

Ryo Kanno

ryo.kanno@empa.ch | ryokanno.com | [linkedin.com/in/ryokanno](https://www.linkedin.com/in/ryokanno)



TECHNICAL SKILLS

Programming & software: C++, Python, MATLAB, Solidworks, COMSOL, Fusion360, Git
Hardware: 3D printing, PCB-Design, High-Voltage Systems, Robotic System Integration
Research Areas: Direct Ink Writing, Soft Robotics, Electromagnet, Human-Machine Interface

EXPERIENCE

Doctoral fellow at the Laboratory of Sustainability Robotics June. 2023 – Present
Sustainability Robotics Lab, Empa (Advisor: Prof. Mirko Kovac) Zurich, Switzerland

- Invented electromagnetic torque motor for multi-segment underwater undulatory robots.
- Flexible electromagnetic actuator with Origami-housing for underwater robot and high-precision tilt stage control.
- 3D printed biocompatible ionic polymer soft actuators.

Scientific Assistant April. 2023 – May. 2023
Shintake Lab, UEC (Advisor: Prof. Jun Shintake) Tokyo, Japan

- Invented electrohydrodynamics pumps for wearable heating/cooling system. (Nature Scientific Reports, 2024)

Visiting Scholar Mar. 2022 – Feb. 2023
Laboratory of Intelligent Systems, EPFL (Advisor: Prof. Dario Floreano) Lausanne, Switzerland

- Invented world's first plant-based underwater soft robot. (Advanced Intelligent Systems, 2024).

SELECTED PROJECTS

FLEX-RAY (Flexible Locomotion Electromagnetic X-hinge for Robotic Aquatic Yield)
Developed an active electromagnetic hinge that enables undulatory swimming robots to replicate eel-, trout-, and tuna-like gaits for high-efficiency underwater locomotion.

AM-ACT (Additive Manufactured Actuators) — Robosoft 2025
Designed and fabricated biocompatible ionic polymer actuators entirely via 3D printing, successfully eliminating manual assembly steps from the manufacturing pipeline.

MAGNUS (Metamaterial Adhesive & Gripper for Non-uniform Universal Surfaces) — Robosoft 2024
Integrated a structural metamaterial adhesive with an electrostatic gripper to achieve strong, highly anisotropic (directional) grip across varied surface topologies.

HERO (Hydraulic Eco-friendly Robotic Operator) — Advanced Intelligent Systems 2022
Engineered a biodegradable electrohydraulic actuator driven by a high-voltage system, reducing environmental impact compared to traditional smart material systems.

MAPP (McKibben Actuator with Proprioceptive Perception) — RA-L 2021
Monolithically integrated a McKibben artificial muscle with a stretchable capacitive sensor to provide simultaneous soft actuation and closed-loop proprioceptive sensing.

PUBLICATIONS

5+ first-author papers at top-tier impact factor journal: Advanced Intelligent Systems, IEEE RA-L, Nature Scientific Reports

HONORS & AWARDS

2026 – Top viewed article at Advanced Sustainable Systems 2026 (journal impact factor: 5.6)
2024 – Best Paper Finalist at Excellence in Manufacturing Reproducibility at Robosoft 2024 (2 awardees out of 143 accepted papers)

LANGUAGES

English: Fluent / Professional proficiency
German: Waystage / Elementary proficiency
Japanese: Native proficiency

EDUCATION

École Polytechnique Fédérale de Lausanne (EPFL) Lausanne, Switzerland
Ph.D. in Microsystems and Microelectronics June. 2023 – present

The University of Electro-communications (UEC) Tokyo, Japan
M.S. in Mechanical Engineering, Mechatronics, Robotics and Automation Program April. 2021 – Mar. 2023

The University of Electro-communications (UEC) Tokyo, Japan
B.S. in Mechanical Engineering, Mechatronics, Robotics and Automation Program April. 2017 – March. 2021