



Overview

- PhD candidate in computer science (with engineering background) seeking to enable scalable and robust multi-agent systems, for instance as self-driving cars in everyday traffic or robot fleets in automated warehouses.
- Full-stack roboticist mastering mechanical, electronic, algorithm, and control design with project experience in collective intelligence, inspection robotics, medical devices, and smart material systems.
- Visionary thinker well-versed in initializing and managing transdisciplinary research projects and collaborations.
- Efficient leader and communicator skilled at defining expectations, distributing workload, and coordinating diverse team members.

Fellowships & Awards

Financial Support, David B. Heller Innovation Fund (2019) • Certificate of Distinction in Teaching, Harvard University Bok Center (2018) • Best Paper Finalist, International Conference on Robotics and Automation (2018) • PhD Scholarship, Harvard University (2017 – present) • Fellowship, Janggen-Pöhn Foundation (2017) • Fellowship, Werner Siemens Foundation (2016) • Scholarship, Swiss Study Foundation (2015) • Best Innovator Award, Bühler Holding AG (2013) • Fellowship, Swiss Study Foundation (2011 – present) • Graduation Award for First in Class, Wil High School (2010) • Sustainability Award for Best Matura Paper, Employer's Association Wil (2010)

Education

Cambridge, USA
2017 – present

Harvard University

PhD and MS in Computer Science, Advisor: Prof. Radhika Nagpal
Thesis: 3D Vision-Based Collective Behaviors in a Fish-Inspired Robot Swarm

Zurich, CHE
2014 – 2016

ETH Zurich

MS in Mechanical Engineering, Advisor: Prof. Bradley Nelson
Thesis: A Low-Cost, Highly Maneuverable, Miniature Underwater Robot Intended for Collective Behaviors

Zurich, CHE
2010 – 2013

ETH Zurich

BS in Mechanical Engineering, Advisor: Prof. Roland Siegwart
Thesis: Obstacle Climbing Control for an Inspection Robot with Magnetic Wheels

Work & Research

Cambridge, USA
2017 – present

Harvard University, Self-Organizing Systems Research Group

Prof. Radhika Nagpal

- Designed and fabricated a miniature underwater robot with 3D fin-propelled locomotion and 3D visual perception suitable for collective behaviors
- Developed bio-inspired algorithms for 3D collective behaviors in simulation and with a physical robot swarm
- Contributed to the acquisition of a \$225k Amazon grant

Cambridge, USA
2017 – 2020

Harvard University, Microrobotics Laboratory

Prof. Robert Wood

- Applied custom-made dielectric elastomer actuators (DEAs) in soft robotics
- Demonstrated an autonomous DEA-driven underwater robot and a bending beam DEA for multi-modal locomotion (crawling, hopping, jumping, rolling)

Cambridge, USA
2018 – 2020

Harvard University, Lauder Laboratory

Prof. George Lauder

- Designed a biomimetic fish-like underwater robot suitable as an experimental platform for addressing open questions in aquatic locomotion
- Replicated three key characteristics of fish swimming: linear speed-frequency relationship, U-shaped cost of transport, reverse Kármán wakes
- Used the robot to validate a thrust enhancement hypothesis for energy savings in fish schooling
- Developed a novel schooling-inspired propulsor for energy efficient underwater vehicles

Cambridge, USA 2016 – 2017	Wyss Institute for Biologically Inspired Engineering, Self-Organizing Systems Research Group Prof. Radhika Nagpal <ul style="list-style-type: none"> Worked as a research fellow and led the conception of novel multi-agent robotics platform for the investigation of collective behaviors in 3D space
Zurich, CHE 2014	ETH Zurich, Multi-Scale Robotics Lab Prof. Bradley Nelson <ul style="list-style-type: none"> Designed a miniscule force sensing catheter capable of measuring contact forces at its distal end during cardiac ablation Demonstrated tissue sampling (texture and flexibility) for diagnostic purposes
Bangalore, IND 2013 – 2014	Bühler Holding AG, Innovation Lab at R&D Food Processing Calvin Grieder, chairman and former CEO <ul style="list-style-type: none"> Managed a \$30k budget to conduct industrial research including the conception, design, and validation of food processing machines that are sold for profit Designed the framework and motor suspension for a novel and now commercially available single screw extruder Visited customers in Northern India to test prototypes for controlled and cost-effective oil spraying of pulses on site
Zurich, CHE 2012 – 2013	ETH Zurich, Autonomous Systems Lab Prof. Roland Siegwart <ul style="list-style-type: none"> Designed Ship Inspection Robot, a robust, cheap, and easy to operate inspection tool for the maritime transport sector intended to reduce costly inspection time in dry docks Contributed to an innovative overlapping wheel configuration (patented!) for overcoming a broad variety of obstacles encountered in cargo ships including I-shaped stiffeners Led the research team of 10 interdisciplinary undergraduate students, oversaw the \$15k budget, negotiated with manufacturers and suppliers, reported to investors and experts

Leadership & Service

2018 – present	Harvard University , mentored and supervised several graduate and undergraduate students, taught and lectured in 2 AI/robotics classes (CS189 and CS289)
2017 – 2018	reach.ch , member of the reach-team for artificial intelligence, wrote an article on AI
2016 – present	ETH Alumni New England Chapter , board member, organized talks with ETH professors
2013	ETH Zurich , coached 3 undergraduate engineering teams during their “Innovation Process” course, supported them in conceptualizing and realizing a mechatronic system with several sensors and actuators
2010 – 2016	Wiler Forum for Sustainability Issues (WIFONA) , board member and vice president, organized forums with Swiss Federal Councillors for several hundred participants

Skills & Interests

Areas of Expertise	Project management, product development, systems engineering, software design, artificial intelligence, robotics
Programming	Python, MATLAB, C/C++, HTML/CSS, Git, LaTeX
Fabrication	Computer-Aided Design, 3D printing, laser cutting, CNC milling, molding and casting, PCB design, soldering, sewing
Languages	English (fluent), German (mother tongue), French (conversational), Spanish (basic)
Personal	Sports including skiing, biking, tennis and soccer, art exhibitions, cooking

Selected Publications & Patents (2 of 7)

- o F. Berlinger, J. Dusek, M. Gauci, R. Nagpal, Robust maneuverability of a miniature, low-cost underwater robot using multiple fin actuation. *IEEE Robotics and Automation Letters* 3, 140-147 (2017).
- o F.C.J. Berlinger, C.M. Clausen, Y. Detrekoey, J. Eichenberger, M.A. Eppenberger, M.S. Fisler, A. Mueller, S.M. Schmid, W. Fischer, Carriage cart with obstacle overcoming. *General Electric Technology GmbH*, U.S. Patent Application 15/041,652 (2016).