

## Education

### University of Central Florida – Orlando, Florida

- **BS:** Computer Science (Dec 19) – “With Distinction”
- **Minor:** Cognitive Sciences; **Minor:** Intelligent Robotic Systems; **Minor:** Mathematics
- **Awards:** Epsilon Pi Upsilon Honor Society, Dean’s List, First Year Scholar, Summer Research Academy; Knights of Distinction;
- **Selected Courses:** Evolutionary Computation (grad); Computer Vision (grad); Complex Adaptive Systems (grad)

### Udacity (Nanodegrees) – Online

Machine Learning (Aug 16); Deep Learning (Jun 17); Artificial Intelligence (Jul 17); Robotics (Jan 18); Self-Driving Car (Mar 18); Computer Vision (May 18); Natural Language Processing (Jun 18); Deep Reinforcement Learning (Dec 18);

### Coursera & edX– Online

Neuroscience: Medical (Oct 16), Computational (Jun 17), & Simulation (Dec 17); Game Theory (Mar 17);

## Research Experience

### Computational Cognitive Sciences Group, MIT – Cambridge, Massachusetts

Research Intern (May – Sep 19): PI – Joshua Tenenbaum & Max Kleiman-Weiner

- Developing models for use in multi-agent social-cognition tasks to be used as a means of querying how our own minds are capable of modeling others
- Also developing methods to take a more quantitative approach to the social sciences, contrasted with most qualitative methods currently in use.

### Natural Language Processing Group, UCF – Orlando, Florida

Research Assistant (Jan 19 – Present): PI – Fei Liu

- Analyzing factual consistency of summaries when fusing (merging) sentences and quantifying the difficulty machines have, when fusing sentences
- Developing novel training paradigm to enhance machine’s ability to more accurately fuse sentences, producing better summaries

### Center for Research in Computer Vision, UCF – Orlando, Florida

Research Assistant (Sep 18 – Mar 19): PI – Mubarak Shah

- Worked on action detection and segmentation in videos. Proposed an additional loss term to enable Convolutional Neural Networks to learn how to segment objects more efficiently.

### NeuroLogic, Institute for Simulation & Training – Orlando, Florida

Research Assistant (Aug 17 – Aug 18): PI – Alan Paris

- Translated AR-GVZM model into Python package (achieves state of the art noise reduction on electroencephalogram [EEG] signals).

### AMALTHEA REU, Florida Institute of Technology – Melbourne, Florida

Research Intern (May – July 17): PI – Ronaldo Menezes

- Data visualization and temporal analysis of racial/educational demographic data from the United Network for Organ Sharing dataset.

## Selected Skills

### Web

**Proficient:** JavaScript, Go, Selenium, Flask

### Data Science / HPC

**Proficient:** Python, NLTK, OpenCV, pandas, scikit-learn, PyTorch, TensorFlow, Keras  
**Familiar:** CUDA, R, Julia, SLURM

### UI / Games / Virtual Reality

**Proficient:** C++, C#, Qt

### Spoken Languages

**Native:** English, Portuguese  
**Fluent:** Spanish  
**Working:** German, Russian

## Projects

### StarCraft II (Aug 18 – May 19)

Leading a team of 5 working on replicating and advancing on results from DeepMind in the StarCraft II video game. Training Neural Networks using Deep Reinforcement Learning and Policy Gradient Optimization to achieve similar results to DeepMind across all “mini games.”

### Axcelion (Aug 17 – Aug 18)

Led a team of 3 focused on hybridizing brain-computing interfaces and mixed reality displays to provide highly interactive computing experiences. (Plans to revisit circa 2020.)

### Klasse (Oct – Nov 16)

Capstone project for Udacity’s Machine Learning Engineer Nanodegree; utilizing Word2Vec and custom heuristics. “Mean quadratic weighted kappa” (Kaggle’s original metric) score of ~94%.

## Work Experience

### Forage – Orlando, Florida

#### Team Lead & Core Engineer (May 18 – Present)

- Leading a team of 5, building visualizations and summarization of research.
- Focusing on scraping data, summarization, topic modeling, and visualization.

### Udacity's School of AI – Remote (Orlando, Florida)

#### TA (Student Mentor / Project Reviewer) (Mar 17 – Present)

- Mentor 200+ students across all taken Nanodegrees by clarifying content, fostering debugging skills, and providing career counseling.
- Grading projects across all Nanodegrees, notably Facial Keypoint Identification, Continuous Control (DeepRL), and Navigation (DeepRL).

### University of Central Florida – Orlando, Florida

#### AI@UCF, Founder & Director (Aug 2017 – May 2019), Advisor (Jun 2019 – Present)

- Founding member of the UCF Data Science Team.
- Designed "Course" curriculum which is offered every semester.
- Coordinated and maintained CBMM@MIT and Intel sponsorship, \$2.5K+/semester.
- Enabled uniform workshops and opened access to non-technical folk by writing an automation framework which runs the majority of managerial tasks for the group.
- Hosted 20+ workshops, introducing 40-100 students (each) to Machine Learning & Data Science techniques.
- Ran 15+ reading-group meetings where topics on Computational Cognitive Science, implications of current Machine Learning, & current ML methods were discussed.

#### Computer Vision Graduate Teaching Assistant (Aug – Dec 18)

- Designed homeworks successfully reinforcing core Deep Learning concepts.
- Coordinated and designed infrastructure for students to complete assignments and final project, using the university's supercomputer (SLURM batch manager).

#### Biomedical Acoustics Research Lab, Application Developer (Jan – Nov 16)

- Led team of 3 to successfully develop a signal processing Android application.
- Cultivated a deep understanding of JNI and signal processing techniques.
- Funding provided by a local hospital for on-site testing.

#### Peer Tutor [Introduction to C Programming] (Jan – May 16)

- Held weekly tutoring sessions for students taking their first programming course.
- Ensured students understood programming with C and the Procedural Paradigm, resulting in an improved course score of up to 10%.

#### Supplemental Instructor [Object Oriented Programming] (Aug – Dec 15)

- Held weekly recitations for students learning Java and the Object-Oriented Paradigm.
- Ensure students understood the content - as a result improved the average grade received by up to 10%.

## Manuscripts

### In Preparation

1. Lebanoff, L., **Muchovej, J.**, and Liu, F., *Analyzing Sentence Fusion in Abstractive Summarization*

## Teaching Experience

### SIGAI@UCF Workshops (Aug 17 – Present)

1. An Intro to Neural Networks (09/27/17, 01/31/18)

### Echo (Nov 16 – Nov 17)

Natural Language Processor that has been attempting to further flesh out the Goodreads 'Quotes' system. A self-introduction into focusing on the semantics of a statement, rather than the syntax, as has been done with most NLP systems in the past.

### Tangram (Sep 16)

Custom-built 3D printer, open-sourced, to learn how they work, kinesthetically. Two-person collaboration, primary areas of focus are CAD designs for simulation and software linkages.

## Fun Facts

### Certifications

#### Adobe Certified Associate:

Photoshop, Illustrator, Dreamweaver, InDesign, Flash, Premiere (2013)

### Non-categorized

Intramural soccer; Habitat for Humanity (from 2014); Rotary International Paul-Harris Fellow (2008)

2. Seriesly, Neural Networks? – RNNs (03/07/18)
3. Can Machines Learn like Humans? – Reinforcement Learning, Part 1 (04/04/18)
4. Build Your Own Neural Network (10/07/17, 02/07/18)
5. Do We Need English Lit Anymore? – RNNs (03/21/18)
6. Overcoming Car Troubles with Q-learning (04/18/18)
7. Intro to Data Analysis with Pandas & NumPy (09/05/18)
8. A Crash Course in PyTorch to Assemble Neural Networks (09/26/18)
9. Teaching Machines to Make Sense of Images (Conv Nets) (10/03/18)
10. Machines Learn to Program (Seq2Seq Models on Linux Source-Code) (10/10/18)
11. Give Humans a Voice, by Letting Data Speak (11/07/18)
12. Getting Started in Programming for Intelligence (02/07/19)
13. Getting into Machine Learning Research (02/13/19)
14. What Makes Deep Learning More of an Art Than a Science? (02/27/19)
15. The Universe of Possibilities Just Widened with Machine Learning (03/03/19)