kim, “*Challenges and implemented technologies used in autonomous drone racing*”, Springer: Intelligent Service Robotics Series, 2019. [[PDF](#)]
- J5 **D. Falanga**, S. Kim, D. Scaramuzza, “*How Fast is Too Fast? The Role of Perception Latency in High-Speed Sense and Avoid*”, IEEE Robotics and Automation Letters (RA-L), 2019. [[PDF](#)] [[Video](#)]

J6 **D. Falanga**, K. Kleber, D. Scaramuzza, “*Dynamic Obstacle Avoidance for Quadrotors with Event Cameras*”, Science Robotics, 2020. [[PDF](#)] [[Video](#)]

Peer-reviewed Conference Publications

- C1 **D. Falanga**, E. Mueggler, M. Faessler, D. Scaramuzza, “*Aggressive Quadrotor Flight through Narrow Gaps with Onboard Sensing and Computing*”, IEEE Int. Conf. on Robotics and Automation (ICRA), 2017. [[PDF](#)] [[Video](#)]
- C2 P. Foehn, **D. Falanga**, N. Kuppaswamy, R. Tedrake, D. Scaramuzza, “*Fast Trajectory Optimization for Agile Quadrotor Maneuvers with a Cable-Suspended Payload*”, Robotics: Science and Systems (RSS), 2017. **Best Student Paper Award Finalist**. [[PDF](#)] [[Video](#)]
- C3 **D. Falanga**, A. Zanchettin, A. Simovic, J. Delmerico, D. Scaramuzza, “*Vision-based Autonomous Quadrotor Landing on a Moving Platform*”, IEEE/RSJ Int. Symp. on Safety, Security and Rescue Robotics (SSRR), 2017. [[PDF](#)] [[Video](#)]
- C4 R. Spica, **D. Falanga**, E. Cristofalo, E. Montijano, D. Scaramuzza, M. Schwager, “*A Real-Time Game Theoretic Planner for Autonomous Two-Player Drone Racing*”, Robotics: Science and Systems (RSS), 2018. [[PDF](#)] [[Video](#)]
- C5 **D. Falanga**, P. Foehn, P. Lu, D. Scaramuzza., “*PAMPC: Perception-Aware Model Predictive Control for Quadrotors*”, IEEE/RSJ Int. Conf. Intell. Robot. Syst. (IROS), 2018. [[PDF](#)] [[Video](#)] [[Code](#)]
- C6 B. Nisar, P. Foehn, **D. Falanga**, D. Scaramuzza, “*VIMO: Simultaneous Visual Inertial Model-based Odometry and Force Estimation*”, Robotics: Science and Systems (RSS), 2019. [[PDF](#)]
- C7 A. Fabris, K. Kleber, **D. Falanga**, D. Scaramuzza, “*Geometry-aware compensation scheme for morphing drones*”, IEEE Int. Conf. on Robotics and Automation (ICRA), 2021. [[PDF](#)][[Video](#)]

Patents

- P1 S. V. Reddy, **D. Falanga**, M. J. H. Krogius, E. Minor “*Automated Unmanned Aerial Vehicle Dock Verification And Landing*”, US20240192705A1, USPTO. [[Link](#)]