

Bernardo Aceituno-Cabezas

PERSONAL DATA

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EDUCATION

Universidad Simón Bolívar Caracas, VE
Electronics Engineering September 2012 - March 2018 (expected)
Concentration: Robot Locomotion Advisor: Gerardo Fernández Overall GPA: 4.86/5.00

EXPERIENCE

Visiting Researcher Genoa, IT
Dynamic Legged Systems Laboratory, IIT July 2017 - August 2017

- Developed a simultaneous contact and motion planning algorithm for non-gaited multi-legged robot locomotion in challenging terrain, using mixed-integer optimization.
- Carried experiments in a hydraulic quadruped robot HyQ, optimizing robust gaits over a variety of challenging terrain tracks.

Undergraduate Researcher Caracas, VE
Mechatronics R&D Group, C Laboratory, USB September 2016 - February 2017

- Developed a non-gaited locomotion framework, using mixed-integer optimization for contact and gait planning with terrain heuristics.
- Extended a robust walking motion planning algorithm based on contact wrench cone and convex optimization to multilegged locomotion.

Summer Research Intern Caracas, VE
Mechatronics R&D Group, C Laboratory, USB June 2016 - September 2016

- Developed a generalized footstep planning algorithm for multilegged robots with arbitrary geometries and number of legs, based on Mixed Integer Convex Optimization.

Research Assistant Caracas, VE
Mechatronics R&D Group, C Laboratory, USB September 2015 - March 2016

- Developed an Underwater Robotics Perception Toolbox for large scale underwater 3D reconstructions and structural complexity analysis.
- Integrated a gait optimization method for a hexapod robot using a centroidal dynamics and full kinematics model.

PROFESSIONAL SERVICE

Reviewer of IEEE ICRA	2018 - Present
Reviewer of IEEE RA-L	2018 - Present
Reviewer of IEEE IROS	2017 - Present
Reviewer of IEEE CASE	2017 - Present
Secretary General of the USB EECS Student Council	2015-2016

TEACHING EXPERIENCE

Teaching Assistant for "Robotics" (EC3804)	Caracas, VE
Instructor: Juan C. Grieco	January 2017 - March 2017
Teaching Assistant "Digital Circuits" (EC1723)	Caracas, VE
Instructor: Marta Perez	April - June 2016

AWARDS AND HONORS

Best Student Award

Caracas, VE

December 2017

Given for an outstanding academic and extracurricular undergraduate career, issued by Universidad Simón Bolívar.

Outstanding Thesis Award

Caracas, VE

October 2017

Given for an outstanding bachelor's thesis with significant contributions to its field, resulting on peer-reviewed publications.

IROS Travel Award

Vancouver, BC

August 2017

To attend IROS 2017 in Vancouver (Canada), issued by the IEEE Robotics and Automation Society.

President's List

Caracas, VE

June 2017

Recognized as part of the top 1% students of the entire junior class of 2016/2017.

USB Excellence Award

Caracas, VE

September 2014

Given for an outstanding academic and extracurricular performance, issued by Universidad Simón Bolívar. (*last time awarded*)

GROUPS AND SOCIETIES

Institute of Electrical and Electronic Engineers (IEEE)

2016 - Present

IEEE Robots and Automation Society (IEEE-RAS)

2016 - Present

IEEE-RAS TC in Model-based Optimization for Robotics

2017 - Present

USB Electronics Engineering Student Council

2014 - 2016

PUBLICATIONS

- [1] **Bernardo Aceituno-C**, Carlos Mastalli, Hongkai Dai, Michele Focchi, Andreea Radulescu, Darwin G. Caldwell, Jose Cappelletto, Juan C. Grieco, Gerardo Fernández, and Claudio Semini. Simultaneous Contact, Gait and Motion Planning for Robust Multi-Legged Locomotion via Mixed-Integer Convex Optimization. In *IEEE International Conference on Robotics and Automation (ICRA)*, Brisbane, Australia, May 2018. Also in *IEEE Robotics and Automation Letters (RA-L)*, 2018.[\[url\]](#) [\[video\]](#)

- [2] **Bernardo Aceituno-C**, Hongkai Dai, Jose Cappelletto, Juan C. Grieco, and Gerardo Fernández. A Mixed-Integer Convex Optimization Framework for Robust Multilegged Robot Locomotion Planning over Challenging Terrain. In *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Vancouver, BC, September 2017. [\[url\]](#)

WORKSHOP PAPERS AND ABSTRACTS

- [1] **Bernardo Aceituno-C**, Hongkai Dai, Carlos Mastalli, Michele Focchi, Andreea Radulescu, Darwin G. Caldwell, Jose Cappelletto, Juan C. Grieco, Gerardo Fernández, and Claudio Semini. A Mixed-Integer Convex Formulation for Simultaneous Contact, Gait and Motion Optimization on Multi-Legged Robots, In *IROS 2017 Workshop on Frontiers in Contact-rich Robotic Interaction: Modeling, Optimization and Control Synthesis*, Vancouver, BC, September, 2017. [\[url\]](#)
- [2] **Bernardo Aceituno-C**, Hongkai Dai, and Gerardo Fernández. Mixed-Integer Convex Optimization of Non-Gaited Multi-Legged Walking Sequences, In *RSS 2017 Workshop on Challenges in Dynamic Legged Locomotion*, Cambridge, MA, July 2017. [\[url\]](#)

TECHNICAL REPORTS

- [1] **Bernardo Aceituno-C**, Jose Cappelletto, Juan C. Grieco, and Gerardo Fernández. A Generalized Mixed-Integer Convex Program for Multilegged Footstep Planning on Uneven Terrain. Technical Report. arXiv:1612.02109v2 [cs.RO]. [\[arXiv\]](#)

THESES

- [1] **Bernardo Aceituno-C**. A Mixed-Integer Convex Optimization Framework for Multilegged Locomotion on Uneven Terrain. *Bachelor's Thesis*, Caracas, VE, September 2017.