

COMMUNITY NEWSLETTER

Dear Subscribers,

The NCCR Robotics newsletter will be back in October. We wish you a great summer break!



LATEST NCCR NEWS

Review in Nature Medicine

In early June, Grégoire Courtine published a Review in Nature Medicine titled "*Spinal cord repair: advances in biology and technology*", written with Michael Sofroniew (University of California). The article reviews recent advancements in augmenting neuroplasticity and functional recovery in animal models of spinal cord injuries, and highlights the importance of combining biological and engineering strategies in order to translate those results into actual therapeutic breakthroughs. [Read more](#)



NCCR Robotics Pavilion

The NCCR Robotics consortium will showcase its pioneering technologies in a dedicated Pavilion at the EPFL Open Days, on 14 & 15 September 2019 – during a very special edition of EPFL's annual public event, that will coincide with the celebration of the 50th anniversary of the institution. [Read more](#)



Stanisa Raspopovic

We welcome Stanisa Raspopovic (ETHZ) as NCCR Robotics Associate Professor. His research interest is focused on the development of innovative devices for the treatment of neurologically disabled (amputees and diabetics) persons.



José Millán

We would like to inform our readers that our member José Millán will be ceasing his activities with NCCR Robotics end of August 2019. He will be taking up a position at the University of Texas at Austin, where he will strengthen the clinical and translational component of his research on brain-machine interfaces. We take this opportunity to thank José for his most valuable contributions.



AlphaPilot Autonomous Drone Racing Competition

Scaramuzza lab is one of the nine teams selected to participate in the 2019 AlphaPilot Innovation

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ROBOTICS WORLD

Top News

- Joining forces to boost AI adoption in Europe
- Bringing human-like reasoning to driverless car navigation
- On Artificial Intelligence for Wildlife Conservation, with Milind Tambe
- The social animals that are inspiring new behaviours for robot swarms
- Tackling sustainability and urbanization with AI-enabled furniture

World events

- MARSS (01-05 July)
- RoboCup (02-08 July)
- Neuromodulation (05 July)
- AIM (08-12 July)
- World Haptics Conference (09-12 July)
- ICDL-EPIROB (19-22 Aug)

high-speed aerial courses without any GPS, data relay or human intervention. The competition has a \$1 million prize, sponsored by Lockheed Martin. [Read more](#)

Dronistics' first field tests outside Switzerland

NCCR Robotics spin-off Dronistics, along with WeRobotics and Dominican Republic Flying Labs, conducted delivery field tests last month in a very remote and a hard to reach community in the Dominican Republic. Cargo drones that deliver medical supplies could be extremely useful in this area where medical healthcare is very limited. Stay tuned for their next destination. [Read more](#)

EPFL Drone Days

Don't miss this year the EPFL Drone Days on 13-14th September. Several of our NCCR Robotics labs will be present with robot demonstrations. Our NCCR Robotics spin-off Dronistics will be delivering surprise items on the EPFL campus on 14-15th Sept.



- 01 Sept)
 - IFAC Mechatronics NOLCOS (04-06 Sept)
 - International Micro Air Vehicle Competition and Conference (30 Sept - 04 Oct)
 - Do Good Robotics Symposium (03-04 Oct)
 - EXOberlin (22-23 Oct)

External calls

- EXO Berlin 2019
- Humanoids
- ICAR
- Marine Bio-inspired Soft Robotics
- RoboCup 2019

Start-up corner

Please find the following links related to start-up support. If you would like to promote your events through our channel, please contact us nccr-robotics@epfl.ch

- PostVenture

Equal Opportunities Corner

- The Robert Gnehm Grant for parent postdocs aims to support parent postdocs in the early stages of parenthood, allowing them to devote more time to their child while alleviating a temporary decrease in scientific productivity. One aim is to free them from routine work that can be delegated to others, for example in the field of laboratory work, academic administration, and teaching.

External positions

- Research Assistant (University of Bath)
- Two Postdoc Fellows (BIRO)
- PhD in Soft and Micro Robots for Exploration and Remediation Underground (Bristol Robotics Laboratory)
- Robotics Technician to support Bristol Soft Robotics Group (University of Bristol)
- Post-doctoral Position on High-Performance DEAs (EPFL)
- Post-doctoral Position on Stretchable Pumps (EPFL)
- Fellow position in Humanoid Technologies: Humanoid and Human Centered Mechatronics Lab (iit)
- Surgical Robotics Engineer - Mechatronic Systems Control (Intuitive)
- Research Engineer (Robotics/Estimation) (Navisense)
- Senior Research Fellow in

CONGRATULATIONS

Rolex Awards for Enterprise

Our member Grégoire Courtine is one of five laureates of the 2019 Rolex Awards for Enterprise. The laureates will receive financial support for their innovative projects that contribute to the common good. [Read more](#)



First two NCCR Robotics Grants for Women

We are glad to announce that earlier last month the first two recipients of the NCCR Robotics Grants for Women, presented their papers. Arzu Güneysu (Dillenbourg lab) presented the paper: "*Towards an Adaptive Upper Limb Rehabilitation Game with Tangible Robots*" at ICORR 2019 and Ingrid Odermatt (Marchal-Crespo lab) presented the paper: "*My Virtual Hand: Does Body Ownership Over and Avatar Enhance Motor Performance?*" at Rehab Week 2019 – INRS.



Matthew Robertson's Thesis Defense

Matthew (Paik lab) defended his thesis last month, titled *Modular soft pneumatic actuator system design for compliance matching*. He was awarded the SNSF Early Postdoc.Mobility fellowship to conduct research at Queen's University in Canada.



NCCR Robotics Alumnus Luca Randazzo

Luca Randazzo, NCCR Robotics alumnus (Millán lab), and Iselin Froybu (both currently in Ijspeert lab) have won first stage Ventruekick support and coaching to develop business ideas for Yago, which uses soft, motorized exoskeleton to help wearers grasp and release objects. [Read more](#)



NCCR ROBOTICS OPEN POSITIONS

positions: Mechanical Engineer, Inspection Software Engineer, Locomotion Control Software Engineer, Navigation Software Engineer and Perception Software Engineer. [Read more](#)



NCCR ROBOTICS CALLS

NCCR Robotics Master Scholarship for Women

Every year, NCCR Robotics opens a call for scholarships for women master students who wish to spend a period of 3-6 months in an NCCR Robotics lab. Application submission deadline: 5th September. [Read more](#)

NCCR Robotics PhD/Postdoc Exchange Programmes

NCCR Robotics offers financial assistance to PhD students and Postdocs from both inside and outside our organisation to take part in a 3-6 months collaborative project in a field related to the NCCR. Application submission deadline: 15th September. [Read more](#)



2019 EVENT UPDATE - WE WILL BE AT:

ARCHE

05 July 2019

Swiss Military Rescue Troops

[Read more](#)

ARCHE

Summer School on Rehabilitation Robotics

07-13 July 2019

Shangai

[Read more](#)



Yuval Noah Harari to address a packed house at EPFL

10 July 2019

EPFL

[Read more](#)



ICDL-EPIROB

19-22 August 2019

Oslo

[Read more](#)



AMAM 2019

20-23 August 2019

EPFL

[Read more](#)



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Vienna[Read more](#)**NCCR Robotics Annual Retreat**

13 September 2019

EPFL[Read more](#)**FAI International Drones Conference and Expo**

13-15 September 2019

Lausanne[Read more](#)**EPFL Drone Days**

13-15 September 2019

EPFL[Read more](#)**NCCR Robotics Pavilion**

14-15 September 2019

EPFL[Read more](#)**Engineering PhD Summit**

02-04 October 2019

EPFL[Read more](#)**PRESS COVERAGE****Hoffnung für Menschen im Rollstuhl**

Es gibt wohl keinen grösseren Wunsch für Menschen im Rollstuhl, als den, wieder laufen zu können. Das Schweizer Start-Up «MyoSwiss» hat in den letzten zwei Jahren ein sogenanntes «Exo-Skelett» entwickelt. Mit diesem externen Gehroboter könnte dieser Wunsch bald in Erfüllung gehen. Watch video (DE)

**To Fly Solo, Racing Drones Have a Need for AI Speed Training**

Drone racing's ultimate vision of quadcopters weaving nimbly through obstacle courses has attracted far less excitement and investment than self-driving cars aimed at reshaping ground transportation. [Read more](#)



C'est la nouvelle image que la Confédération cherche à vendre à l'étranger : la Suisse pays du drone par Valérie Demierre

(FR) min 12:39 [Watch video](#) (FR)

PLAY RTS

EPFL'S TWIICE EXOSKELETON MAY SOON HELP PARAPLEGICS SKI

EPFL's TWIICE is an exoskeleton that's helping paraplegics walk again, and a new version to come may even help them ski down a mountain. But TWIICE co-founder Tristan Vouga says that despite such life-changing innovation it can still be difficult to find the right kind of funding in Switzerland. [Watch video](#)

CNN Money
SWITZERLAND

Drone land Switzerland

Ein Zürcher Start-up baut Drohnen, die für Öl- und Gaskonzerne aus aller Welt Inspektionen in luftiger Höhe durchführen sollen. Ein Waadtländer Drohnen-Start-up wächst innert vier Jahren von 2 auf fast 80 Mitarbeiter an. Die Schweiz mischt im weltweiten Drohnengeschäft ganz vorne mit. Das hat die ausländische Konkurrenz gemerkt und pickt sich die Perlen heraus. [Watch video](#) (DE)

PLAY SRF

Large media coverage

The recent paper by D. Falanga, S. Kim, and D. Scaramuzza "*How Fast is Too Fast? The Role of Perception Latency in High-Speed Sense and Avoid*" IEEE ROBOTICS AND AUTOMATION LETTERS, 2019, has received much media attention: BBC - Tech Briefs - Digital Trends - AUVSI - Business Insider - CBS Denver - Fox News - PCMag - SFGate - CNET - The Verge - IEEE Spectrum.



More press coverage available through NCCR Robotics website.

NEW VIDEOS

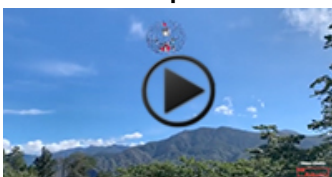
Lorenz' experience with the MyoSuit



Michael's experience with the MyoSuit



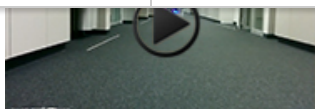
Agile Cargo Drone Delivery in the Dominican Republic



Rapid, Dynamic Obstacle Avoidance with an Event-based Camera



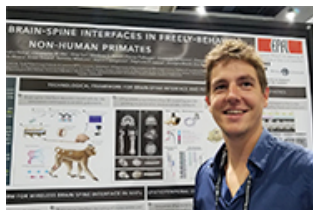
PULP-DroNet -- A 64mW DNN-based Visual Navigation Engine for Autonomous Nano-Drones



NEW MEMBERS

Simon Borgog (Courtine lab)

Simon is a PhD student studying the motor system with an emphasis on locomotion in non-human primates. His research focuses on detailing the anatomical basis for specific behaviors and patterns of movement, in order to develop and apply therapeutic strategies for motor disorders.



Valentin Wüest (Floreano lab)

Valentin is a Mechanical Engineer who focused on vision-based estimation and control for multirotors. In his new role as a PhD student, he will apply the gained expertise on estimation and control research problems for a bird-inspired drone.



Viviane Tanner (Marchal-Crespo lab)

Viviane is a PhD student at the ARTORG Center for Biomedical Research of the University of Bern. She got her MSc in Computer Science with specialisation in advanced data processing from the Swiss Joint Master in Computer Science. Her research focuses on the development of training algorithms to learn the control of wearable robotics.



DEPARTING MEMBERS

Francesco Petrini (Micera lab)

Francesco will continue as CEO of SensArs Neuroprosthetics, NCCR Robotics spin-off specialized in neuromodulation technologies. It has recently obtained a financing from the European Commission, to bring to the market a device that restores sensory feedback from the prosthetic leg of lower limb amputees, through the stimulation of the remaining peripheral nerves. Francesco will also have a part-time position as post-doc at ETHZ, where he will explore future applications for direct nerve stimulation technologies.



SELECTED NCCR ROBOTICS PUBLICATIONS *

I. Batzianoulis, A. Simon, L. Hargrove, A. Billard "Reach-to-grasp motions: Towards a dynamic classification approach for upper-limb prosthesis" Proceedings of 9th International IEEE EMBS Conference on Neural Engineering (NER'19), San Francisco, CA, USA, 2019.

E. Formento, K. Minassian, F. Wagner, J.B. Mignardot, C.G.M. Le Goff-Mignardot, A. Rowald, J. Bloch, S. Micera, M. Capogrosso, G. Courtine, "Electrical spinal cord stimulation must preserve proprioception to enable locomotion in humans with spinal cord injury" Nature Neuroscience, 2018.

A.M. Georgarakis, P. Wolf, R. Riener "Simplifying Exosuits: Kinematic Couplings in the Upper Extremity During Daily Living Tasks", IEEE International Conference on Rehabilitation Robotics (ICORR) 2019, June 25-28, Toronto, Canada, 2019.

B. Nisar, P. Foehn, D. Falanga, D. Scaramuzza "VIMO: Simultaneous Visual Inertial

A. Özgür, W. Johal, A. Güneysu Özgür, F. Mondada, P. Dillenbourg "*Declarative Physicomimetics for Tangible Swarm Application Development*" Proceedings of the 11th International Conference on Swarm Intelligence, ANTS 2018, 11172 Presented at: 11th International Conference on Swarm Intelligence, ANTS 2018, Rome, 2018.

D. Palossi, A. Loquercio, F. Conti, E. Flamand, D. Scaramuzza, L. Benini "*A 64mW DNN-based Visual Navigation Engine for Autonomous Nano-Drones*" IEEE Internet of Things Journal 2019.

G. Risso, G. Valle, F. Iberite, I. Strauss, T. Stieglitz, M. Controzzi, F. Clemente, G. Granata, P. M. Rossini, S. Micera, G. Baud-Bovy, "*Optimal integration of intraneural somatosensory feedback with visual information: a single-case study*" Scientific Reports, 9, 1, 7916, 2019.

D. Scaramuzza, Z. Zhang "*Visual-Inertial Odometry of Aerial Robots Encyclopedia of Robotics*" Springer, 2019.

B. Stolz, T. Brodermann, E. Castiello, G. Englberger, D. Erne, J. Gasser, E. Hayoz, S. Muller, L. Muhlebach, T. Low, D. Scheuer, L. Vandeventer, M. Bjelonic, F. Gunther, H. Kolvenbach, M. Hopflinger, M. Hutter "*An Adaptive Landing Gear for Extending the Operational Range of Helicopters*" IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2018.

M. Yao, C. Belke, H. Cui, J. Paik, "*A reconfiguration strategy for modular robots using origami folding*" The International Journal of Robotics Research, Dec 2018.

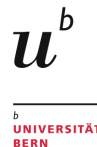
Z. Zhang, D. Scaramuzza "*Rethinking Trajectory Evaluation for SLAM: a Probabilistic, Continuous-Time Approach*" ICRA19 Workshop on Dataset Generation and Benchmarking of SLAM Algorithms for Robotics and VR/AR (Best Paper Award) 2019.

* Selected publications include publications which have been made known to the editor. All members are kindly encouraged to inform the management team of new publications.

NCCR Robotics



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 and UNIBE to work on wearable, rescue and educational robots.



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Images: Nature Medicine (Nature Medicine website); Alpha Pilot (CISION PR Newswire); Dronistics (@2019 WeRobotics) EPFL Dron Days (EPFL Meidacom); Rolex Award (EPFL),

Yago (Yago website).



