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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

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

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)

KEYWORDS: ROBOT DESIGN, SYSTEM DESIGN, AUTONOMY, TASK ALLOCATION, MANIPULATION, ROBOTIC VISION, BIO-INSPIRED ROBOTICS

Buffalo, NY, USA
2016-Present

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

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

Buffalo, NY, USA
2016-Present

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

KEYWORDS: DEEP LEARNING, SIAMESE NETWORKS, SIMILARITY MEASUREMENT, LONG-TERM TRACKING, DATA ANALYSIS, ANIMAL BIOMETRICS

Buffalo, NY, USA
2015-2016

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.

KEYWORDS: GRAPHS, CLUSTERING, IMAGE PROCESSING, IMAGE COLOR ANALYSIS, OBJECT SEGMENTATION, CLASSIFICATION ALGORITHMS

Campinas, SP, BR
2009-2011

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

KEYWORDS: IMAGE PROCESSING, IMAGE COLOR ANALYSIS, OBJECT SEGMENTATION, ENTROPY, CLASSIFICATION ALGORITHMS

Recife, PE, BR
2007-2009

Work Experience

Padtec

JUNIOR SYSTEMS ANALYST

EMBEDDED SYSTEM DEVELOPMENT FOR OPTICAL NETWORK DEVICES AND SYSTEMS BASED ON UNIX (C/C++, PYTHON)

Campinas, SP, BR
Nov. 2011 - Jun. 2014

Foundation for Technological Innovation

INTERN SYSTEMS ANALYST

DEVELOPMENT AND TESTING OF WEB APPLICATIONS DESIGNED FOR PERSONAL DIGITAL ASSISTANTS (PDA) (C#, ASP.NET, ADO.NET)

Recife, PE, BR
Feb. 2008 - Jan. 2009

Teaching Experience

Lecturer: Introduction to Computer Programming

THE STATE UNIVERSITY OF NEW YORK AT BUFFALO

Buffalo, NY, USA
May. 2018 - Jul. 2018

Undergraduate Teaching Assistant: Image Processing

UNIVERSITY OF PERNAMBUCO

Recife, PE, BR
Aug. 2008 - Dec. 2008

Undergraduate Teaching Assistant: Imperative Programming - C language

UNIVERSITY OF PERNAMBUCO

Recife, PE, BR
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

List of References

Dr. Nils Napp

ASSISTANT PROFESSOR

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING, SUNY AT BUFFALO

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Dr. Karthik Dantu

ASSISTANT PROFESSOR

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING, SUNY AT BUFFALO

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106 DAVIS HALL, BUFFALO, NY 14260

Dr. Kirstin Hagelskjær Petersen

ASSISTANT PROFESSOR

SCHOOL OF ELECTRICAL AND COMPUTER ENGINEERING, CORNELL UNIVERSITY

EMAIL: KIRSTIN@CORNELL.EDU

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