

Maximilien Naveau

Research engineer in humanoid robotics

Toulouse
Driving license – French citizen



Work Experience

2021-2025 **Research Engineer**, *PAL-FRANCE*, Toulouse/Caen, France

- * Remote-working in Caen, France
- * Integrator coordinator of the European project **AGIMUS**.
- * Software development for robotic applications.

2020-2021 **Research Engineer**, *LAAS-CNRS*, Toulouse, France

- * Scientific coordinator of the European project **Memmo**.

2016-2020 **Post-Doc**, *MPI-IS*, Tübingen, Allemagne

- * Implementation of a control architecture based on the dynamic-graph (developed at LAAS-CNRS). The architecture includes real-time software (low level) up to ROS integration.
- * Development of locomotion algorithms for humanoid and quadruped robots.
- * Integration of the software on the humanoid robot *Athena* and the quadruped robot *Solo*.
- * Setup of continuous integration for the core codes of the laboratory's control architecture.
- * Open-sourcing of these codes (<https://github.com/machines-in-motion/>).

2013-2016 **PhD in Robotics**, *LAAS-CNRS*, Toulouse, France

- * Research in collaboration with partners on inter-disciplinary topics in the frame of the **European project KoroïBot**.
- * Use of **linear** and **nonlinear optimization** for motion generation of humanoid robots.
- * Application of **human inspired** optimization costs and human inspired trajectory generation on human robots.
- * Integration of **embedded real time** applications on the **HRP-2** humanoid robot.
- * Design and implementation of novel algorithms for **walking** and **multicontact locomotion** of humanoid robot
- * Main developer of `jrl-walkgen`
<https://github.com/jrl-umi3218/jrl-walkgen.git> (branch devel)

Mars 2013 **Training**, *CEA Saclay*, Gif-sur-Yvette, France

- * Obstacle avoidance of a robotic arm using stereo-vision,
 - * integration of the AVISO system on the robot ASSIST.
- September 2013

October 2012 **Student project**, *Supméca Toulon*, France

- * Mechanical design, fabrication and instrumentation of an autonomous sail boat,
 - * team work (19 students) for 5 months,
- until February 2013

September 2012 **Training**, *University of Birmingham*, United-Kingdom

- * Implementation of an admittance control on a 6 degree of freedom Kuka robotic arm,
 - * 5 months of autonomous work, in the frame of the GeRT (Generalizing Robot Manipulation Tasks) project
- until January 2013

Education

2013 – 2016 **PhD in Robotics**, in *LAAS-CNRS*, Université Paul-Sabatier, Toulouse III, supervised by Olivier Stasse. "*Advanced human inspired walking strategies for humanoid robots*". Defense the 28th of September 2016

2010 – 2013 **2 master degrees**, *Engineer Diploma (Supméca Toulon)* AND Master in vision and command (*University of Toulon*), France
Specialty : robotics and mechatronic systems

2008 – 2010 **Preparatory classes to enter the French Engineering Schools + Baccalauréat (A-level)**, in *Caen, France*
Specialty : Mathematics, Physics, Engineer science

Language **English**, *fluent : read, written, spoken*, TOEIC 865/990 2012
Publications in international journals, training for 6 months in Birmingham UK

Other languages, *notion of Chinese and Italian*

Informatics **Software**, *cmake, git, OpenCV, Matlab(Simulink), LabView, CATIA(V5R20), Adams*
Language, *C/C++,python,bash, nix*

Scientific animation

Mai 2015 **Congress**, *Doctoral School EDSYS*, France

- * Organization of the annual doctoral school congress.
- * Management of the logistic of the congress for the 2 days.

Publications

PhD thesis :

* **Naveau**, “Advanced human inspired walking strategies for humanoid robots,” Ph.D. dissertation, Université Paul Sabatier Toulouse III, 2016

Journal papers :

- * Mukovskiy, Vassallo, **Naveau**, Stasse, “Adaptive synthesis of dynamically feasible full-body movements for the humanoid robot hrp-2 by flexible combination of learned dynamic movement primitives,” *Int. Jour. of Robotics and Autonomous Systems*, 2016
- * Orthey, Ivan, **Naveau**, Yang, “Homotopic particle motion planning for humanoid robotics,” submitted work to *Int. Jour. of Transactions on Robotics*, 2015
- * **Naveau**, Kudruss, Stasse, Kirches, “A Reactive Walking Pattern Generator Based on Nonlinear Model Predictive Control,” *Int. Jour. of Robotics and Automation Letter*, 2016
- * Clever, Harant, Mombaur, **Naveau**, “Cocomopl: A novel approach for humanoid walking generation combining optimal control, movement primitives and learning and its transfer to the real robot hrp-2,” *Int. Jour. of Robotics and Automation Letter*, 2017

Conference papers :

- * Ramirez-Alpizar, **Naveau**, Benazeth, Stasse, “Motion generation for pulling a fire hose by a humanoid robot,” in *Int. Conf. on Humanoid Robotics*, 2016
- * Karlinski, **Naveau**, Mukovskiy, Stasse, “Robust human-inspired power law trajectories for humanoid hrp-2 robot,” in *Int. Conf. on Biomedical Robotics and Biomechatronics*, 2016
- * Carpentier, Tonneau, **Naveau**, Stasse, “A versatile and efficient pattern generator for generalized legged locomotion,” in *Int. Conf. on Robotics and Automation*, 2016
- * Kudruss, **Naveau**, Stasse, Mansard, “Optimal control for whole-body motion generation using center-of-mass dynamics for predefined multi-contact configurations,” in *Int. Conf. on Humanoid Robotics*, 2015
- * **Naveau**, Carpentier, Barthelemy, Stasse, “METAPOD Template META-programming applied to dynamics: CoP-CoM trajectories filtering,” in *Int. Conf. on Humanoid Robotics*, 2014
- * Stasse, Orthey, Morsillo, Geisert, “Airbus/future of aircraft factory HRP-2 as universal worker proof of concept,” in *Int. Conf. on Humanoid Robotics*, 2014

Reviewer in :

- * IJRR, IEEE T-RO, IEEE RA-L, ICRA, IROS, Humanoids.

Published papers can all be downloaded from this link : http://projects.laas.fr/gepetto/index.php/Publications/ByAuthor?author=Maximilien_Naveau

Interests

Music **Instruments**, *Drum (10 years), Bass (1 year)*

Creation of 2 bands, “MARACLAAS” and “Open Doors” , concerts in different places in 2012-2013 in Toulon (France) + music festival in June 2015 in Toulouse (France)