

## NCCR Robotics lab receives € 2 Million for research on autonomous drones

The European Research Council awards Davide Scaramuzza a “Consolidator Grant” for a project that will use innovative cameras to improve the performance of flying robots in rescue operations.



Davide Scaramuzza is among the winners of the 2019 Consolidator Grants, awarded by the European Research Council. Scaramuzza, who heads the Robotics and Perception group at the University of Zurich and leads the Rescue Robotics Grand Challenge within NCCR Robotics, will receive 2 million Euros over 5 years for developing his project on “**Agile Flight: Low-latency Perception and Action for Agile Vision-based Flight**”.

The ERC Consolidator Grants are awarded to researchers of any nationality, working in EU member states or associated countries of the Horizon 2020 scheme, with 7 to 12 years of experience since completion of their PhD, a scientific track record showing great promise and an excellent research proposal. The goal is to help already successful researchers to consolidate their independence by growing their research team. The name of the 2019 winners were announced today by the ERC.

### Toward drones that can do more in less time

Scaramuzza's project will tackle the problem of how to make drones fly autonomously and robustly. In particular, the goal is to make autonomous drones fly better than human pilots by using only onboard cameras and computation.

Current commercial drones are completely blind: they navigate using GPS or a human pilot, which prevents their use for search-and-rescue operations in complex environments. “This is a scenario that is very close to me personally since I come from the center of Italy, which has been heavily affected by earthquakes over the past centuries” Scaramuzza explains. “If you look at the performance of today's autonomous drones in such scenarios, they are still far from human pilot performance in terms of speed, versatility, and robustness”. Speed is particularly important: since battery life is unlikely to improve over the next years, we need to make drones faster so that they can accomplish more in a given time. But to do so, we need to

use faster sensors and algorithms. Scaramuzza's proposal is to use event cameras, a novel high-speed sensor with much lower latency (the delay between the moment when an image is captured and the moment when it is actually displayed) and higher dynamic range than standard cameras; however, these cameras function very differently than conventional cameras, so that new algorithms must be developed for them.

The ERC grant will allow Scaramuzza's group to continue and expand work on such algorithms and on other aspects of vision-based autonomous flight for drones – a line of research that has also a key role in NCCR Robotics' search-and-rescue research programme.

## More information on the ERC Consolidator Grants

Programme description

Full list of the 2019 winners

## Media contacts

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## NCCR Robotics

The Swiss National Center 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.

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