

List of publications – Julien Dupeyroux (v2020)

Journal papers

[3] Dupeyroux, J., Serres, J., and Viollet, S. (2019). *Antbot: a six-legged walking robot able to home like desert ants in outdoor environments*. Science Robotics, vol. 4 (eaau0307).

DOI: <https://www.doi.org/10.1126/scirobotics.aau0307>

IF: **19.400** (JCR rank 1/26 in Robotics).

[2] Dupeyroux, J., Viollet, S., and Serres, J. (2019). *Polarized skylight-based heading measurements: a bio-inspired approach*. Journal of the Royal Society Interface, vol. 16, no. 150 (20180878).

DOI: <https://www.doi.org/10.1098/rsif.2018.0878>

IF: **3.224** (JCR rank 16/69 in Multidisciplinary Sciences).

[1] Dupeyroux, J., Viollet, S., and Serres, J. (2019). *An ant-inspired celestial compass applied to autonomous outdoor robot navigation*. Robotics and Autonomous Systems, vol. 117 (40-56).

DOI: <https://www.doi.org/10.1016/j.robot.2019.04.007>

IF: **2.928** (JCR rank 11/26 in Robotics, and 45/134 in Computer Science & Artificial Intelligence).

Another journal paper is currently being produced and will present the literature review on hexapod robots that I produced during my Ph.D. This paper is expected to be submitted by the end of 2020.

[1] Dupeyroux, J., Brodoline, I., Viollet, S., and Serres, J. *Hexapod walking robots: 50 years of development towards fully autonomous insectoids*.

International conferences

[8] Dupeyroux, J., Viollet, S., and Serres, J. (2020). *Insect-inspired omnidirectional vision for autonomous localization on-board a hexapod robot*. 28th Mediterranean Conference on Control and Automation, **IEEE** (893-898), Saint Raphaël, France.

DOI: <http://www.doi.org/10.1109/MED48518.2020.9183091>.

[7] Dupeyroux, J., Viollet, S., and Serres, J. (2020). *Bio-inspired celestial compass yields new opportunities for urban localization*. 28th Mediterranean Conference on Control and Automation, **IEEE** (893-898), Saint Raphaël, France.

DOI: <http://www.doi.org/10.1109/MED48518.2020.9183367>.

[6] Dupeyroux, J., Serres, J., and Viollet, S. (2019). *AntBot: a fully insect-inspired hexapod homing like desert ants*. 4th International Conference on Invertebrate Vision (ICIV 2019), Bäckaskog Castle, Sweden.

URL: <https://hal-amu.archives-ouvertes.fr/hal-02272156v1>

Acceptance rate: **25%**.

[5] Dupeyroux, J., Serres, J., and Viollet, S. (2018). *A hexapod walking robot mimicking navigation strategies of desert ants Cataglyphis*. Conf. on Biomimetic and Biohybrid Systems (145-156), Paris, France. Springer, Cham.

DOI: https://www.doi.org/10.1007/978-3-319-95972-6_16

[4] Dupeyroux, J., Boutin, V., Serres, J. R., Perrinet, L. U., and Viollet, S. (2018). *M2APix: A bio-inspired auto-adaptive visual sensor for robust ground height estimation*. Circuits and Systems (ISCAS), 2018 **IEEE** International Symposium on (1-4), Florence, Italie.

DOI: <https://www.doi.org/10.1109/ISCAS.2018.8351433>

Acceptance rate: **53%**.

[3] Dupeyroux, J., Diperi, J., Boyron, M., Viollet, S., and Serres, J. (2017). *A novel insect-inspired optical compass sensor for a hexapod walking robot*. Intelligent Robots and Systems (IROS), 2017 **IEEE/RSJ** International Conference on (3439-3445), Vancouver, Canada.

DOI: <https://www.doi.org/10.1109/IROS.2017.8206183>

Acceptance rate: **45%**.

[2] Dupeyroux, J., Dipéri, J., Boyron, M., Viollet, S., and Serres, J. (2017). *A bio-inspired celestial compass applied to an ant-inspired robot for autonomous navigation*. Mobile Robots (ECMR), 2017 **IEEE** European Conference on (1-6), Paris, France.

DOI: <https://www.doi.org/10.1109/ECMR.2017.8098680>

[1] Dupeyroux, J., Passault, G., Ruffier, F., Viollet, S., and Serres, J. (2017). *Hexabot: a small 3D-printed six-legged walking robot designed for desert ant-like navigation tasks*. IFAC World Congress 2017 (1628-1631), Toulouse, France.

URL: <https://hal-amu.archives-ouvertes.fr/hal-01643176/>

National peer-reviewed journal papers (France)

[2] Viollet, S., Dupeyroux, J., and Serres, J. (2020). *Conception et réalisation d'un robot bio-inspiré : le robot fourmi AntBot*. Techniques & Culture, vol. 73, p. 128-141.

URL: <https://journals.openedition.org/tc/13557>

[1] Dupeyroux, J., Viollet, S., and Serres, J. (2020) *AntBot : un robot qui s'oriente comme une fourmi - Applications à la navigation à vue sans GPS ni magnétomètre*. Techniques de l'Ingénieur (Réf : IN236).

URL: <https://www.techniques-ingenieur.fr/base-documentaire/innovation-th10/conception-durable-inspiree-du-vivant-le-biomimetisme-42616210/antbot-un-robot-qui-s-oriente-comme-une-fourmi-in-236/>

National conferences (France)

[1] Dupeyroux, J., Viollet, S., and Serres, J. (2017). *Providing an autonomous hexapod walking robot with the ability to reorientate : application of a novel ant-inspired celestial compass*. Journées Jeunes Chercheurs en Robotique 2017, Bayonne, France.

https://jjcr2017.sciencesconf.org/data/pages/JJCR17_DUPEYROUX_Julien.pdf

Patents

[1] Dupeyroux, J., Monnoyer, J., Serres, J., and Viollet, S. *Dispositif de détection du cap d'un véhicule par détection de photons polarisés linéairement*. Patent published under no. FR3086088A1.

https://worldwide.espacenet.com/publicationDetails/biblio?CC=FR&NR=3086088A1&KC=A1&FT=D&ND=1&date=20200320&DB=&locale=en_EP#

Science popularization

[3] Dupeyroux, J., Viollet, S., and Serres, J. (2019). *AntBot is able to go home like desert ants*. The Science Breaker.

DOI: <https://doi.org/10.25250/thescbr.brk252>

[2] Dupeyroux, J. (2019). *Ce petit robot qui navigue sans GPS comme une fourmi*. The Conversation.

<https://theconversation.com/ce-petit-robot-qui-navigue-sans-gps-comme-une-fourmi-116700>

[1] Dupeyroux, J., Viollet, S., and Serres, J. (2019). *AntBot : un robot fourmi autonome qui navigue sans GPS*. La Lettre de Grand Luminy Technopôle, no. 100, p. 12.

https://www.grandluminy.com/sites/default/files/lettre-100mai-19_grandluminy.pdf

Awards and honours

[2020] Winner of the 7th International Bionic Award.

[2020] Winner of the PhD Prize of Aix-Marseille University.

[2020] 2nd Best PhD Prize of the French Research Robotics Network (CNRS).

[2019] Winner of the IoT Industry and Services Prize, organized by Embedded France.

[2018] Winner of the Best Paper Award at the 2018 Conference on Biomimetic and Biohybrid Systems.

[2017] Winner of the Best Paper Award at the 2017 European Conference on Mobile Robotics (ECMR).

[2014] Winner of a merit scholarship from the University of Cergy-Pontoise (UCP), France.

Press coverage (selected)

Science - *This ant-inspired robot can navigate better than civilian GPS.*

Nature Electronics - *AntBot makes its own way home.*

Wired - *A 6-legged robot stares at the sky to navigate like a desert ant.*

Digital Trends - *Ant-inspired walking robot navigates without GPS by using polarized light.*

New Scientist - *Robot mimics desert ants to find its way home without GPS.*

de Volkskrant - *Robot weet de weg zonder gps dankzij woestijnmier.*

Le Monde - *AntBot, un robot autonome inspiré par des fourmis du désert.*

Challenges, Reuters - *Un robot à pattes qui a le sens de l'orientation.*

Les Echos - *Un capteur peu coûteux pour naviguer sans GPS.*

France Inter - *C'est une innovation marquante: ce robot-fourmi s'oriente sans GPS.*

CNRS - *Le premier robot à pattes qui se déplace sans GPS.*

Cité des Sciences et de l'Industrie - *Robot à pattes sans GPS.*

La Provence - *Marseille : le robot inspiré de la fourmi du désert.*

La Marseillaise - *Un robot qui se déplace sans GPS conçu à Marseille.*

Futura Science - *Voici Antbot, un robot inspiré des fourmis et qui se déplace sans GPS.*

Science et Avenir - *Ce robot se déplace en se repérant comme les fourmis du désert.*

Science et Vie - *Ce robot réussit à s'orienter grâce à la lumière du soleil.*

Trust My Science - *AntBot: le tout premier robot évoluant sans GPS pour se repérer.*