Johann Laconte

Ph.D. Student, Post-Doc Applicant

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Updated on June 17, 2021

Research Interests: Robotics; Applied Mathematics; Traversability; State Estimation; Mapping.

Education

2018–2021 **Ph.D. in Robotics**, *Clermont Auvergne University (UCA), France; Laval University, Canada*.
Development of a theoretical framework for meaningful risk assessment in occupancy grids.
Supervisors: Romuald Aufrère (UCA), François Pomerleau (Laval University), Roland Chapuis (UCA), Christophe Debain (National Research Institute for Agriculture, Food and the Environment)

2017–2018 **Master Degree in Robotics**, *Clermont Auvergne University*.
Ranked 1/24 of the class.

2015–2018 **Engineering Degree in Computer Science and Modeling**, *Institut Supérieur d'Informatique, de Modélisation et de leurs Applications*.
Ranked 2/120 of the class.

Professional activities

2018–2020 **Reviewing Services**.
Reviewing of 4 conference papers (ICRA, IROS, ITSC) and 1 journal paper (RA-L).

2018–2020 **Organization of seminars**.
Organization of various seminars in the research department.

2020 **Research Internship**, *Laval University*, Quebec City, Canada, *2 Months*.
Collaboration with the Northern Robotics Laboratory (Norlab), leading to the publications of Baril *et al.* [3] and Vaidis *et al.* [7].

2019 **Winter School**, *National Institute for Research in Digital Science and Technology (INRIA)*, Sophia Antipolis, France, *1 Week*.
Winter school covering the basics in both mobile and manipulative robotics.

2018 **Research Internship**, *Laval University*, Quebec City, Canada, *5 Months*.
Investigation of the measurements bias coming from a light detection and ranging (lidar) sensor. Modeling of the return waveform and design of an experimental setup. Lead to the publication of **J. Laconte** *et al.* [2].

2017 **Internship**, *Thales*, Elancourt, France, *5 Months*.
Evaluations and improvements of state-of-the-art LIDAR Simultaneous Localization And Mapping (SLAM) algorithms.

2016–2018 **Robotics Competitions**.
Took part in several national and international robotics competitions (Robot Challenge, French Robot Cup, *La Nuit du Hack*, *Reconnaissance des Formes et Intelligence Artificielle*)

Grants and Distinctions

2020 **Best Robot Vision Paper Award**, *Conference on Robots and Vision (CRV)*.
For the paper: "Evaluation of Skid-Steering Kinematic Models for Subarctic Environments"

2020 **Finalist for Best Student Paper Award**, *International Conference on Control, Automation, Robotics and Vision (ICARCV)*.
For the paper: "An Information Driven Approach For Ego-Lane Detection Using Lidar And OpenStreetMap"

2018 **Doctoral Research Grant**, *Innovative Mobility: Smart and Sustainable Solutions (IMOBS3) Program*.

2018 **Graduate Research Grant**, *WOW! Wide Open to the World Program from I-Site CAP2025 project.*

Languages

English	Fluent, TOEIC certificate	**French**	Native Speaker
Chinese	Basic Level, HSK2 certificate	**German**	Notions

Teaching

2018–2021 **Digital Signal Processing**, *Graduate course.*
Graduate course about Discrete Fourier Transform, Z transform, signal filtering and their applications.

2018–2021 **Control Theory**, *Graduate course.*
Graduate course about Laplace transform, regulation, modeling and analysis of continuous systems.

2018–2021 **Projects Supervision**, *Graduate students.*
Supervision of four robotics graduate projects of 60 or 120 hours per person.

2020 **Internship Mentoring**, *Ph.D. candidate student.*
Mentoring of a graduate student working on path-planning algorithms.

Scientific Publications

[1] **J. Laconte**, C. Debain, R. Chapuis, F. Pomerleau, and R. Aufrère, "Lambda-field: A continuous counterpart of the bayesian occupancy grid for risk assessment," in *2019 International Conference on Intelligent Robots and Systems (IROS)*, 2019, pp. 167–172.

[2] **J. Laconte**, S.-P. Deschênes, M. Labussière, and F. Pomerleau, "Lidar measurement bias estimation via return waveform modelling in a context of 3d mapping," in *2019 International Conference on Robotics and Automation (ICRA)*, IEEE, 2019, pp. 8100–8106.

[3] D. Baril, V. Grondin, S.-P. Deschênes, **J. Laconte**, M. Vaidis, V. Kubelka, A. Gallant, P. Giguere, and F. Pomerleau, "Evaluation of skid-steering kinematic models for subarctic environments," in *2020 17th Conference on Computer and Robot Vision (CRV)*, IEEE, 2020, pp. 198–205.

[4] A. Kasmi, **J. Laconte**, R. Aufrère, D. Denis, and R. Chapuis, "End-to-end probabilistic ego-vehicle localization framework," *IEEE Transactions on Intelligent Vehicles*, 2020.

[5] A. Kasmi, **J. Laconte**, R. Aufrère, R. Theodose, D. Denis, and R. Chapuis, "An information driven approach for ego-lane detection using lidar and openstreetmap," in *2020 16th International Conference on Control, Automation, Robotics and Vision (ICARCV)*, IEEE, 2020, pp. 522–528.

[6] M. Labussière, **J. Laconte**, and F. Pomerleau, "Geometry preserving sampling method based on spectral decomposition for large-scale environments," *Frontiers in Robotics and AI*, 2020.

[7] M. Vaidis, **J. Laconte**, V. Kubelka, and F. Pomerleau, "Improving the iterative closest point algorithm using lie algebra," *2020 International Conference on Intelligent Robotics and Systems (IROS) Workshop "Bringing geometric methods to robot learning, optimization and control Workshop"*, 2020.

[8] **J. Laconte**, A. Kasmi, F. Pomerleau, R. Chapuis, L. Malaterre, C. Debain, and R. Aufrère, "Lambda-field: A continuous counterpart of the bayesian occupancy grid for risk assessment and safe navigation," *Submitted to the International Journal of Robotics Research (IJRR)*, 2021.

[9] **J. Laconte**, E. Randriamiarintsoa, A. Kasmi, F. Pomerleau, R. Chapuis, C. Debain, and R. Aufrère, "Dynamic lambda-field: A counterpart of the bayesian occupancy grid for risk assessment in dynamic environments," *Submitted to the 2021 International Conference on Intelligent Robots and Systems (IROS)*, 2021.