ID2Move BELGIAN ACADEMIC SEMINAR
AUTONOMOUS SYSTEMS
7 JUNE 2019 - NIVELLES

Rue de l'Industrie 22, 1400 NIVELLES -- https://goo.gl/maps/Q7vWLsHm4pz

ID2Move is a collaborative, transdisciplinary project located in the South of Nivelles and initiated by In BW (Intercommunale Brabant Wallon) and the Université Libre de Bruxelles. The project aims at creating a Competence Centre (University Incubator) for Innovative Startups in the field of **Autonomous Systems.** After a launch in 2019, the ambition is to become quickly a reference in the Walloon Region and beyond (Europe and the world). The project will focus on **payload** with added-value applications, while keeping a strong interest in the **carrier** (UAV, Airships Balloons, Autonomous Cars UGV, Underwater Drones USV, etc.) and the **regulatory and societal impacts** (strong transdisciplinary approach).

We have the pleasure to invite all interested parties to our first Academic Seminar on 07 June 2019. This one-day seminar will offer the opportunity to participate to keynotes, short talks and open debates, network with main Belgium's university research groups active in Autonomous Systems, discover the ID2Move project and visit its infrastructure, and participate to drone demonstrations and discover innovative research and startup projects.

Whereas the seminar will focus on academic research, it is **open to all parties** (academic, private, public, from Belgium and abroad), by invitation only.

Thank you for **confirming your attendance** on https://www.eventbrite.com/e/belgian-academic-seminar-on-autonomous-system-tickets-60809631244 .

Venue : CAP Innove, Rue de l'Industrie 22, 1400 NIVELLES - https://goo.gl/maps/Q7vWLsHm4pz

Free participation with prior registration (with a no-show fee of 20 EUR).
The organisation does not provide accommodation nor travel advise ("on your own").

More on the ID2Move project : https://famousclothes.egnyte.com/dl/s85xN1YNpG

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Programme Summary (working language will be English with robotic translation into French).
Final programme subject to change. Focus of the seminar is on academic content.
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10:00	30'	**Registration and Welcome Coffee** in Nivelles -- Visit of ID2Move infrastructure
10:30	15'	**Plenary Session introduction**
10:45	45'	**Academic Keynote by Prof. Lorenzo Marconi (Università di Bologna, Italy)** Title : "Aerial robotics: challenges and opportunities outside the lab"
11:30	4x15'	**Short talks** by Skeyes, Skywin, ID2Move and Theodorus funds
12:30	60'	**Lunch**, networking and live demonstration of autonomous systems
13:30	120'	**Workshops** with the presentation of projects relating to autonomous systems by Belgium's research groups (with parallel sessions depending on the number of projects)
15:30	90'	**Academic talks on innovative autonomous system solutions by Belgian universities research institutes** ➢ "RAGI: the artificial intelligence that guides you in a complex building", by Dr. Ir. François Van Lishout (Montefiore Institute, ULiège) ➢ "Distributed electric propulsion for (small and large) fixed wing UAVs", by Pr. Patrick Hendrick (Aero-Thermo-Dynamics (ATM), ULB) ➢ "Towards a "robonumerization" of the construction processes: challenges and opportunities for drones", by Sébastien Goessens, Teaching assistant and Phd Student (Institute of Mechanics, Materials and Civil Engineering (IMMC), UCL) ➢ "Artificial Intelligence: a social, legal and regulatory analysis" by Jean-Marc Van Gyseghem, Research director (Research Centre in Information, Law and Society (CRIDS), UNamur) ➢ "Foret inventory with drones", by Pr. Philippe Lejeune, with A. Michez, N. Latte, and S. Bauwens (Terra Research Center, Gembloux Agro-Bio Tech (GxABT), ULiège) ➢ "Embedded System for Computer Vision and Video surveillance using Deep Learning Technologies", by Pr. Sidi Mahmoudi (Faculté Polytechnique FPMs, UMons) **Closing panel and open debate with academic members**
17:00	60'	**Goodbye drink and networking**

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Aerial robotics: challenges and opportunities outside the lab
Academic Keynote by Prof. Lorenzo MARCONI, Università di Bologna

Abstract

The use of drones in real life environments often unveils challenging control problems that are hardly imaginable within an indoor flight arena and inspires new research areas. The main goal of the talk is indeed to present research activities involving unmanned aerial vehicles motivated by their use in relevant application contexts outside the lab. Two main application areas are thoroughly presented in the talk. The first deals with aerial inspection of infrastructures requiring the physical contact between the drone and the inspected surface. Besides presenting industrial needs and economic impacts in the field, the talk will address specific research challenges pertaining to structural properties of the aerial robot and of the onboard control required to face dramatically different aerial scenarios.

The second is about the use of drones for search and rescue applications in hostile environments, with a specific focus on quick localisation of victims buried by avalanches. The talk will report ongoing research activities carried out at European level jointly with professional search and rescue teams, showing the technological challenges raised in the field and the potentials of automatic control algorithms that are revolutionising actual search manual strategies.

Besides addressing technical research problems, the talk will also touch aspects about social innovation and financial sustainability of aerial technologies in certain fields, by identifying "orphan markets" in which control technologies can play a decisive role.

BioSketch

Lorenzo Marconi graduated in 1995 in Electrical Engineering from the University of Bologna. Since 1995 he has been with the Department of Electronics, Computer Science and Systems at the University of Bologna, where he obtained his Ph.D. degree in March 1998. Since 1999 he has been an Assistant Professor in the same Department where is now Full Professor since January 2016.

He has held visiting positions at and collaborations with various academic/research international institutions. He is co-author of more than 250 technical publications on the subject of linear and nonlinear feedback design published on international journals, books and conference proceedings. He is also co-author of three international monographs.

In 2005, he has been awarded jointly by Elsevier and the International Federation of Automatic Control (IFAC) for the best paper published in the period 2002-2005 on "Automatica". He is also the recipient of the 2014 IEEE Control Systems Magazine Outstanding Paper Award for the best paper published on the magazine in the period 2012-2013. He is the recipient of the 2018 O. Hugo Schuck Best Paper Award assigned by the American Automatic Control Council for the best paper presented at the 2017 American Control Conference. He is Fellow of IEEE for "contributions to feedback design of nonlinear systems and unmanned aerial vehicles". He is the Principal Investigator of the EU projects AiRobots (2010-2013), SHERPA (2013-2017), AirBorne (2018-).

He is now serving as Senior Editor of IEEE Transaction on Automatic Control (Associate Editor from 2009 to 2013) and Associate Editor of IEEE Control Systems Technology (2012-) and Automatica (2014-).

His current research interests include nonlinear control, output regulation and stabilisation of nonlinear systems, control of autonomous aerial vehicles, robust control, hybrid systems.

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CALL FOR ABSTRACTS

ID2Move is organizing on 07 June 2019 a transdisciplinary academic seminar on Autonomous Systems in Nivelles. All Belgium's and foreign research groups are invited to present their research projects related to Autonomous Systems during a workshop from 13:30 to 15:30 (possible parallel sessions depending on the number of submitted projects).

Submission Deadline : 01 June 2019

Please provide us with :
- The attached project description template filled-in (ppt)
  or available here : https://famousclothes.egnyte.com/dl/vDZqd0RHWb
  (one-pager description of the project to be distributed to the participants)
- If applicable, your need for demonstration zones
  - Indoor (24l x 12w x 8h)
  - Outdoor (subject to the respect of current flight regulations)
- If applicable, copies of additional papers / documentation to be distributed to the participants

By providing this information, the applicant authorizes its copy and distribution to the participants of the seminar and the publication on the event website.

Scientific Committee : Prof. Patrick Hendrick (President, ULB, patrick.hendrick@ulb.ac.be), Olivier Gillieaux (ULiège, o.gillieaux@uliege.be), Prof. Emanuele Garone (ULB, egarone@ulb.ac.be), Sébastien Goessens (UCL, sebastien.goessens@uclouvain.be), Patrick Mascart (ID2Move, patrick.mascart@capinnove.be)

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