Bernardo Aceituno-Cabezas

Graduate Student

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EDUCATION

Massachusetts Institute of Technology   Cambridge, MA
Master of Science (SM) in Mechanical Engineering   September 2018 - Present
Advisor: Alberto Rodriguez

Universidad Simón Bolívar   Caracas, VE
Degree in Electronics Engineering   September 2012 - July 2018
Advisor: Gerardo Fernández

EXPERIENCE

Research Assistant   Cambridge, MA
MCube Laboratory, MIT   September 2018 - Present

- Developed a convex-combinatorial optimization model for planar caging.

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   June 2016 - February 2017

- Developed a non-gaited legged locomotion planning 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 (SOCP) to multilegged locomotion.

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

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.

Invited Talks and Presentations

[1] 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.

[2] 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.

[3] A Mixed-Integer Convex Optimization Framework for Robust Multilegged Locomotion over Challenging Terrain. In *Istituto Italiano di Tecnologia*, Genoa, IT, August 2017.