robotics Swiss National Centre of Competence in Research

COMMUNITY NEWSLETTER

Issue 57
July 2020
Public Version

In this issue...

LATEST NCCR NEWS

Covid-19 drone delivery project

As a result of the call for ideas launched at the outset of the pandemic, NCCR Robotics is funding a collaborative project between three spin-offs: Dronistics (Floreano lab), SUIND (Scaramuzza lab) and Volaly (Gambardella lab). The "Covid-19 drone delivery project" will develop a system for collecting medical samples from people isolated, quarantined, sick, or immobilized in their households. The system includes a foldable drone, an autonomous landing system and a gesture-based software for directing the drone.

New technology transfer officer

Katiuska Molina-Luna has joined the team on June 15 as the new NCCR Robotics Technology Transfer Officer. Katiuska brings strong expertise in coaching and project management, as well as a background in the health sciences. As part of her appointment, she will support the foundation and growth of NCCR Robotics start-ups, liaise with industry and prepare the Swiss Robotics Industry Day (see below). All industries interested in the activities of NCCR Robotics are invited to get in touch with her using the email techtransfer@nccr.

ARCHE event

The Advanced Robotic Capabilities for Hazardous Environments (ARCHE) took place in the first week of July at Wangen an der Aaare. More than 50 researchers from the different teams jointly tested various ground and flying robots for search and rescue applications. As in previous years the exercise, conducted in collaboration with Armasuisse, provided the opportunity for data collection of extreme navigational hazards like fire or smoke.

Swiss Robotics Industry Day

Our annual flagship event will take place at the Swiss Tech Convention Center in Lausanne on 5 November 2020. Registration will open next week and the programme will be available soon. NCCR Robotics laboratories and spin-offs will showcase and discuss their latest projects, while high-profile speakers from both industry and academia will present their perspectives in talks and roundtables. Read more and follow updates here.

A new associate PI

Herbert Shea, head of the Soft Transducers Lab at EPFL, has joined NCCR Robotics as an associate member. His research focuses on soft, stretchable and

ROBOTICS WORLD

Top News

· Giving soft robots feelings
· Robotic "third arm" can smash through walls
· How roboticists (and robots) have been working from home

External calls

· Call for Papers for Frontiers Research Topic on "Creativity and Robotics"
· Call for papers - The 12th International Conference on Social Robotics (ICSR 2020)
· IEEE RAM Special Issue on "Emerging Paradigms for Robotic Manipulation: from the Lab to the Productive World"

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

· Business creation ICT - upcoming training events for ICT companies: Zurich (18 August) and Lausanne (27 August).

compliant robotic components (sensors, actuators and transducers), including soft manipulators and printed microsystems. We welcome Herbert to the team and look forward to his scientific contributions.

Usability Evaluation Survey for Wearable Robots

Are you developing wearable robots for daily assistance, augmentation, or therapy? Help the Gassert lab get a deeper understanding of the current usability evaluation practices and their limitations by completing our dedicated survey. The survey data will allow to benchmark usability practices in the field and assist researchers/developers in the process of finding the right measures for their specific context of use. The survey will take approximately 10–15 minutes to complete.

In-sight Crutches at ICRA 2020

At the ongoing online conference, Florian Haufe from the Riener lab presented recent results on the us of technology to support patients with spinal cord injury. In particular the InSight crutches were used to evaluate how assistive technologies reduced the load that a subject placed on his crutches when assisted. The work is part of the Wearable Robotics Grand Challenge. Read more.

CONGRATULATIONS

Best Master Thesis

Tim Taubner, who did his Master thesis "Competitive Drone Racing via Pass-Block Games" at both Stanford University and the Scaramuzza Lab, has received the ETH Medal 2020 and the Willi Studer Prize for the best student in the ETH Master Robotics, Systems and Control in the period March 2019-2020.

NCCR ROBOTICS OPEN POSITIONS

Developer at Dronistics

The NCCR Robotics spin-off is looking for a full-stack developer who will develop, test, and deliver high-quality frontend and backend solutions that can be operated in various web-browsers. The required qualifications are liste here. If you are interested in applying for this position, please send your resume and motivation letter at info@dronistics.ch

Open positions at UZH

The Scaramuzza lab has several fully-funded openings for PhD students and Postdocs in control, path planning, aerodynamic modelling, numerical optimization, computer vision, and machine learning to contribute to the areas of autonomous drone racing, autonomous inspection of power lines, computational photography. Read more

ROBOTICS & PERCEPTION GROUP

Post-doc position in AI for medicine

The Center for Intelligent Systems at EPFL is opening a post-doc position for a researcher in AI for medicine. The candidate will be conducting research in the fields of machine learning and medical imaging, and will collaborate directly with faculty members from CIS

Equal Opportunities Corner

· International Women in Engineering Day - A UK-based annual event organised by the Women's Engineering Society and including the "Top 50 Women in engineering 2020".

External positions

· Full-time Research Engineer Position in Robotic Manipulation at Honda Research Institute USA
· PhD and Postdoc positions, Campus Bio-Medico University, Rome, Italy
· Postdoc and PhD positions in Robotics at Queen Mary University of London, UK

NCCR Robotics

Director
Prof. Dario Floreano (EPFL)

Co-director
Prof. Robert Riener (ETH Zurich)

CONTACT
NCCR Robotics
Office MED 1 1526,
Station 9
EPFL CH-1015 Lausanne
Switzerland
+41 21 693 76 64
nccr-robotics@epfl.ch
nccr-robotics.ch

For Technology Transfer enquiries please contact:
techtransfer@nccr-robotics.ch

IMPRESSUM
Publisher
NCCR Robotics Management Team
Editor
Nicola Nosengo
Contributing Editors
Tristan Piguet / Ana Caldas / Valeria Di Cola / Katiuska Molina-Luna / Frances Ryser
Web Editing
Ana Caldas
Design
Alternative Communication SA / Pascal Briod

and with medical doctors at CHUV in Lausanne. Read more

NCCR ROBOTICS CALLS

Third FPV Drone Racing VIO competitions

The competition, organised by the Scaramuzza lab, will be held jointly with the 6th edition of the IROS 2020 Workshop on "Perception, Learning, and Control for Autonomous Agile Vehicles". The participants will run their VIO algorithms on datasets (including images, IMU measurements and event data) recorded with a FPV drone racing quadrotor flown by an expert pilot with speeds up to and over 20m/s. Deadline to submit: 27 September 2020. Read More.

PRESS COVERAGE

Robots in the Covid-19 crisis

NCCR Robotics Director Dario Floreano was interviewed by SwissInfo in a story about how the robotics sector in Switzerland has responded to the Covid-19 pandemic. The story also mentions NCCR Robotics spin-off ANYbotics, Sensars, Dronistics, MyoSwiss. Read more

EO career development award in Agefi

An interview with Auke Ijspeert, head of the Equal Opportunities Commitee in NCCR Robotics, on the new programme aimed at supporting young female researchers. Read more

Coverage of drone acrobatics

The Scaramuzza lab published a paper in RSS 2020 on drones with on-board sensing and computation that can fly agile acrobatic maneuvers. The story was feature in several publications, including Daily Mail, TechExplore, Futurity, Interesting Engineering. A videoof the experiments is also available, and the project's code is available for those who want to try out drone acrobatics themselves.

Paik lab's "Best Of 2020"

A video summary of the Reconfigurable Robotics Lab's research from last year was featured in IEEE Spectrum's "video Friday" collection. The video can be seen here, and the full list on the IEEE Spectrum website is here.

Debate on the future of robotics

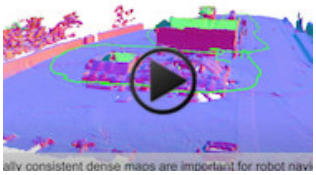
Davide Scaramuzza participated in the ICRA 2020 debate on the future of the field, and in particular discussed the question "is robotics research over-reliant on benchmark datasets and simulation?" See the video recording here

More press coverage available through NCCR Robotics website.

NEW VIDEOS

Globally consistent volumetric mapping

AlphaPilot: Autonomous Drone Racing



SELECTED NCCR ROBOTICS PUBLICATIONS *

T. Bützer, O. Lambercy, J. Arata, and R. Gassert, “Fully Wearable Actuated Soft Exoskeleton for Grasping Assistance in Everyday Activities”, Soft Robotics, 2020

P. Foehn, D. Brescianini*, E. Kaufmann, T. Cieslewski, M. Gehrig, M. Muglikar, D. Scaramuzza, "AlphaPilot: Autonomous Drone Racing Robotics", Science and Systems (RSS), 2020

E. Kaufmann, A. Loquercio, R. Ranftl, M. Müller, V. Koltun, D. Scaramuzza. "Deep Drone Acrobatics
Robotics". Science and Systems (RSS), 2020

V. Reijgwart, A. Millane, H. Oleynikova, R. Siegwart, C. Cadena, J. Nieto, "Voxgraph: Globally Consistent, Volumetric Mapping using Signed Distance Function Submaps", Arvix, 2020

N.J. Sanket, C.M Parameshwara, C.D. Singh, C. Fermüller, D. Scaramuzza, Y. Aloimonos, "EVDodgeNet: Deep Dynamic Obstacle Dodging with event cameras", IEEE International Conference on Robotics and Automation (ICRA), 2020

R. Sugimoto, M. Gehrig, D. Brescianini, D. Scaramuzza, "Towards Low-Latency High-Bandwidth Control of Quadrotors using Event Cameras", IEEE International Conference on Robotics and Automation (ICRA), 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.

NCCR Robotics

robotics Swiss National Centre of Competence in Research

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

EPFL ETH zürich Universität Zürich[UZH] USI/SUPSI Istituto Dalle Molle di studi sull'intelligenza artificiale IDSIA u b UNIVERSITÄT BERN Empa Materials Science and Technology FNSNF Fonds national suisse Schweizerischer Nationalfonds Fondo nazionale svizzero Swiss National Science Foundation

The National Centres of Competence in Research are a research instrument of the Swiss National Science Foundation.