Joseph Salini

French, born in 1984,
Rue des confédérés 104, 1000 Brussels, Belgium
+32 (0)470 81 88 31 / +33 (0)6 19 48 74 58
josephsalini@gmail.com
people.isir.upmc.fr/salini

Ph.D. Thesis:

http://tel.archives-ouvertes.fr/tel-00710013

"Dynamic LQP-based control of humanoid robots interacting with the environment"

Ph.D. thesis at the *Institut des Systèmes Intelligents et de Robotique (ISIR)* in *Pierre and Marie Curie University (UPMC).* Jury: P. Fraisse, J.P. Laumond, A. Micaelli, O. Khatib, P.B. Wieber, P. Bidaud, V. Padois, O. Sigaud.

Dynamic control of humanoid robots interacting with their environment. Design of a controller based on optimization program (LQP), implementation and simulations (C++, python). Advisor: Pr. Philippe Bidaud.

Professional experience:

2014 - *now* Space Applications Services - Systems engineer *Brussels, Belgium*

- DexROV: **haptic engine implementation** (H3D API, C++) into a human machine interface with force feedback support. Drivers development used in ROS (python).
- RegoLight: **mechanical design** of systems (Creo) to perform solar sintering of building elements with regolith simulants. Creation of a graphical interface (python, Qt) which generate the g-code file interpreted by the CNC machine.
- MIRAD: **development of the simulation framework** (C++, OpenNI, Qt) for a lower limbs exoskeleton dedicated to rehabilitation, and design of some simple serious games (Unity 3D).
- SHEE: **creation of a virtual tour** application to visit a self-deployable habitat for extreme environment (Unity 3D) using virtual reality helmet (Oculus rift). Development of an application that wirelessly communicates with the inboard controller of the real habitat to monitor, open and close the system (python, Qt, GxWorks2, MC Protocol).
- ICARUS: **software support** during demonstrations of search-and-rescue operations using multi-robot systems. Creation of programs to facilitate initialization procedure (bash).

2012 - 2014 ISIR/UPMC Paris VI - Research engineer *Paris, France*
Implementation of dynamic controller in **XDE** (C++, python).

2008 - 2012 ISIR/UPMC Paris VI - Ph.D. Thesis *Paris, France*

2008 (6 months) CEA/LIST - Master thesis *Fontenay-Aux-Roses, France*
Contact identification for peg-in-hole insertion in a robotics laboratory. Design of contact tools (Solidworks), implementation and simulations (C++, Matlab). Validation on a robot RX90 Staubli.

2007 (6 months) Peugeot-Citröen (PSA) - Master engineering thesis *Paris, France*
Exhaust gas temperature measures improvement, Identification based on Kalman Filter (Matlab).

2006 (4 months) Ubisoft - Engineer trainee *Bucharest, Romania*
Modelling planes for next-gen game, Modelling 6 planes for the game *Blazing Angels 2* (3D Studio Max).

2005 (1 month) Corse Composite Aéronautique *Ajaccio, France*
Factory worker for inspecting carbon fiber parts for aeronautic industry.

(1 month) Airbus Saint-Eloi *Toulouse, France*
Factory worker for machining titanium parts for aeronautic industry.

Studies:

2008 - 2012	**Ph.D. thesis** - Pierre and Marie Curie University (UPMC, Paris 6)	*Paris, France*
2007 - 2008	**Master degree of Computer Science** - Pierre and Marie Curie University Artificial intelligence, decision and operational research.	*Paris, France*
2004 - 2007	**Mechanical engineering degree** - École Nationale Supérieure d'Arts & Métiers Industrial engineering, dynamics, CAD and mechatronics.	*Paris, France*

Skills:

IT	**OS** (Windows, Linux, ROS), **CAD, 2D/3D creation** (Catia, SolidWorks, 3DS Max, Blender, Gimp), **Programming** (C++, Python, C#, Qt, Swig, Matlab, Svn, Git, Cmake), **Documentation** (Doxygen, Sphinx), **Office** (Word, Excel, Powerpoint, LaTeX).
Languages	French (native language), English (fluent).
Abilities	**Communication** with team and partners, **adaptability** on new challenges, **tenacity** on long-term projects.
Certification	Project Management Professional (PMP® - www.pmi.org)

Robotics/Software development: `https://github.com/salini` & `https://github.com/ISIR-SYROCO`

Arboris-python `[py]`	Participate to the development of a robotic dynamic simulator in Python.
LQPctrl `[py]`	Develop a generic dynamic controller in Python, based on quadratic programming.
daenim `[c++]`	A collada file viewer with animation, based on OpenSceneGraph.
pydaenim `[js,py]`	A collada file viewer on web browser, based on three.js.
pyQP `[swig,py]`	Swig package of Quadprog++ for quadratic optimization problem.
XDE-WorldManager `[py]`	Participate to the development of simple wrappers for XDE.
XDE-ISIRCtrl `[c++,py]`	Adapt the LQPctrl project above in C++ for XDE.
OCRA `[c++]`	[Not part of this project] Current development of deprecated XDE-ISIRCtrl.
SHEE tour `[c#,unity3d]`	Virtual tour of the SHEE habitat.
Mars Mission `[c#,unity3d]`	Simple game simulating a Martian mission.

Leisure:

Sports	Handball (10 years, competition), fencing (9 years, competition), football, golf.
Interests	Travels, Robotics and animation.

Publications & Conferences

2013 *Granata, C. and Bidaud, P., and Ady, R., and Salini, J.* : **Human activity analysis: a personal robot integrating a framework for robust person detection and tracking and physical based motion analysis.** PALADYN Journal of Behavioral Robotics. Vol. 7, pages 1–19.

Salini, J. and Barthélemy, S. and Bidaud, Ph. and Padois, V. : **Whole-Body Motion Synthesis with LQP-based Controller - Application to iCub.** Cognitive Systems Monographs : Modeling, Simulation and Optimization of Bipedal Walking. Vol.18, pages 119–210.

Granata, C. and Bidaud, P., and Ady, R., and Salini, J. : **A personal robot integrating a physically-based human motion tracking and analysis.** In Proc. 16th International Conference on Climbing and Walking Robots and the Support Technologies for Mobile Machines. Pages 68–76.

Granata, C. and Bidaud, P., and Ady, R., and Salini, J. : **Human whole body motion characterization from a Kinect.** In Proc. of 4rd IEEE Int. Conference on Cognitive Infocommunicaitons. Pages 1–12.

2012 *Zong, C. and Clady, X. and Salini, J. and Chetouani, M.* : **An embedded 3D human motion capture using the prediction provided from a walking model.** 4th IEEE RAS/EMBS International Conference on Biomedical Robotics and Biomechatronics.

2011 *Salini, J. and Padois, V. and Bidaud, P.* : **Synthesis of Complex Humanoid Whole-Body Behavior: a Focus on Sequencing and Tasks Transitions.** In proceedings of the IEEE International Conference on Robotics and Automation. Pages 1283 - 1290. **(Presented May 2011, Shanghai, China)**

Salini, J. and Padois, V. and Ibanez, A. and Bidaud, Ph. and Buendia, A. : **A Goal driven perspective to generate humanoid motion synthesis.** In proceedings of CLAWAR 2011, 11th International Conference on Climbing and Walking Robots and the Support Technologies for Mobile Machines. **(Presented September 2011, Paris, France)**

2010 *Salini, J. and Barthélemy, S. and Bidaud, P.* : **LQP-Based Controller Design for Humanoid Whole-Body Motion.** Advances in Robot Kinematics: Motion in Man and Machine, Springer publisher. Pages 177–184. **(Presented June 2010, Portoroz, Slovenia)**

2009 *Salini, J. and Barthélemy, S. and Bidaud, P.* : **LQP controller design for generic whole body motion.** In proceedings of CLAWAR 2009, 11th International Conference on Climbing and Walking Robots and the Support Technologies for Mobile Machines, **(Presented September 2009, Istanbul, Turkey)**