

Franck RUFFIER

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h-index: 14 ; 709 Citations (Sum of the Times Cited, Web of Science, May 2018) www.researcherid.com/rid/G-4797-2013
h-index: 20 ; 1720 Citations (Google Scholar, May 2018) https://scholar.google.fr/citations?user=H_ylbpgAAAAJ&hl

University Curriculum:

- Feb. 2013: Defense of the “Accreditation to supervise research” (**Habilitation, HDR**), Aix-Marseille University
Sept. 2004: **PhD** from Grenoble INP
Thesis prepared at CNRS, Marseille within the Biorobotics Dpt. advised by N. Franceschini
PhD Thesis Title: **Biomimetic Autopilot**
Sept. 2000: **Engineer** from ESISAR / Grenoble INP (Automatic Control, Computer Sciences, Electronics)

Professional Experience:

- Since 2015: Head of the UAV Working group of French Research Group in Robotics with P. Morin
2014-2017: Nominated member of “IFAC Technical Committee, TC 4.3 Robotics”
2013: Co-Founder of the “Marseilles’ Flying Arena”, www.marseilles-flying-arena.eu
Feb-March 2012: Visiting Scientist invited by Prof. Michael Dickinson, Univ. of Washington, Seattle, **USA**
2012-2016: Co-Head of the Biorobotics Research Group at the Institute of Movement Science, Marseille
2009-2013: EU CURVACE project on the realization of an artificial compound eye www.curvace.org
April-May 2008: Visiting Scientist invited by Dr. T. Mukai at RIKEN, Nagoya, **Japan**
Since 2005: CNRS Research Scientist at the Institute of Movement Science, Marseille
2004-2005: PostDoc within the Biorobotic Research Group (headed by N. Franceschini), Marseille
1999-2000: Exch student at Lund Univ where I have passed a French Master (DEA) in Automatic Control, **Sweden**

Awards and Prizes:

- 2017: CNRS Excellence Prize for Research and Mentoring (PEDR)
2016: Expert & Ruffier (2015) *doi:10.1088/1748-3182/10/2/026003*
Article selected in the “*Bioinspiration & Biomimetics Highlights of 2015*” as well as in the 10 papers collection of the “*Bioinspiration & Biomimetics 10th anniversary*”
2008-13-15: 3 of my PhD students, J. Serres, F. Expert and G. Sabiron, won 4 prizes for their PhD thesis.
2012: CNRS Excellence Prize for Research (PES)
2003-2011: 2 best paper awards at IEEE International Conferences – IEEE ICAR 2003 & IEEE Sensors 2011 –
2004: 1 paper nominate (Best vision paper finalist) at IEEE ICRA 2004
2005: « La Recherche » Prize with N. Franceschini and S. Viollet (French-speaking intern. research prize)

Total number of publications in intern. Journals and referred Proceedings (Web of Science): 58

Total number of patent filed: 9

10 most significant publications:

G. Portelli, J. R. Serres & **F. Ruffier** (2017)

“Altitude control in honeybees: joint vision-based learning and guidance”
Scientific Reports 7, Article number: 9231, doi:10.103/s41598-017-09112-5

J.R. Serres, F. Ruffier (2017)

“Optic flow-based collision-free strategies: From insects to robots”
Arthropod Structure & Development doi:10.1016/j.asd.2017.06.003.

S. Mafrica, A. Serval, **F. Ruffier** (2016)

“Minimalistic optic flow sensors applied to indoor and outdoor visual odometry on a car-like robot”
Bioinspiration and Biomimetics, 11, 066007 doi:10.1088/1748-3190/11/6/066007.

G. Sabiron, T. Raharijaona, L. Burlion, E. Kervendal, E. Bornschlegl and **F. Ruffier** (2015)

“Suboptimal lunar landing GNC using nongimbaled optic-flow sensors”
IEEE Transactions on Aerospace and Electronic Systems (TAES), Vol. 51(4), doi:10.1109/TAES.2015.130573

F. Expert and **F. Ruffier** (2015)

“Flying over uneven moving terrain based on optic-flow cues without any need for reference frames or accelerometers”
Bioinspiration & Biomimetics, 10, 026003 (IOP) doi: 10.1088/1748-3182/10/2/026003

J.R. Serres, F. Ruffier (2015)

“Biomimetic autopilot based on minimalistic motion vision for navigating along corridors comprising U-shaped and S-shaped turns”
Journal of Bionic Engineering 12:47-60 doi: 10.1016/S1672-6529(14)60099-8

D. Floreano, R. Pericet-Camara, S. Viollet, **F. Ruffier**, A. Brückner et al. (2013) (IF: 9,8)

“Miniature curved artificial compound eyes”
Proceedings of National Academy of Sciences of USA, PNAS, 110(23):9267-72 doi: 10.1073/pnas.1219068110

F. Expert, S. Viollet, **F. Ruffier** (2011)

“Outdoor field performances of insect-based visual motion sensors”
Journal of Field Robotics, Wiley, 28(4):529-541 doi: 10.1002/rob.20398/abstract

N. Franceschini, **F. Ruffier**, J. Serres (2007) (IF: 10,5)

“A bio-inspired flying robot sheds light on insect piloting abilities”
Current biology, 17(4):329-335 doi: 10.1016/j.cub.2006.12.032

F. Ruffier, N. Franceschini (2005)

“Optic flow regulation: the key to aircraft automatic guidance”
Robotics and Autonomous Systems, Vol. 50, No 4, 31 March 2005, pp. 177-194 doi:10.1016/j.robot.2004.09.016

PhD Students

2 Current PhD Students:

- Victor Boutin (Dir. L. Perrinet, Superv. F. Ruffier), 2016-..., *1 peer-reviewed conference paper (more in Prep.)*
- Vladislav Tempez (Dir. JB Mouret, Co-Dir. F. Ruffier), sept 2018-...

7 Previous PhD Students:

- Fabien COLONNIER, PhD started in Nov. 2012 & defended on April 2017 (Dir. S. Viollet, Co-Dir. F. Ruffier), *4 journal articles, 2 peer-reviewed conf. papers, now Postdoc at Temasek Labs, Nat. University of Singapore,*
- Stefano MAFRICA, PhD started in April 2013 & defended on July 2016 (Dir. F. Ruffier, Co-Superv. A. Serval), *2 journal articles, 2 peer-reviewed conf. papers, 2 patents filed, now R&D Engineer at PSA Peugeot Citroën Group,*
- Guillaume SABIRON, PhD started in Oct. 2011 & defended on Nov. 2014 (Dir. F. Ruffier), **2015 ISAE-SUPAERO Foundation PhD award**, *now Research Engineer at IFPEN France, 2 journal articles and 3 peer-reviewed conf. papers,*
- Fabien EXPERT, PhD started in Oct. 2009 & defended on Oct. 2013 (Dir. F. Ruffier), **2014 G. Giralt European PhD award in Robotics (eu-Robotics) & 2013 2nd Prize (ex aequo) of the French Robotics Research Association (GDR-Robotique)**, *now CTO at Wandercraft France, 5 journal articles, 6 peer-reviewed conf. papers, 2 patents filed & awarded,*
- Frédéric ROUBIEU, PhD started in Jan. 2010 & defended on July 2013 (Dir. S. Viollet, Co-Dir. F. Ruffier), *CEO of Baby Montessori, 3 journal articles and 3 peer-reviewed conference papers,*
- Geoffrey PORTELLI, PhD started in Oct 2006 & defended on Sept. 2011 (Dir N. Franceschini, Superv. F. Ruffier), *now Postdoc at Biovision team, Inria Sophia Antipolis France, 3 journal articles,*
- Julien SERRES, PhD started in Oct 2003 & defended on July 2008 (Dir N. Franceschini, Superv. F. Ruffier), **2008 2nd Prize (ex aequo) of the French Robotics Research Association (GDR-Robotique)**, *now MCF at Aix-Marseille University, France, 3 journal articles and 3 peer-reviewed conference papers,*

6 research grants as Principal Investigator (PI) since 2013

- PI for the AVision project (2017-2017), MI CNRS - *Défi Instrumentation aux Limites*. The goal of the AVision project is to capture the visual cues used by birds, project together with CEFE, Montpellier and Technosmart, Italy (budget: 14k€).
- PI for the AviMod project (2016-2017), MI CNRS - PEPS ExoMod. The goal of the AviMod project is to better understand visuomotor mechanism of birds, project with CEFE, Montpellier and Lund Univ. (budget: 2x20k€).
- PI for the PhD thesis under CIFRE industrial research agreement (including support contract) (Avril 2013 – Avril 2016) in the framework of the open-lab with PSA Peugeot Citroën on the bio-inspired sensors for automotive (budget: 160k€).
- PI for the *Quadmorphing* project with Carnot STAR Institute (2015), (budget: 75k€ including the financial support of an engineer during 10 months).
- PI for the PhD project with NPI-ESA (European Space Agency) entitled: Design of a bio-inspired autopilot for safe and soft lunar landing, (01/09/11 - 01/09/14) (budget: 180k€).
- PI for the OptiLander project (04/11 - 04/13), PEPS CNRS INSIS. The goal of the Optilander project is to simulate a moon landing based on optic flow measurement in collaboration with ONERA (budget: 20k€).

Co-PI or Workpackage responsibilities in 6 other recent research projects (since 2013)

- Co-PI for the « Locabots » project (2017), PEPS INS2I OCAAA on the control and the localization of aerial and terrestrial robotic system with Prof. Maan El Badaoui El Najjar (Crystal Lab, Lille) (budget 20keuros plus the short-term contract of an engineer at ISM Marseille).
- Co-PI for the PhD thesis including its support contract (2016-2019) COFUND H2020 (Doc2Amu program) on the capture of the hand movement by a miniature drone with Laurent Perrinet (budget: 140k + 60k€).
- Co-PI for the Maturation project entitled « Eye-ring » (01/07/2015 - 31/12/2016) with *Technivue* startup, project funded by SATT-SE (budget de 110k€) (PI : S. Viollet, F. Ruffier).
- Co-PI for the ISM chapter called « Flying Arena » of Robotex-Equipex project (budget of 350k€) part of the French national program "Investing for the Future": A flying arena was equipped with 17 Vicon cameras for trajectory monitoring of miniature drones. The regional council funded also such (100k€).
- Responsible for the robotic Workpackage of the IRIS project (01/01/2013 - 30/06/2016), ANR (French National Agency for Research) ; Project obtained in 2012 with the university of Burgundy, the CEA (Nano-Innov') and the NOVADEM startup (PI: S. Viollet) (budget : 350k€ for the ISM part).
- Responsible for the robotic Workpackage of ICT/FET open European project entitled CURVACE (2010 - 2013), Conception and realization of an artificial compound eyes for mobile and aerial robots (ISM PI: S. Viollet); Project obtained in 2009 in collaboration with EPFL (Project Coordinator: D. Floreano), Fraunhofer Institute of Jena and the university of Tübingen (budget of 350k€ for the ISM part).