Andrea Burns

PhD Student

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Research Interests

Computer Vision, Natural Language Processing, Machine Learning.

Education

Boston University / PhD Student
SEPTEMBER 2018 - PRESENT, BOSTON, MA

GPA: 3.88/4.0

Advisor: Prof. Kate Saenko

Research Group: Image and Video Computing.

Tulane University / Bachelor of Science
AUGUST 2014 - MAY 2018, NEW ORLEANS, LA

GPA: 3.94/4.0

Majors: Computer Science, Mathematics

Minor: French

Member of Phi Beta Kappa and Women in Technology

Université Paris Diderot / Semester Abroad
SEPTEMBER 2016 - DECEMBER 2016, PARIS, FRANCE

French immersion semester abroad

Awards

Invited participant for the Grad Cohort Workshop of the CRA-W.

Dean's Fellowship Fall 2018, Boston University

The Academic Achievement Award Scholarship 2014-2018, Tulane University

Dean's List 2014-2018, Tulane University

The Elsa Freiman Angrist Scholarship 2015-2018, Tulane University

Friezo Family Found Greater New York Area Scholarship 2015-2018, Tulane University

Skills

Languages Python, Ruby on Rails, Java, Matlab, HTML/CSS

Personal Skills / Interests French, Hip Hop Dance, Drawing, Cooking

Industry Experience

Ellevest / Software Engineering Intern

JUNE 2018 - AUGUST 2018, NEW YORK CITY, NY

Drift Report Update and Extension. Implemented key compliance report to ensure consistency between clients' assigned portfolios and owned securities. Refactored SQL to query relevant account information and integrated Sidekiq job into Ruby on Rails application to store in database records. Implemented front-end interface for filtering, analyzing, and taking action on accounts with inconsistencies. Began work on creating intelligent model for action prediction.

Research Experience

Tulane University / Student Researcher

SEPTEMBER 2017 - MAY 2018, NEW ORLEANS, LA

Probabilistic Chemotaxis Modeling for Sperm Motility. Developed a probabilistic algorithm to determine sperm swimming behavior with chemotaxis and short-term swimming decisions in Python. Presented at the SCALA conference at LSU, February 2018.

DIMACS / NSF REU Scholar

MAY 2017 - JULY 2017, PISCATAWAY, NJ

Machine Learning from Multimodal Data. Improved accuracy of image classification of liquids by 60% using a self-curated multispectral dataset in Python. "Multispectral imaging for improved liquid classification in security sensor systems" published and presented at the SPIE Defense & Security Conference, April 2018.

Tulane University / NSF REU Scholar

MAY 2016 - JULY 2016, NEW ORLEANS, LA

Mathematical and Computational Biofluids. Discovered implicit limitations in phenomenological and neural-based models of simple vertebrate locomotion when affected by external sensory input, ultimately creating a combination of models using Matlab.

Tulane University / Student Researcher

MARCH 2016 - MAY 2016, NEW ORLEANS, LA

Homotopy Visualization. Implemented an algorithm to identify self-overlapping curves in Java, algorithm used to find a homotopy that sweeps minimal area.

Teaching Experience

Boston University / Teaching Fellow

CS101 Introduction to Computer Science. Taught and facilitated lab sessions and held office hours weekly.

Publications

[1] A. Burns, W.U. Bajwa. "Multispectral imaging for improved liquid classification in security sensor systems", Proc. SPIE 10644, Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XXIV, 1064418 (8 May 2018); doi: 10.1117/12.2304696

[2] A. Burns, R. Tan, B. Plummer, K. Saenko, S. Sclaroff. “Learning Specialized Word Representations for Vision-Language Tasks.” NAACL 2019, Submission.

Projects

Tulane University / Senior Capstone

JUNE 2018 - AUGUST 2018, NEW ORLEANS, LA

Multimodal Sentiment Analysis for Voice Message Systems. Created a multimodal machine learning model to learn the urgency of a voice message after categorizing it into four emotions: anger, fear, joy, and sadness. Used Python’s SciKitLearn and SDK libraries to apply emotion classification and unsupervised intensity regression on audio and text data.

Selected Coursework

Boston University

Image and Video Computing (CS 585)

Advanced Optimization Algorithms (CS 591)

Intro to Natural Language Processing, Programming Languages (Spring 2019)

Tulane University

Intro to Machine Learning (CS 3240)

Machine Learning (CS 4720)