**Women in science**

On 8 March, this year’s edition of the International Women’s Day will focus on the topic of women in leadership. For the occasion, EPFL will organise a full-day online event accessible without registration. The homepage of ETH Zurich on 8 March will feature stories, portraits and infos about and for women (see “Equal Opportunities Corner” on the right column for details). A few days before, on 5 March, a campaign involving all 22 NCCRs will be launched, based on videos that will portray female PhD students, postdocs and professors from all scientific disciplines. NCCR Microbiomes will start the campaign on Monday 8 March, and NCCR Robotics will participate by publishing videos in the second half of May. At NCCR Robotics, we will also soon start a series of online training modules to raise awareness among our members about gender bias in the research community.

**Nature article**

A team of Swiss and Canadian scientists, led by Grégoire Courtine at EPFL, have developed a treatment that allows patients to regain control of their blood pressure, using targeted electrical spinal-cord stimulation. No medication is required. The findings were published in late January in *Nature*. Read more

**Drones keep flying without one rotor**

The Scaramuzza lab published an article in IEEE-R-AL in January, demonstrating a method for keeping quadrotors flying in case of failure of one of their rotors. The method uses input from onboard sensors, in particular standard and event cameras. Read more

**Myosuit clinical trial**

The Riener Lab has started a clinical study, together with the Deutsches Herzcentrum Berlin (DHZB) and Charité Hospital, to use the Myosuit to support physical training of patients with cardiac insufficiency. The study is led by Prof. Riener and Prof. Dr. Volkmar Falk, director of the DHZB Department of Cardiothoracic and Vascular Surgery, and co-funded by the “ETHeart initiative: emerging therapies for cardiovascular diseases”.

**PHASER**

The article “PHASER: A Robust and Correspondence-Free Global Pointcloud Registration” by the Siegwart group has been published in IEEE Robotics and Automation Letters. The study introduces a correspondence-free global registration of sensor-centric pointclouds that is robust to noise, sparsity, and partial overlaps. Read more

**Project Play**

Florian Haufe and Michele Xiloyannis were awarded a Spin Fund Grant of CHF 100k for the commercialization of “Project Play”. Project Play is a novel approach to movement therapy that connects the best of wearable robotics to the latest video games for an unprecedented training experience. The NCCR Sinn Fund awardees are hosted at the Sensory-Motor Systems Lab, ETH Zurich, by Prof. Robert Riener.

**CYBATHLON@school**

Three workshops sponsored by NCCR Robotics and aimed at young students will be organised in the next months by Mint & Pepper, the educational project by the Wyss Institute in Zurich. They are “Freizeitkurse Grüt”, on 10 March 13:30-17:00, open to 50 girls and 50 boys in the year 6; “Startbahn 29” in Dübendorf on 6 May, for girls only; “Ferienplausch”, Zürich Platform on 16 August for 50 girls and 50 boys, 11—12 years old. More details to follow soon on the Mint & Pepper website.
Paper in IEEE R-AL
The Gambardella lab published a new open-access article on "State-Consistency Loss for Learning Spatial Perception Tasks From Partial Labels" in IEEE Robotics and Automation Letters. The paper introduces a general approach to deal with the problem of having access only to partial labels when learning models for real-world robot spatial perception tasks, yielding significant quantitative performance improvements. Read more.

SpineBot project
The Rauter Lab at the University of Basel has been awarded the Christian Toggenburger Award 2021 for the "SpineBot Project", a programmable robotic device that performs intraoperative measurements of segmental stiffness of the spine in children with idiopathic scoliosis. The award corresponds to CHF 100,000 to develop a new and better version of the device and perform a feasibility study. Read more.

New financing round for Flyability
The NCCR Robotics spin-off, that specialises in indoor drone inspection for the industrial sector, has announced in December that it has raised EUR 7 million in a Series C funding round co-led by Future Industry Ventures and Swisscom Ventures. Read more.

Swiss-Korean science club
The Science and Technology Office of the Swiss Embassy in South Korea on 25 February organised an online Science Club on the topic of "Robotics Inspired by Nature", with Marco Hutter from ETH Zurich and Hae-Won Park from KAIST in Seoul (moderated by NCCR Robotics' science writer Nicola Nosengo). The recording of the event will soon be available on the S&T Office LinkedIn page and website.

Article in Current Biology
In early January, Stanisa Raspopovic and his team published an article where they show that connecting the prostheses of leg amputees to the nervous system helps amputees to perceive the prosthesis weight as lower, which is beneficial for their acceptance. Read more.

Special issue on soft robotic co-design
NCCR Robotics Director Dario Floreano co-edited a special issue of IEEE Robotics & Automation Magazine, on the design of a new generation of adaptive, compliant, and reliable soft robots. The introduction to the special issue can be found here. Newly accepted articles
The Scaramuzza lab had two new articles accepted in IEEE Robotics and Automation Letters. The first one is on a data-driven Model Predictive Controller for quadrotors. The article is already available, as well as the video and the code. The second article is on combining events and frames using recurrent asynchronous multimodal networks. Here too, the paper is already accessible online, as well as the project page and code.

CONGRATULATIONS

Best paper award
Marie Georgarakis (Riener lab) and Edoardo D’Anna (formerly at the Miera lab) won the 2020 NCCR Robotics Best Paper Award with their papers: A. Georgarakis et al., "Age-dependent asymmetry of wrist position sense is not influenced by stochastic tactile stimulation", published in Frontiers in Human Neuroscience; and E. D’Anna et al., "A closed-loop hand prosthesis with simultaneous intraneural tactile and position feedback" in Science Robotics.

Virtual reality paper
The article "The Impact of Virtual Reality and Viewpoints in Body Motion Based Drone Teleoperation", by Matteo Macchini from the Floreano lab, was accepted for the IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR), which will take place online from 27 March to 3 April. The work focuses on Body-Machine Interfaces, Virtual Reality and first-person view perspectives to teleoperate robotic systems. The article is already accessible on arXiv.

Harvey Prize
In December 2020, Grégoire Courtine has been awarded the IET A F Harvey Engineering Research Prize – the most valuable prize given out by the Institution of Engineering and Technology (IET). Courtine will use
the funding to further his research on spinal cord regeneration. Read more.

**PhD Thesis**

Titus Cieslewski (Scaramuzza lab) has successfully defended his PhD dissertation titled "Decentralized Multi-Agent Visual SLAM". Among his major contributions, a completely new approach to feature detection and matching, named IMPs, and a data representation showing that optimization is not needed for exploration.

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**NCCR ROBOTICS CALLS**

**Special issue on medical robotics**

*Science Robotics* has opened a call for contributions for a special issue on medical robotics. The editorial board is looking for high-quality, original research articles that advance the field of medical robotics toward more intelligent, capable, autonomous systems. In particular, in vivo and first-use-in-human efforts, developments in brain-computer interfaces, as well as fundamental advances in micro- and nanorobotics. The journal is also looking for short "Focus" articles covering the ethical use of robots in medical applications and the use of robots against infectious diseases. Deadline: 3 May 2021. Read more.

**Workshop on Event-based Vision**

The Scaramuzza lab is co-organising the "3rd Workshop on Event-based Vision", which will take place in June at the IEEE Conference on Computer Vision and Pattern Recognition. The workshop is dedicated to event-based cameras, smart cameras, and algorithms processing data from these sensors. The paper submission deadline is March 27. Read more here for more info and the current list of invited speakers.

**R2T2 Rendez-vous Mars mission**

The educational R2T2 Rendezvous Mars remote and free missions for all teachers and their classes, based on the robot Thymio, are accepting registrations. The deadline is 5 March 2021. More information on Twitter and LinkedIn. The latest edition of the Roteco newsletter for the robotics teachers' community is also online.

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**NCCR ROBOTICS OPEN POSITIONS**

**Positions at LIS - EPFL**

The Floreano lab is advertising two new positions: 1) a postdoctoral fellowship to study learning and control of agile flight in avian-inspired drones. The project is carried out in collaboration with the laboratory of Prof. Davide Scaramuzza at University of Zurich. 2) a postdoctoral fellowship in learning and control of soft grippers, for a project carried out in collaboration with the laboratory of Prof. Herb Shea. Read more about the positions.

**PhD positions at ETH**

The Siegwart lab is looking for doctoral students to work on Full-body Control of an Interactive Aerial Robot and on Uncertainty Aware Mapping and Control for Aerial Robots. The positions are offered within the Marie Skłodowska-Curie Innovative Training Network (ITN) "AErial RObotic TRAINing for the next generation of European infrastructure and asset maintenance technologies" (AERO-TRAIN: www.aerotrain-etn.eu). The deadline for both applications is 6 March. See here and here for more details.

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**PRESS COVERAGE**

**Aude Billard in "The Brain"**

The EPFL professor and NCCR Robotics member is among the scientists interviewed in the "The Brain – Cinq nouvelles du cerveau", a new Swiss documentary on neuroscience recently reviewed in *Le Temps*. Read more

**Failure-resistant drones in IEEE spectrum**

Scaramuzza's work on autonomous quadrotor flight despite rotor failure with onboard vision sensors is featured on IEEE Spectrum. Read more

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**Jamie Paik on ant-like robots**
The EPFL professor was interviewed by Freethink in an article about swarming behaviour in robots. The article starts by describing a recent Science Robotics publication on robotic fish, and then goes on to describe Paik’s tribots. Read more

The robot designed by EPFL is being used in a new educational project in the Valais canton, described in an article in Le Nouvelliste. Read more

Le Temps on Courtine's research
The French-language newspaper had an article on the Nature publication, led by Grégoire Courtine, on blood-pressure regulation in patients with spinal cord lesions. Read more

ANYbotics in Le Temps
The Zurich-based ETH spin-off, and in particular its ANYmal robot, were the main subject of a story in Le Temps in December, focused on main similarities and differences between the Swiss company and Boston Dynamics. See more.

UZH Space Hub
The University of Zurich has a YouTube channel entirely dedicated to its innovation cluster on “Space and Aviation”. Among many interesting videos to check out, in December they featured an interview with Davide Scaramuzza on the development of autonomous drones. See more.

Robotics and Automation News
Siegwart’s lab at ETH Zurich, and in particular its research on machine learning applied to robotics, was featured in Robotics and Automation News in early January. Read more.

More press coverage available through NCCR Robotics website.

NEW VIDEOS
The ascent of robots

Data-Driven MPC for Quadrotors

NEW MEMBERS
Victor Guimera Borja (Dillenbourg lab)
Victor Guimera Borja joined the CHILI lab as a Robotics Engineer on February 1st. Victor is an engineer with a background in Mechatronics and Control, multidisciplinary and curious working with mobile robotics. His main duties consist in the redesign of Cellulo, mechanically, electronically and software-wise.

Chiara Basla (Riener lab)
Chiara joined the Riener Laboratory as a PhD student in January 2021 and she works on a lightweight wearable exosuit to provide assistance to patients with muscle weakness across activities of daily living.

Sihao Sun (Scaramuzza lab)
Sihao is a postdoctoral researcher working on the control problems for aerial vehicles. His work aims at improving aerial vehicle safety by leveraging fault-tolerant flight control, robust control, and machine learning.


J. Hidalgo-Carrio, D. Gehrig, D. Scaramuzza Learning Monocular Dense Depth from Events, IEEE International Conference on 3D Vision (3DV), Fukuoka, 2020


* Selected publications include those that have been notified to the editor. All members are kindly encouraged to inform the management team of new publications. Read all publications.

The Swiss National Centre of Competence in Robotics (NCCR Robotics) is a federally funded programme bringing together robotics laboratories from EPFL, ETH Zurich, University of Zurich, IDSIA, UNIBE, EMPA, University of Basel to work on wearable, rescue and educational robots.

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Images: Drone with rotor failure: University of Zurich; Myosuit: ETHZ/Myoswiss; Project Play: ETH Zurich; SpineBot: UniBasel; Thymio: EPFL.

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