



Aerial Robotics for industrial inspection, maintenance & transportation

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European Robotics Forum 2018, Tampere (Finland)

Organizers

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General Electric Inspection Robotics

Topic Groups organizers

The Workshop is organized by the euRobotics Topic Groups “Aerial Robotics” and “Inspection and Maintenance”

Motivation and objective

The Workshop is motivated by the growing interest of aerial robotics for inspection, maintenance and transportation that has been pointed out by the industrial demand, new projects and attendance to previous events including the ERF 2016 and 2017 Workshops on Aerial Robotics for Inspection and Maintenance. This year, in addition of inspection and maintenance, we will also target transportation due to the strong industrial interest.

The organizers and speakers are members of companies, including technology providers and end-users, universities and research institutions with extensive expertise in aerial robotics for inspection, maintenance and transportation.

The already existing technology and applications will be presented, including new technologies developed in European H2020 and other projects. Moreover, the main gaps and barriers for new industrial applications will be examined. Particularly, both technology requirements, costs and regulatory barriers will be analysed.

Approach

The workshop will have 13 short presentations dealing with technologies and applications. The presentations will include four H2020 projects dealing with Aerial Robotics for Inspection and maintenance: AEROARMS (AErial Robotic system integrating multiple ARMS and advanced manipulation capabilities for inspection and maintenance), AEROWORKS (Collaborative Aerial Workers), AEROBI dealing with bridge inspection, and the new project HYFLIERS (“HYbrid FLying rolling with snake aRm robot for contact inspection)

We will discuss the requirements, existing systems and gaps in a brainstorming dealing with industrial plant inspection, infrastructure inspection and transportation. The attendants will also have the opportunity to introduce new technologies and applications in the Brain storming sessions.

Program

14:00 Introduction

14: 10 "Inspection of Large Storage Tanks using Robotic Systems in Oil Refineries",
Mauricio Calva (Chevron)

14:20 "Technologies for aerial robotic industrial inspection, maintenance and transportation",
Anibal Ollero (Universidad de Sevilla)

14: 30 "Manipulation from a hovering helicopter for maintenance tasks: modelling and
control", Konstantin Kondak (DLR)

14: 40 "Perception and map building for Inspection with aerial robots", Alberto Sanfeliu
(Polytechnic University of Catalonia)

14:50 "Force application in aerial manipulation. Challenges and perspectives in infrastructure
inspection", Matteo Fumagalli (Aalborg University of Copenhagen)

15: 00 "Bioinspired drones for infrastructures inspection and maintenance", Mirko Kovac
(Imperial College)

15: 10 Brainstorming 1: Gaps for industrial applications and challenges

15: 45 Coffee Break

16: 15 "Aerial Robotics in industrial use for inspection, maintenance and transportation:
industrial demands, technologies and existing barriers", Ekkehard Zwicker (General
Electric Inspection Robotics)

16: 25 "HYbrid FLYing rolling with snake aRm robot for contact inSpection: The HYFLIERS H2020
project", Juha Röning (University of Oulu)

16: 35 "Fast Autonomous Flight Near Structures in Large Indoor Environments", Sven Behnke
(University of Bonn)

16:45 "Last-centimeter drone delivery", Dario Floreano (EPFL)

16:55 "Moving-Mass-based Adaptive VPC for ICE Powered Transportation Quadcopter",
Stjepan Bogdan (University of Zagreb)

17:05 "Multiple drone imaging", I. Pitas (Aristotelio Panepistimio Thessalonikis)

17:15 "Vision-based Agile Flight for Infrastructure Inspection", Davide Scaramuzza (University
of Zürich)

17:25 Brainstorming 2: Gaps for industrial applications and challenges

17: 35 Conclusions

17:45 End of the Workshop

Posters, preparation of the Workshop, information and follow up.

Participants having developed new applications and technologies will be invited to present posters and introduce their results in any of the Brainstorming slots. The participants will be also invited in these Brainstorming slots to analyse gaps and technologies requiring further development.

Deadline for the presentation of a summary of the contents of the posters: February 25, 2018.

Information of the H2020 projects being presented in the Workshop, and publications, can be found in:

<http://aeroarms-project.eu>

<http://www.aeroworks2020.eu/>

<http://www.aerobi.eu/>

<http://www.oulu.fi/bisg/hyfliners>

All the presentations will be collected and made available to the participants and the Aerial Robotics and Inspection and Maintenance topics groups