Willie McClinton

Software Engineer · Research Scientist

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Education

University of South Florida *Tampa, Florida*

B.S. in Computer Science and Minor in Mathematics | Honors College *Aug. 2016 - PRESENT*

- Research Interests: Artificial Intelligence: Reinforcement Learning, Imitation Learning, Deep learning, and Meta-Learning; as well as their applications in Brain Computer Interfaces, Robotics, and Human Computer-Interaction
- Cumulative GPA: **4.00**

Publications

1. Wang, Y., **McClinton, W.**, Xiaopeng, L. (2019). *Optimizing for Both Fuel Efficiency and Displacement of Neural Network Controllers for Autonomous Vehicle using Cross-Entropy and Reinforcement Learning.* (In preparation)
2. Minakshi, M., **McClinton, W.**, Mirzakhalov, J., Bharti, P., and Chellappan, S. (2019). *A Deep Learning Framework to Automatically Identify Genus and Species of Mosquitoes from Smart-phone Images.* (Submited to IEEE Transactions on Mobile Computing.)
3. **McClinton, W.**, Garcia, S., Andujar, M. (2019) *An Immersive Brain Painting: The Effects of Brain Painting in a Virtual Reality Environment.* In: Schmorrow D., Fidopiastis C. (eds) Augmented Cognition. HCII 2019. Lecture Notes in Computer Science, vol 11580. Springer, Cham
4. **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.
5. Awad, G., Butt, A., Fiscus, J., Joy, D., Delgado, A., **McClinton, W.**, Michel, M., Smeaton, A., Graham, Y., Kraaij, W., Quenot, G., Eskevich, M., Ordelman, R., Jones, G., Huet, B. (2017) *TRECVID 2017: Evaluating Ad-hoc and Instance Video Search, Events Detection, Video Captioning, and Hyperlinking.* TREC Video Retrieval Evaluation (TRECVID), Nov 2017, Gaithersburg, MD, United States. hal-01854790.

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 ($7000)	*Providence, RI*
2019	**1st Place**, Best Overall Project (Classroom.ai) at KnightHacks	*Orlando, FL*
2019	**Award**, Best Hack for Social Good (Emesh.io) at Hack-A-Bull	*Tampa, FL*
2019	**Award**, USF Dean's List of Scholars	*Tampa, FL*
2018	**1st Place**, Best Poster Presentation at USF REU in Ubiquitous Sensing Poster Competition	*Tampa, FL*
2018	**Inductee**, Sigma Xi National Chapter	*Tampa, FL*
2018	**Inductee**, Pi Mu Epsilon University of South Florida Chapter	*Tampa, FL*
2018	**Award**, Best Hardware Hack (Fix8) at Hack-A-Bull	*Tampa, FL*
2018	**1st Place**, Best Oral Presentation in Computer Science Division at Emerging Researchers National (ERN) Conference 2018	*Washington, D.C.*
2017	**1st Place**, Best Presentation in Information Technology Division at NIST Summer Undergraduate Colloquium 2017	*Gaithersburg, MD*

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

Presentations

[Poster]	**Brown University 2019 Summer Research Symposium (Aug. 2019)**, "Meta-Learning with Multi-Level Hierarchies via Context Variables"	*Providence, RI*
[Oral]	**Leadership Alliance National Symposium 2019 (Jul. 2019)**, "Meta-Learning with Multi-Level Hierarchies via Context Variables"	*Hartford, CT*
[Poster]	**ACM CHI Conference on Human Factors in Computing Systems 2019 (May. 2019)**, "Effects of 3D Brain Painting in Virtual Reality"	*Glasgow, UK*
[Demo]	**USF Brain Drone Race (Feb. 2019)**, "Mind & Machine: Students to Compete in USF's First Brain Drone Race"	*Tampa, FL*
[Demo]	**Roboticon (Sept. 2018)**, "USF Neuro-Machine Interaction Brain Drone Racing Mini-Competition Demo"	*Tampa, FL*
[Panelist]	**USF Making Waves 2018 (Sept. 2018)**, "Partnership, Mentorship, Scholarship: Discussing faculty-student connections"	*Tampa, FL*
[Demo]	**Orlando iX (Aug. 2018)**, "USF Neuro-Machine Interaction Brain Drone Racing Simulation Demo"	*Winter Park, FL*
[Poster]	**USF Ubiquitous Sensing Poster Competition (Aug. 2018)**, "Deriving Trends from Meta-Data to Predict Distress in Online Communications"	*Tampa, FL*
[Demo]	**S.T.E.A.M. FORWARD Camp (Jul. 2018)**, "Brain Computer Interface Demo for Middle School kids hosted by USF, FPU, and Intel"	*Haines City, FL*
[Oral]	**Emerging Researchers National Conference 2018 (Feb. 2018)**, "TRECVID Multimedia Event Detection evaluation"	*Washington, D.C.*
[Oral]	**NIST Summer Undergraduate Colloquium 2017 (Aug. 2017)**, "TRECVID Multimedia Event Detection evaluation"	*Gaithersburg, MD*

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

Summer 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 classifier 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.

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.

Metropolitan Ministries

Tampa, Florida

Volunteer *Sept. 2016, May 2018.*

- Mentored students on First Robotics team and helped them with 3D printers, app development, as well as, technical and career questions.
- Brought donated electronics (Arduinos, Amazon Alexa, servo motors, etc.) in order to spark interest in other technologies.
- Informed instructors about emerging computer science resources, including online tutorials and texts, in order to give them more tools to educate students and stay educated themselves.

Projects

HackNigeria

Hackathon

Community project *Oct. 2019*

- Creating a virtual hackathon in collaboration with Nigerian data science company Vilsquare, Meluibe Foundation, and USF Society of Competitive Programmers to promote the development of technological solutions for local community problems in Nigeria.
- Ambassadored the connection between the organizations and helped with logistics, funding, and hosting for the event.

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 *Mar. 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.