Saboia da Silva, **Maira**

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Work Experience

NASA Jet Propulsion Laboratory *Pasadena, CA, USA*

Postdoctoral Scholar | Supervisor: Dr. Michael Wolf *Sep. 2019 - current*

Development of technology for multi-agent systems (Tools: ROS, Python, PostgreSQL, PostGIS).

The State University of New York at Buffalo *Buffalo, NY, USA*

Lecturer: Introduction to Computer Programming; Greats Ideas In Computer Science. *May. 2018 - May. 2019*

Padtec *Campinas, SP, BR*

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

Development of embedded system for optical network devices and systems based on UNIX (Tools: C, Python).

Foundation for Technological Innovation *Recife, PE, BR*

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

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

Education

The State University of New York at Buffalo (UB) *Buffalo, NY, United States*

Ph.D in Computer Science and Engineering *Aug. 2014 - Jul. 2019*

Supervisor: Dr. Nils Napp

State University of Campinas (UNICAMP) *Campinas, SP, Brazil*

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

Supervisor: Dr. Alexandre Xavier Falcão

State University of Pernambuco (UPE) *Recife, PE, Brazil*

B.S. in Computer Engineering *Aug. 2004 - Jul. 2009*

Supervisor: Dr. Carlos Alexandre Barros de Mello

Publications

- The Pluggable Distributed Resource Allocator (PDRA):a Middleware for Distributed Computing in Mobile Robotic Networks, Rossi*, F., Vaquero*, T., Net, M., **Saboia, M.**, and Hook, J.. International Conference on Intelligent Robots and Systems, (IROS 2020) (Under review).

- Thangavelu, V., **Saboia, M.**, Choi, J. and Napp, N., Autonomous Modification of Unstructured Environments With Irregular Found Material. In 2020 IEEE International Conference on Robotics and Automation (ICRA 2020).

- **Saboia, M.**, Thangavelu, V. and Napp, N., multi-material construction with a heterogeneous robot team. Robotics and Autonomous Systems, 121, p.103239.

- Liu, Y., **Saboia, M.**, Thangavelu, V. and Napp, N., Approximate Stability Analysis for Drystacked Structures. In 2019 IEEE International Conference on Robotics and Automation (ICRA 2019)

- **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 2008)

- 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)

Research Projects

A-PUFFER: Autonomous Pop-Up Flat-Folding Explorer Robots

DEVELOPMENT OF A HYBRID DISTRIBUTED MAPPING FRAMEWORK FOR THE AUTONOMOUS LUNAR ROVER NETWORK. *NASA JPL, USA*
2019-Present

KEYWORDS: DISTRIBUTED MAPPING, SYSTEM DESIGN, AUTONOMY, DATABASE.

MOSAIC: Mars On-site Shared Analytics Information and Computing

SCHEDULING AND TASK-ALLOCATION ALGORITHMS TO SHARE COMPUTATIONAL TASKS AMONG HETEROGENEOUS AGENTS *NASA JPL, USA*
OVER TIME-VARYING COMMUNICATION LINKS. *2019-Present*

KEYWORDS: SCHEDULING AND TASK-ALLOCATION, AUTONOMY, ALGORITHM, SIMULATION

Adaptive Multi-Robot Autonomous Modification of Unstructured Environments.

METHODS TO PERFORM AUTONOMOUS CONSTRUCTION IN IRREGULAR TERRAIN AND THE DESIGN OF A ROBOTIC SYSTEMS *UB, USA*
THAT BUILDS WITH MATERIAL OF DIFFERENT PHYSICAL PROPERTIES (RIGID AND AMORPHOUS MATERIALS). *2016-Present*

KEYWORDS: ROBOT DESIGN, SYSTEM DESIGN, AUTONOMY, PATH PLANNING, SIMULATION, ROBOTIC VISION, BIO-INSPIRED ROBOTICS

Strategies for Dry-Stacking Structures with Irregular Objects

ASSEMBLY PLANNING METHOD TO DRY STACK IRREGULAR RIGID OBJECTS IN A 2D SIMULATION ENVIRONMENT *UB, USA*
2016-2019

KEYWORDS: AUTONOMOUS CONSTRUCTION, IRREGULAR OBJECTS, SIMULATION, GEOMETRICAL ANALYSIS, PHYSICAL ANALYSIS

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

RE-IDENTIFICATION APPROACH FOR BEHAVIOUR ANALYSIS OF LONG-EVANS LAB RATS THAT COMBINES A DEEP LEARNING *UB, USA*
CLASSIFIER WITH IMAGE SIMILARITY TECHNIQUES *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

A NEW METHODOLOGY FOR AUTOMATIC EXTRACTION OF DESIRED OBJECTS IN NATURAL IMAGES. A FUZZY MODEL BASED *UNICAMP, BR*
ON THE IMAGE FORESTING TRANSFORM METHOD IS USED TO CLASSIFY THE PIXELS AS OBJECT OR BACKGROUND. *2009-2011*

KEYWORDS: GRAPHS, CLUSTERING, IMAGE PROCESSING, OBJECT SEGMENTATION, CLASSIFICATION ALGORITHMS, LANGUAGE C

Thresholding Algorithms for Bank Checks

USE OF HISTOGRAM SPECIFICATION AND TSALLIS ENTROPY TO FIND THE BEST THRESHOLD VALUE IN THE THRESHOLDING *UPE, BR*
PHASE OF THE CHECK COURTESY AMOUNT *2007-2009*

IMAGE PROCESSING, IMAGE COLOR ANALYSIS, OBJECT SEGMENTATION, OBJECT CLASSIFICATION, MATLAB

Scholarships & Awards

2020	**JPL 347 Team award**, "DEMONSTRATING DISTRIBUTED SYSTEMS OPERATION AND AUTOMATION ON MULTIPLE SCIENCE CASES INCLUDING VENUS, MARS, AND THE MOON."	*USA*
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

Adaptive Autonomous Construction in Unstructured Environments
Oregon (virtual), USA

RSS PIONEERS - ROBOTICS: SCIENCE AND SYSTEMS PIONEERS WORKSHOP *2020*

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 *2017*
AT ROBOTICS: SCIENCE AND SYSTEMS (RSS)

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

POSTER AT NEW ENGLAND MANIPULATION SYMPOSIUM (NEMS) *2017*