

# Marie Charbonneau

## Postdoctoral fellow in robotics

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mariecharbonneau in

### Work Experience

**Postdoctoral fellow** 2019 – present  
UNIVERSITY OF WATERLOO, Waterloo, ON, Canada  
Develop whole-body control methods for humanoid robots

**Marie Curie Early Stage Researcher** 2015 – present  
ISTITUTO ITALIANO DI TECNOLOGIA, Genoa, Italy  
INRIA NANCY GRAND-EST, Nancy, France  
Developed whole-body motion control methods for humanoid robots, within the [SECURE](#) project

**Experimental Research Intern** 2013  
CASA PAGANINI, Genoa, Italy  
Developed algorithms to quantify, with comparable precision, a person's motion recorded from motion capture, camera or Kinect

**Knowledge Consultant** 2012  
DASSAULT SYSTEMES, Montreal, Canada

**Industrial Equipment Designer** 2011–2012  
ABMS CONSULTANTS, Granby, Canada

**Hydroelectric Turbine Development Intern** 2010  
ALSTOM HYDRO CANADA, Sorel-Tracy, Canada

**Fluid Dynamics Research Intern** 2009  
TECHNISCHE UNIVERSITÄT DARMSTADT, Darmstadt, Germany

**Underground Mine Maintenance Intern** 2008  
MINES SELEINE, Madeleine Islands, Canada

**Structural Engineering Intern** 2008  
OGER INTERNATIONAL, Paris, France

### Education

**PhD in Robotics** 2015 – 2019  
ISTITUTO ITALIANO DI TECNOLOGIA, Genoa, Italy  
UNIVERSITÀ DEGLI STUDI DI GENOVA, Genoa, Italy  
PhD Program in Bioengineering and Robotics, Curriculum on Advanced and Humanoid Robotics

**Master of Robotics Engineering** 2012 – 2014  
ETH ZÜRICH, Zurich, Switzerland  
WARSAW UNIVERSITY OF TECHNOLOGY, Warsaw, Poland  
UNIVERSITÀ DEGLI STUDI DI GENOVA, Genoa, Italy  
European Master on Advanced Robotics ([EMARO](#))

**Bachelor of Mechanical Engineering** 2006 – 2010  
UNIVERSITÉ DE SHERBROOKE, Sherbrooke, Canada

### Professional Interests

Robot dynamics and control  
Physical human-robot interaction  
Learning for robotics  
Mechanical design

### Key Skills

Machine learning ★★☆☆☆  
Mechanical design ★★★★★  
Kinematics/Dynamics ★★★★★  
Programming ★★☆☆☆  
Robot control ★★★★★  
Signal processing ★★☆☆☆

### Software

Ansys ★★★★★  
AutoCAD ★★★★★  
CATIA V5 ★★★★★  
Gazebo ★★☆☆☆  
Git ★★☆☆☆  
L<sup>A</sup>T<sub>E</sub>X ★★★★★  
Matlab/Simulink ★★★★★  
Microsoft Office ★★★★★  
Pro/Engineer ★★★★★  
ROS ★☆☆☆☆  
Solidworks ★★★★★  
YARP ★★★★★

### Programming Tools




C++ ★★★★★  
C ★★☆☆☆  
OpenCV ★★☆☆☆  
Python ★★☆☆☆

### Spoken Languages

French ★★★★★  
English ★★★★★  
Spanish ★★☆☆☆  
Italian ★★☆☆☆  
German ★★☆☆☆  
Polish ★☆☆☆☆  
Mandarin ★☆☆☆☆  
Japanese ★☆☆☆☆

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### Publications

- 2018 M. Charbonneau, V. Modugno, F. Nori, G. Oriolo, D. Pucci and S. Ivaldi, “**Learning robust task priorities of QP-based whole-body torque-controllers,**” *2018 IEEE-RAS International Conference on Humanoid Robots* [preprint], Nov 2018
- 2018 S. Dafarra, G. Nava, M. Charbonneau, N. Guedelha, F. Andrade, S. Traversaro, L. Fiorio, F. Romano, F. Nori, G. Metta, and D. Pucci, “**A Control Architecture with Online Predictive Planning for Position and Torque Controlled Walking of Humanoid Robots,**” in *2018 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Oct 2018
- 2016 M. Charbonneau, F. Nori and D. Pucci, “**On-line joint limit avoidance for torque controlled robots by joint space parametrization,**” in *2016 IEEE-RAS 16th International Conference on Humanoid Robots (Humanoids)*, Nov 2016
- 2015 N. P. van Hinsberg, M. Charbonneau-Grandmaison, “**Single-drop impingement onto a wavy liquid film and description of the asymmetrical cavity dynamics,**” in *Physical Review E* 92, 013004, 2015

### Outreach Activities

**Talks given:** 2018

- *Methods for robust whole-body control of humanoid robots,* at [Robotics Week](#) and as a seminar at the Universidad de Chile
- *QP Parameter tuning as a challenge in the development of optimization-based whole-body torque-controllers,* at [JNRH](#)
- *A small step for iCub,* at the Universidad de Chile (invited by the Comunidad de Robótica UChile)

**Contestant** 2017

FALLING WALLS LAB MARIE SKLODOWSKA CURIE ACTIONS  
Took part in the [Falling Walls Lab](#) competition with a talk about *Breaking the wall of robot fear* and control methods for safe human-robot interactions

**Member of the Corporate Citizenship Board** 2011 – 2012

DASSAULT SYSTEMES, Montreal, Canada  
Drove the company’s awareness of corporate citizenship activities

**Mentor** 2011 – 2012

[FIRST](#) ROBOTICS COMPETITION, École Secondaire Chomedey de Maisonneuve, Montreal, Canada  
Mentored students in the design of a basketball playing robot





### Academic Activities

- 2018 Local chair for [SSR 2018](#)  
Reviewer for [MOCO](#)  
Reviewer for [Humanoids](#)
- 2017 Student volunteer: [HPCS](#)  
Reviewer for [Humanoids](#)
- 2016 Publication chair for a [SECURE](#) workshop
- 2015 Fellow representative
- 2013 Student representative

### Awards & Scholarships

- 2016 Dr. Kanako Miura Award
- 2015 Marie Curie Early Stage Researcher Fellowship
- 2014 ETH Zurich Graduate Scholarship
- 2012 Erasmus Mundus Scholarship
- 2009 Fonds Paul Desmarais Scholarship
- 2009 DAAD Research Internships in Science and Engineering (RISE) Scholarship
- 2007 Canada Millenium Scholarship
- 2006 Université de Sherbrooke Merit Scholarship

### Interests

-  Cooking world food
-  Drawing (portraits, characters)
-  Board games
-  Traveling