Gabriel Urbain

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I am a PhD engineer student with a background in Electronics, Computer Sciences and Aerospace. I am looking for a R&D position in company specialized in advanced robotics, using state-of-art perception, computation and actuation techniques. I fancy challenging projects with a high societal, economical and environmental impact where I can fully invest my passion and time.

EXPERIENCE

UGENT | PhD Student - Research Assistant at AIRO Group, IDLab - imec
October 2015 - Present | Gent, Belgium
Topic: *Locomotion of compliant quadruped robots at the crossing of AI and Neurosciences.* Human Brain Project. Neurorobotics branch (`http://neurobotics.net/`). Main topics : compliant robotics, locomotion, central pattern generators, supervised learning, reinforcement learning, artificial neural networks, spiking neural networks, automation.
Doctoral schools : machine learning, auditory perception and computation, 3D modeling, career building, English presentation skills.
Teaching Assistant : embedded prototyping - industrial engineers campus Kortrijk (2016), digital electronics - FPGA programming class (2016-2018), robotics - labs and project (2018)

ITALIAN INSTITUTE OF TECHNOLOGY | Visiting PhD Reseacher
July - October 2018 | Genoa, Italy
Topic: *Machine Learning for low-level locomotion on the HyQ robot.* Dynamic Legged Systems Lab.

UMONS | Researcher at the numediart Institute
February - October 2015 | Mons, Belgium
Topic: *Development of a Search Engine Based on Audio Similarities for Large Collections of Foley Sounds.* Research in partnership with Dame Blanche SA and CETIC.

THALES ALENIA SPACE | Research and Innovation Internship
August - September 2013 | Charleroi, Belgium
Topic: *Feasibility Analysis of an Electro-Mechanical Control System for Ariane Rocket Boosters.*

UMONS | Research Initiation Internship
July - August 2011 | Mons, Belgium
Topic: *Semi-Automatic Creation of a 3D Model for the City of Mons.*

UMONS | Research Initiation Internship
July - August 2010 | Mons, Belgium
Topic: *Implementation of C/C++ Libraries in TRNSYS 16.1 for Heat Pump Study.*

EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY
Master Thesis at the Space Systems Laboratory
June 2014 – November 2014 | Cambridge, USA
Topic: *Calibration and Fusion of Stereoscopic and Time-of-Flight Cameras for Zero Gravity Targets Inspection.* Passed with the highest mention.

ISAE | SUPAERO
Master of Science in AeroSpace Engineering
August 2012 – November 2014 | Toulouse, France
Double Master Degree trough *T.I.M.E.* Network. Major : Space Systems, Telecommunications and Networks.

UMONS | FACULTÉ POLYTECHNIQUE
Master of Science in Electrical Engineering
September 2011 – November 2014 | Mons, Belgium
Major: Multimedia et Telecommunications. Graduated with Honors.

Bachelor of Science in Engineering
September 2008 – June 2011 | Mons, Belgium
Major: Electricity and Electronics. Graduated with Honors.

PATENTS

Audio Search User Interface.
G. Urbain, A. Moinet, C. Frisson. Pending with registry number EP3430535. *European Patent Office.* 2017

WORKSHOPS - SYMPOSIUMS

4th HBP School | Future of Artificial Intelligence
Lightning talk and poster session. June 2017, Obergurgl, Austria.

1st Neurorobotics Platform User Workshop
April 2017, Munich, Germany.

3rd HBP School | Future of Neuroscience
Lightning talk and poster session. December 2016, Obergurgl, Austria.

Let's Talk Science! | Communication Summer School
PhD thesis presentation in a one man show fashion. July 2016. Gent, Belgium.

4th HBP Education Workshop | Future of Computing
Lightning talk and poster session. January 2016. Manchester, UK.

5th Cubesat Symposium and the 6th QB50 Workshop
Lightning talk and poster session. June 2013. Brussels, Belgium.

LANGUAGES

French	Native. C2
English	Fluent. C1. TOEFL IBT 105/120 in 2014
Dutch	Professional. B2
Spanish	Basic. A2
Italian	Basic. A1

SKILLS

IT AND SOFTWARE

Operating Systems | Middleware
Linux • Embedded Linux • Windows • ROS • Docker
Languages
C • C++ • Python • Matlab • Java • Bash • VHDL • OpenCV • Git • LATEX
Embedded Platforms
Low-level development on: X86 • Atmel AVR (Arduinos, self-designed boards) • ARM (BeagleBone, RaspberryPI, Odroid) • Neuromorphic Hardware (SpiNNaker, BrainScaleS)

TECHNICAL

Embedded Systems • Image and Audio Processing • Neural Networks • Machine Learning • Robotics • Electronics • Telecommunications • Space Systems

PUBLICATIONS

Body Randomization Reduces the Sim-to-Real Gap for Compliant Quadruped Locomotion.
A. Vandesompele, **G. Urbain**, H. Mahmud, F. wyffels and J. Dambre. In *Frontiers in Neurorobotics 13, 9.* 2019

Calibration Method to Improve Transfer from Simulation to Quadruped Robots.
G. Urbain, A. Vandesompele, F. wyffels and J. Dambre. *International Conference on Simulation of Adaptive Behavior, 102-113.* 2018

Design of a Bio-inspired Compliant Quadruped Robot for Research on Closed-Loop Locomotion Control.
G. Urbain, A. Vandesompele, F. wyffels and J. Dambre. *2nd HBP Student Conference: Transdisciplinary Research Linking Neuroscience, Brain Medicine and Computer Science.* 2018

Morphological Properties of Mass-Spring Networks for Optimal Locomotion Learning.
G. Urbain, J. Degrave, B. Carette, F. wyffels and J. Dambre. In *Frontiers in Neurorobotics.* 2017

A Semantic and Content-Based Search User Interface for Browsing Large Collections of Foley Sounds.
G. Urbain, C. Frisson, A. Moinet and T. Dutoit. In: *Audio Mostly - A conference on interaction with sound.* 2016

INSPECT Sensor Suite for On-Orbit Inspection and Characterization with Extravehicular Activity Spacecraft.
D. Steinberg, T. Sheerin and **G. Urbain**. *45th International Conference on Environmental Systems.* 2015

OTHER POSITIONS

HUMAN BRAIN PROJECT (HBP) | Student Representative
2016 - Present | Brussels, Belgium
Student ambassador in the HBP Neurorobotics branch (2016, 2017) and elected Student Representative at the HBP Education Programme Committee until May 2019.

IROBOTIQUE | Administrator
2004 - Present | Mons, Belgium
Class on electronics, microprocessor programming and robotic design. Participation to Eurobot Junior (2005, 2006, 2008) and Eurobot (2011, 2013) with multiple rewards: Creativity Award (2006), Belgian Junior Champions Award (2008), 8th European Junior position (2008), 7th European position (2013). Design and development of robotic platform for museum guided tours since 2014.

MUSEOMIX BELGIUM | Administrator and Organiser
2015 - Present | Brussels, Belgium
Organization of hackatons and events confronting people from technological and cultural backgrounds to define the future of museum mediation in Belgium. Communication and website manager.

HOBBIES

Gent University Symphonic Orchestra (2016-present) • Gent Alumni and Staff Orchestra (2017-present) • Sailing (2014) • CubeSat (2012-2014) • Scuba Diving (2013-2014) • Supaero Jazz Band (2012-2014) • Rowing (2013) • Winner of a GDF Suez scholarship (2012) • Student Regional Committee (2009-2012) • Board of Faculty (2011-2012) • • Commission of Academic Program Evaluation (2011-2012) • Board of Libraries (2010-2011) • Student Culture Committee (2010-2011) • Jazz Band Baudour (2001-2011) • Drums • Trumpet • Piano • Choral