Willie McClinton

Software Engineer · Research Scientist

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Education

University of South Florida — *Tampa, Florida*

B.S. in Computer Science | Honors College — *Aug. 2016 - PRESENT*

- Relevant Coursework: Analysis of Algorithms, Bayesian Statistics, Calculus I-III, Computer Architecture, Data Structures, Linear Algebra, Independent Study: Reinforcement Learning, Introduction to Artificial Intelligence, Theory of Computation, and Vector Calculus
- Cumulative GPA: **4.00**

Research Experience

Undergraduate Research, Intelligent Robot Lab (Dr. George Konidaris) — *Providence, Rhode Island*

Undergraduate Researcher — *Oct. 2018 - present*

- Explored the use of Meta-Learning and Hierarchical Reinforcement Learning, specifically the use of high level options, in constructing procedures by which agents can discover new skills autonomously and transfer them effectively to new tasks.
- Implemented modern and traditional RL algorithms (Dynamic Programming, Monte Carlo, TD-Learning, Sarsa, DDPG, A3C, DQN, etc.) and explored research directions in attempt to improve on the convergence speed of existing meta-learning approaches.

Undergraduate Research, Neuro-Machine Interaction Lab (Dr. Marvin Andujar) — *Tampa, Florida*

Software Engineer & Research Assistant — *Feb. 2018 - present*

- Developed Unity applications to make BCI more available to the general public.
- Classified brain data with high signal-to-noise ratio using machine learning techniques (LDA, MLP, SVM, etc.) in Matlab and Openvibe.

Undergraduate Research, Social Computing Lab (Dr. Sriram Chellappan) — *Tampa, Florida*

Software Engineer & Research Assistant — *Jan. 2018 - present*

- Designed a cross-platform mobile app with React Native and Expo integrating deep learning for detecting mosquito disease-carriers, using Tensorflow and Firebase API
- Developed a platform for social scientist to extract anonymous metadata from users' phones.

USF Ubiquitous Sensing Research Experience for Undergraduate — *Tampa, Florida*

Undergraduate Researcher — *Jun. 2018 - Aug. 2018*

- Worked with a team of 4 to build an Android application that detects distress in users from non-textual SMS message data.
- Built a classier using Scikit-Learn and Tensorflow to identify user distress from features extracted from the metadata.

National Institute of Standards and Technology — *Gaithersburg, Maryland*

Summer Undergraduate Research Fellow — *May. 2017 - Aug. 2017*

- Parsed through and edited large video databases composed of videos from both the YFCC100M and HAVIC datasets with SQL to synthesize datasets for the TRECVID Multimedia Event Detection Evaluation.
- Reduced scoring time by implementing parallelization in the new Ruby/Rake evaluation.
- Collaborated with small team of 3 to manage past systems from previous Multimedia Event Detection Evaluations.

Undergraduate Research, Intelligent Systems Lab (Dr. Lawrence Hall) — *Tampa, Florida*

Researcher for <Detecting Brain Tumors in CT Scans Using Deep Learning> — *Dec. 2016 - May. 2018*

- Gathered, formatted, and augmented CT brain scan segmentations using ImageJ and Matlab to create training, testing, and validation datasets
- Constructed Deep Convolutional Generative Adversarial Networks (DCGANs) to synthesize more training examples from sparse data

Undergraduate Research, Computational Biophysics Lab (Dr. Sameer Varma) — *Tampa, Florida*

Researcher for <Quantify Intrinsic Molecular Motion Using Support Vector Machines> — *Nov. 2016 - May. 2017*

- Created command line applications utilizing GROMACS API in C to parse molecular simulations and quantify their intrinsic motion using Support Vector Machines.

Honors & Awards

2019	**Scholarship**, Barry Goldwater Scholarship ($7500)	*Alexandria, VA*
2019	**Award**, The Leadership Alliance's Summer Research Early Identification Program - Participant	*Providence, RI*
2019	**Award**, CRA-W Distributed Research Experiences for Undergraduates Program - Participant	*Providence, RI*
2019	**1st Place**, Best Overall Project(Classroom.ai) at KnightHacks	*Orlando, Florida*
2018	**Award**, USF Dean's List of Scholars	*Tampa, Florida*
2018	**1st Place**, Best Poster Presentation at USF REU in Ubiquitous Sensing Poster Competition	*Tampa, Florida*
2018	**Inductee**, Sigma Xi University of South Florida Chapter	*Tampa, Florida*
2018	**Inductee**, Pi Mu Epsilon University of South Florida Chapter	*Tampa, Florida*
2018	**1st Place**, Best Hardware Hack(Fix8) at Hack-A-Bull	*Tampa, Florida*
2018	**1st Place**, Best Oral Presentation in Computer Science Division at Emerging Researchers National (ERN) Conference 2018	*Washington, D.C.*
2017	**Scholarship**, Honors College Community Engagement Scholarship ($2000)	*Tampa, Florida*
2017	**1st Place**, Best Presentation in Information Technology Division at NIST Summer Undergraduate Colloquium 2017	*Gaithersburg, Maryland*
2016	**Scholarship**, USF Directors Award Scholarship ($16,000)	*Tampa, Florida*
2016	**Scholarship**, The Florida Bright Futures Scholarship Program	*Tampa, Florida*
2016	**Scholarship**, Gerald Champion Regional Medical Center Scholarship ($1000)	*Tampa, Florida*

Leadership Activity

Society of Competitive Programmers

Tampa, Florida

Co-founder & Vice-President

Jan. 2018 - present

- Created a student organization that helps to foster hackathon culture at USF and supports students in their hackathon trips around the nation.
- Reached over 100 active members in a period of 7 months and helped dozens of students experience their first hackathons.
- Worked with small team of 10 officers to manage the organization's events, budget, travel grants, and outreach.
- Achieved over 20K in funding for competition and conference travel through commercial sponsorship.

Projects

Mosquito Tag

Provisonal Patent

Research project

Dec. 2018

- Developed a Convolutional Neural Network (CNN) model for server-side species and genus identification of mosquito.
- Created a mobile application to run the CNN model on the server that communicates with the app and developed an embedded classifier for mosquito vs non-mosquito classification using Tensorflow-Lite.
- A **provisional patent** has also been filed by Univ. of South Florida titled "A Deep Learning System for Automatic Tagging and Uploading of Mosquito Genus, Species and Anatomy from Smart-phone Images" (USF Ref. No. 18B171PR Chellappan).

Fix8

Android Application

Hackathon project

March. 2018

- Built an Android application that lets users keep track of their attention level over a certain task (i.e. studying, driving).
- Used Muse Brain Sensing Headband to obtain brain waves, which were analyzed to determine the state of the user.
- Won 'Best Hardware Hack' at Hack-A-Bull 2018.

HackerBoard

Website

Personal project

Jul. 2018

- Built a web-based ranking system to showcase the best collegiate hackathon-goers, using HTML, Javascript, and Python (https://hackathonleaderboard.github.io).
- Created a Python web crawler using their Standard Internet Protocols and Support Library to extract hackathon winners from Devpost.

Skills

Languages:, Proficient in C, C++, Matlab, Python, Ruby; prior experience in Bash, C#, Emacs Lisp, Java, Rake, and SQL

Software:, Android/iPhone, Emacs, Expo, Git, GROMACS, OpenCV libraries, Pytorch, React Native, Tensorflow, Unity, and Unix/Linux

Publications

1. Minakshi, M. et al. (2019). Automatic Tagging and Uploading of Mosquito Genus, Species, and Anatomy with Mobile Devices using Deep Learning. (In preparation)
2. McClinton, W. et al. (2019). P300-Based 3D Brain Painting in Virtual Reality. *ACM CHI Conference on Human Factors in Computing Systems 2019 Proceedings*; Glasgow, UK. doi: TBD (Accepted)
3. McClinton, W., Caprio, D., Laesker, D., Pinto, B., Garcia, S., and Andujar, M. 2019. *P300-Based 3D Brain Painting in Virtual Reality. In Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems* (CHI EA '19); ACM, New York, NY, USA, Paper LBW1119, 6 pages.
4. Awad, G. et al. (2017). Trecvid 2017: Evaluating ad-hoc and instance video search, events detection, video captioning and hyperlinking. *Proceedings of TRECVID 2017.* [`https://www-nlpir.nist.gov/projects/tvpubs/tv17.papers/tv17overview.pdf`]

Presentations

ACM CHI Conference on Human Factors in Computing Systems 2019

Glasgow, UK

Presenter for Poster on <Effects of 3D Brain Painting in Virtual Reality> *May. 2019*

- Introduced 3D Brain Painting a P300-based virtual painting application in a 3D Virtual Reality environment and the methodology behind creating the applications, as well as, the results of our pilot study.

USF Making Waves 2018

Tampa, Florida

Panelist for <Partnership, Mentorship, Scholarship: Discussing faculty-student connections> *Sep. 2018*

- Discussed the necessity for positive faculty-student connections in the development of competitive students for prestigious undergraduate awards.

USF Ubiquitous Sensing Poster Competition

Tampa, Florida

Presenter for <Deriving Trends from Meta-Data to Predict Distress in Online Communications> *Aug. 2018*

- Demonstrated the effectiveness of using decision trees to detect user distress from their communication patterns in mobile phones.

Emerging Researchers National Conference 2018

Washington, D.C.

Presenter for <TRECVID Multimedia Event Detection evaluation> *Feb. 2018*

- Explained the significance of the TRECVID Multimedia Event Detection Evaluation and my role in creating the Ad-Hoc Event datasets.

NIST Summer Undergraduate Colloquium 2017

Gaithersburg, Maryland

Presenter for <TRECVID Multimedia Event Detection evaluation> *Aug. 2017*

- Introduced Ad-Hoc Event Kit generation for the TRECVID Multimedia Event Detection evaluation and the methodology behind creating the datasets.