Saboia da Silva, **Maira**

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Education

The State University of New York at Buffalo — *Buffalo, NY, United States*

Ph.D in Computer Science and Engineering — *Aug. 2014 - Present*

Supervisor: Dr. Nils Napp

State University of Campinas — *Campinas, SP, Brazil*

M.S. in Computer Science — *Jul. 2009 - Jul. 2011*

Supervisor: Dr. Alexandre Xavier Falcão

State University of Pernambuco — *Recife, PE, Brazil*

B.S. in Computer Engineering — *Jul. 2004 - Jun. 2009*

Supervisor: Dr. Carlos Alexandre Barros de Mello

Publications

- **Saboia, M.**, Thangavelu, V. and Napp, N., Autonomous Multi-Material Construction with a Heterogeneous Robot Team. Int. Symp. on Distributed Autonomous Robotic Systems (DARS 2018)
- **Saboia, M.**, Thangavelu, V., Gosrich, W. and Napp, N., 2018. Autonomous adaptive modification of unstructured environments. Robotics: Science and Systems (RSS 2018)
- Thangavelu, V., Liu, Y., **Saboia, M.** and Napp, N., 2018, May. Dry Stacking for Automated Construction with Irregular Objects. In 2018 IEEE International Conference on Robotics and Automation (pp. 1-9) (ICRA 2018)
- Liu, Y., **Saboia, M.**, Schatz, K., Paul, M.J. and Napp, N., 2016. Biometric patterns in long-evans rats for automatic behavior analysis. Visual Observation and Analysis of Vertebrate and Insect Behavior, 2016, ICPR – Int. Conference on Pattern Recognition,pp.25-28 (ICPR 2016)
- Neves, R., Mello, C.A.B., **Saboia, M.** and Bezerra, B., 2009. Thresholding the courtesy amount of brazilian bank checks based on tsallis entropy. IEEE Latin America Transactions,7(6)
- Neves, R.F., Mello, C.A.B., **Saboia, M.** and Bezerra, B.L., 2008, October. A new algorithm to threshold the courtesy amount of Brazilian bank checks. In Systems, Man and Cybernetics, 2008 (pp. 1226-1230) (IEEE SMC 2018)
- Neves, R.F.P., Mello, C.A.B., **Saboia, M.** and Bezerra, B.L.D., 2008, June. A new technique to threshold the courtesy amount of Brazilian bank checks. In Systems, Signals and Image Processing, 2008. IWSSIP 2008. 15th International Conference on (pp. 93-96) (IWSSIP 2008)

Scholarships & Awards

2018	**Finalist**, Best Systems Paper Award at the Robotics Conference: Science and Systems (RSS)	*USA*
2014-2018	**PhD. Scholarship**, Science without Borders - SwB/Laspau	*USA*
2009-2011	**M.S Scholarship**, São Paulo Research Foundation – FAPESP	*Brazil*
2006-2009	**B.S Scholarship**, National Council for Scientific and Technological Development – CNPQ	*Brazil*

Presentations

Autonomous Multi-Material Construction with a Heterogeneous Robot Team — *CU Boulder, USA*

Int. Symp. on Distributed Autonomous Robotic Systems (DARS) — *2018*

Bio-Inspired Multi-Material Construction — *The Rockefeller University, USA*

Social Evolution and Behavior course — *2018*

Autonomous adaptive modification of unstructured environments — *CMU, USA*

Women in Robotics IV Workshop at Robotics: Science and Systems (RSS) — *2018*

Dry Stacking Strategies for Autonomous Construction — *MIT, USA*

The What without the How: Specifying Planning Problems in Robotics Workshop at Robotics: Science and Systems (RSS) — *2017*

Robotic System For Autonomous Construction Using Irregular found Objects — *Northeastern University, USA*

Poster at New England Manipulation Symposium (NEMS) — *2017*

Research Projects

Adaptive Multi-Robot Autonomous Modification of Unstructured Environments

Proposed methods to perform autonomous construction in irregular terrain and designed a heterogeneous robotic system that allows effective evaluation of these methods at a physical implementation level. The heterogeneous robotic team is composed of two autonomous robots that are able to manipulate material of different physical properties (rigid and amorphous materials) *Buffalo, NY, USA 2016-Present*

Keywords: Robot design, System Design, Autonomy, Motion Planning, Task Allocation, Manipulation, Robotic Vision, Bio-Inspired Robotics

Strategies for Dry-Stacking Structures with Irregular Objects

Proposed an assembly planning method to dry stack irregular rigid objects in a 2D simulation environment, given a high level target structure *Buffalo, NY, USA 2016-Present*

Keywords: Autonomous Construction, Irregular Objects, Simulation, Geometrical Analysis, Physical Analysis, Dry Stacking

Deep Learning Based Automated Re-Identification Techniques of Biometric Color Patterns in Long-Evans Rats

Proposed a re-identification approach for behaviour analysis of Long-Evans lab rats that combines a deep learning classifier with image similarity techniques *Buffalo, NY, USA 2015-2016*

Keywords: Deep Learning, Siamese Networks, Similarity Measurement, Long-term Tracking, Data Analysis, Animal Biometrics

Clustering of pixels by image foresting transform and its application in background segmentation of natural images

Proposed a new methodology for automatic extraction of desired objects in natural images. A fuzzy model based on the Image Foresting Transform method is used to classify the pixels as object or background. *Campinas, SP, BR 2009-2011*

Keywords: Graphs, Clustering, Image Processing, Image color analysis, Object Segmentation, Classification algorithms

Thresholding Algorithms for Bank Checks

Proposed approach uses histogram specification and Tsallis entropy to find the best threshold value in the thresholding phase of the check courtesy amount *Recife, PE, BR 2007-2009*

Keywords: Image Processing, Image color analysis, Object Segmentation, Entropy, Classification algorithms

Work Experience

Padtec *Campinas, SP, BR*

Junior Systems Analyst *Nov. 2011 - Jun. 2014*

Embedded system development for optical network devices and systems based on UNIX (C/C++, Python)

Foundation for Technological Innovation *Recife, PE, BR*

Intern Systems Analyst *Feb. 2008 - Jan. 2009*

Development and testing of web applications designed for Personal Digital Assistants (PDA) (C#, ASP.NET, ADO.NET)

Teaching Experience

Lecturer: Introduction to Computer Programming *Buffalo, NY, USA*

The State University of New York at Buffalo *May. 2018 - Jul. 2018*

Undergraduate Teaching Assistant: Image Processing *Recife, PE, BR*

University of Pernambuco *Aug. 2008 - Dec. 2008*

Undergraduate Teaching Assistant: Imperative Programming - C language *Recife, PE, BR*

University of Pernambuco *Feb. 2008 - Jun. 2008*

Software Skills

Robotics and Computer Vision

Robot Operating System (ROS) • OpenCV • TensorFlow • Point Cloud Library • Gazebo • PyBullet

Programming

Python • C/C++ • Matlab • Java • Shell • Embedded C • Haskell • VHDL • C# • JavaScript • SQL

Frameworks

Android Studio • Arduino Programming• LaTeX

References

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