

Marie Charbonneau

Robotics Research Engineer

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mariecharbonneau in

pi-q

Work Experience

Marie Curie Early Stage Researcher 2015 – present
ISTITUTO ITALIANO DI TECNOLOGIA, Genoa, Italy
INRIA NANCY GRAND-EST, Nancy, France
Develop 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
Managed finite elements analysis (FEA) models of cars, analyzed data and made design recommendations to clients

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 – present
ISTITUTO ITALIANO DI TECNOLOGIA, Genoa, Italy
UNIVERSITÀ DEGLI STUDI DI GENOVA, Genoa, Italy
Enrolled in the 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](#))
Master's Thesis: *Design and Optimization of a Tendon-Driven Quadruped Robot for Stable Bounding Locomotion Employing Biarticular Actuation* (97/100)

Bachelor of Mechanical Engineering 2006 – 2010
UNIVERSITY OF 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^AT_EX ★★★★★
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, L. Penco, F. Nori, G. Oriolo, D. Pucci and S. Ivaldi, “**Real-time Whole-body Motion Retargeting for Simultaneous Walking and Upper-body Movements,**” [under review] Sept 2018
- 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
- 2017 M. Charbonneau, G. Nava, F. Nori and D. Pucci, “**An Optimization Based Control Framework for Balancing and Walking: Implementation on the iCub Robot,**” *arXiv:1707.08359 [cs]*, July 2017
- 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

- *QP Parameter tuning as a challenge in the development of optimization-based whole-body torque-controllers*, at [JNRH](#)
- *A small step for iCub*, at 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, Chomedey de Maisonneuve Secondary School, 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 University of Sherbrooke Merit Scholarship

Interests

- 🍳 Cooking world food
- 🎨 Drawing (portraits, characters)
- 🎲 Board games
- ✈️ Traveling