François Pomerleau
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EDUCATION

Doctoral degree in Robotics - ETH Zurich   2013

> Thesis: *Applied Registration for Robotics - Methodology and Tools for ICP-like Algorithms*
> Director*: Prof. Roland Siegwart*

Master degree in Robotics - Université de Sherbrooke   2009

> Thesis: *Registration algorithm optimized for simultaneous localization and mapping*
> Director*: Prof. François Michaud*

Engineering degree in Computer Science - Université de Sherbrooke   2006

WORKING EXPERIENCE

Researcher - Laval University   2014

> Research on 3D mapping in dynamic environments such as varying snow coverage.

Researcher - Alstom Inspection Robotics

> Transferring 3D mapping technology to the inspection industry.   2013

Research Assistant I and II - Autonomous Systems Lab - ETH Zurich

> Supervising 24 student projects including 11 Master thesis and 3 full time internships.   2009 -13

Lecturer - Université de Sherbrooke

> Introducing basic concepts of Mobile Robotics to 30 students in their last year of Engineering formation.   2008

Teaching assistant - Université de Sherbrooke

> Supervising robot assembly and programming for an undergraduate lecture.   2007

Research Intern - Autonomous Systems Lab - EPFL   2006

Research Intern - Speech and Audio Processing Lab - Uni. de Sherbrooke   2004

Intern in project management - Space Programs - Canadian Space Agency   2003

RESEARCH PROJECTS

NIFTi - European Project (FP7 ICT 247870)

Goal: advancing Search & Rescue activities using robotic systems. ***Participation:*** providing algorithms for real-time 3D reconstruction in adverse environments to fire brigades (Italy, Germany) and multiple Universities throughout Europe.	2010 - 2013

Limnobotic - Swiss National Science Foundation (CR22I2_130023)

Goal: bringing together the fields of limnology (study of freshwaters) and robotics for a better comprehension of the hydrology and biology of pre-alpine and alpine lakes located in Switzerland. ***Participation:*** providing supervision for the robotic field deployments and experimentations. I participated to the redaction of its funding proposal.	2011 - 2013

Robots@home - European Project (FP6-2005-IST-6)

Goal: providing an open mobile platform for the massive introduction of robots into the homes of everyone. ***Participation:*** supporting experimental work in multiple apartments and exploring navigation solution based on stereocameras.	2009 - 2010

PRIZES, GRANTS AND DISTINCTIONS

Best RoboCup paper award at IROS 2013, with the paper "3D Path Planning and Execution for Search and Rescue Ground Robots".	2013
ROS 3D contest (international) - Second place for most useful code using the Kinect.	2011
Special Ministry of Transportation doctoral research grant (3 years) from the *Fonds québécois de recherche sur la nature et les technologies* (FQRNT).	2008
Doctoral research grant (3 years) from the *Fonds québécois de recherche sur la nature et les technologies* (FQRNT).	2008
Canadian Engineering Competition - Technical excellence all categories.	2005
Canadian Engineering Competition - Second place in the *Solution to an Industrial* Problem category.	2005
Gala *Force Avenir* - Finalist in the Science and Technology category.	2005
European Space Agency - selected for parabolic flight campaign participation.	2004
Undergraduate research grant - Natural Sciences and Engineering Research Council (NSERC).	2004

LANGUAGES

French   Mother tongue

English   Working and redaction language

German   Basic level

SCIENTIFIC PUBLICATIONS

International Journals

J10 - G.-J. Kruijff, M. Janicek, S. Keshavdas, B. Larochelle, I. Kruijff-Korbayova, F. Colas, M. Liu, <u>F. Pomerleau</u>, R. Siegwart, M. Neerincx. R. A. Looije, N.J.J.M. Smets, T. Mioch, J. van Diggelen, M. Gianni, F. Ferri, M. Menna, F. Pirri, R. Worst, T. Linder, V. Tretyakov, H. Surmann, T. Svoboda, M. Reinstein, K. Zimmermann, T. Petricek, V. Hlavac, "**Designing, developing, and deploying systems to support human-robot teams in disaster response,**" submitted to *Advanced Robotics* (TADR-2014-0172) in May 2014.

J9 - <u>F. Pomerleau</u>, F. Colas, R. Siegwart, and S. Magnenat, "**Comparing ICP Variants on Real-World Data Sets,**" *Autonomous Robots*, vol. 34, no. 3, pp. 133-148, Feb. 2013.

J8 - P. Krüsi, B. Bücheler, <u>F. Pomerleau</u>, P. Furgale, U. Schwesinger, R. Siegwart, "**Lighting-Invariant Autonomous Route Following Using ICP,**" *Journal of Field Robotics*, Accepted for publication March 2014.

J7 - V. Kubelka, L. Oswald, <u>F. Pomerleau</u>, F. Colas, T. Svoboda, M. Reinštein, "**Robust Data Fusion of Multi-modal Sensory Information for Mobile Robots,**" *Journal of Field Robotics*, Accepted for publication March 2014.

J6 - M.-È. Garneau, T. Posch, G. Hitz, <u>F. Pomerleau</u>, C. Pradalier, R. Siegwart and J. Pernthaler, "**Short-term displacement of *Planktothrix rubescens* (cyanobacteria) in a pre-alpine lake observed using an autonomous sampling platform,**" *Limnology & Oceanography*, vol. 58, no. 5, 2013, pp. 1892-1906, 2013.

J5 - <u>F. Pomerleau</u>, M. Liu, F. Colas, and R. Siegwart, "**Challenging data sets for point cloud registration algorithms,**" *The International Journal of Robotics Research*, vol. 31, no. 14, pp. 1705-1711, Dec. 2012.

J4 - E. Stumm, A. Breitenmoser, <u>F. Pomerleau</u>, C. Pradalier, and R. Siegwart, "**Tensor-voting-based navigation for robotic inspection of 3D surfaces using lidar point clouds,**" *The International Journal of Robotics Research*, vol. 31, no. 12, pp. 1465-1488, Nov. 2012.

J3 - G. Hitz, <u>F. Pomerleau</u>, M.-E. Garneau, C. Pradalier, T. Posch, J. Pernthaler, and R. Siegwart, "**Autonomous Inland Water Monitoring: Design and Application of a Surface Vessel,**" *Robotics & Automation Magazine, IEEE*, vol. 19, no. 1, pp. 62-72, Mar. 2012.

J2 - F. Tâche, <u>F. Pomerleau</u>, G. Caprari, R. Siegwart, M. Bosse, and R. Moser, "**Three-Dimensional Localization for the MagneBike Inspection Robot,**" *Journal of Field Robotics*, vol. 28, no. 2, pp. 180-203, 2011.

J1 - F. Michaud, P. Boissy, D. Labonté, S. Brière, K. Perreault, H. Corriveau, A. Grant, M. Lauria, R. Cloutier, M. A. Roux, D. Iannuzzi, M. P. Royer, F. Ferland, <u>F. Pomerleau</u>, and D. Létourneau, "**Exploratory design and evaluation of a homecare teleassistive mobile robotic system,**" *Mechatronics*, vol. 20, no. 7, pp. 751-766, Oct. 2010.

Peer-reviewed conferences

C11 - G. Hitz, <u>F. Pomerleau</u>, F. Colas, R. Siegwart, "**State Estimation for Shore Monitoring Using an Autonomous Surface Vessel**", Accepted for *International Symposium on Experimental Robotics (ISER)*, 2014.

C10 - F. Colas, S. Mahesh, <u>F. Pomerleau</u>, M. Liu, R. Siegwart, "**3D Path Planning and Execution for Search and Rescue Ground Robots**," Intelligent Robots and Systems, 2011. Proceedings of the IEEE/RSJ International Conference on, 2013. **Best paper award**.

C9 - <u>F. Pomerleau</u>, A. Breitenmoser, M. Liu, F. Colas, and R. Siegwart, "**Noise Characterization of Depth Sensors for Surface Inspections**," presented at the *Applied Robotics for the Power Industry*, 2012. Proceedings of the Second International Conference on, Zurich, Switzerland, 2012, pp. 1-6.

C8 - G. J. M. Kruijff, M. Janicek, S. Keshavdas, B. Larochelle, H. Zender, N. J. J. M. Smets, T. Mioch, M. A. Neerincx, J. van Diggelen, F. Colas, M. Liu, <u>F. Pomerleau</u>, R. Siegwart, V. Hlavac, T. Svoboda, T. Petricek, M. Reinstein, K. Zimmerman, F. Pirri, M. Gianni, P. Papadakis, A. Sinha, P. Balmer, N. Tomatis, R. Worst, T. Linder, H. Surmann, V. Tretyakov, H. Surmann, S. Corrao, S. Pratzler-Wanczura, and M. Sulk, "**Experience in System Design for Human-Robot Teaming in Urban Search and Rescue**," presented at the *Field and Service Robotics*, Matsushima, Japan, 2012, pp. 1-14.

C7 - S. Gemme, D. Gingras, A. Salerno, E. Dupuis, <u>F. Pomerleau</u>, and F. Michaud, "**Pose Refinement Using ICP Applied to 3-D LIDAR Data for Exploration Rovers**," presented at the *Artificial Intelligence, Robotics and Automation in Space*, Proceedings of the International Symposium on, Turin, Italy, 2012

C6 - <u>F. Pomerleau</u>, S. Magnenat, F. Colas, M. Liu, and R. Siegwart, "**Tracking a depth camera: Parameter exploration for fast ICP**," presented at the Intelligent Robots and Systems, 2011. Proceedings of the IEEE/RSJ International Conference on, 2011, pp. 3824-3829.

C5 - <u>F. Pomerleau</u>, B. Lescot, F. Colas, and M. Liu, "**Dataset Acquisitions for USAR Environments**," presented at the *Robot-Human Teamwork in Dynamic Adverse Environment*, 2010. Proceedings of the AAAI Fall Symposium on, 2011.

C4 - <u>F. Pomerleau</u>, F. Colas, F. Ferland, and F. Michaud, "**Relative motion threshold for rejection in ICP registration**," presented at the *Field and Service Robotics (FSR)*. Proceedings of the International Conference on, 2010, pp. 229-238.

C3 - F. Tâche, <u>F. Pomerleau</u>, W. Fischer, G. Caprari, F. Mondada, R. Moser, and R. Siegwart, "**MagneBike: Compact magnetic wheeled robot for power plant inspection**," presented at the *International Conference on Applied Robotics for the Power Industry*. Proceedings of, 2010. Proceedings of the First International Conference on, 2010, pp. 1-2.

C2 - M. Liu, C. Pradalier, <u>F. Pomerleau</u>, and R. Siegwart, "**Scale-only visual homing from an omnidirectional camera**," presented at the *Robotics and Automation (ICRA)*, 2012. Proceedings of the IEEE International Conference on, pp. 3944-3949.

C1 - F. Ferland, <u>F. Pomerleau</u>, C. T. Le Dinh, and F. Michaud, "**Egocentric and exocentric teleoperation interface using real-time, 3D video projection**," presented at the *Human-Robot Interaction*, Proceedings of the ACM/IEEE international conference on, 2009, pp. 37-44.