Willie McClinton

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EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY **Cambridge, MA**

Ph.D. in Electrical Engineering and Computer Science, Concentration: AI and Robotics *2021-TBD*

- **GPA:** 4.8 /5.0 **Honors:** MIT Presidential Fellowship and NSF GRFP Recipient
- **Relevant Coursework:** Computational Sensorimotor Learning (A), Robotic Manipulation (A), Theory of Computation (A), Managerial Finance (A), Hardware Arch. for Deep Learning (B), Independent Study in Program Synthesis (Satisfactory)
- **Advisors:** Drs. Leslie Kaelbling, Tomas Lozano-Perez, and Armando Solar-Lezama

UNIVERSITY OF SOUTH FLORIDA **Tampa, FL**

Bachelor of Science in Computer Science, Minor in Mathematics *2016-2020*

- **GPA:** 4.0 /4.0 **Honors:** King O'Neal Scholar, Barry Goldwater Scholar, and Dean's List – All semesters
- **Relevant Coursework:** Diff. Eq. (A+), Linear Algebra (A+), Calc. III (A), Vector Calc. (A), Prob. and Stats. (A), NLP (A)

RESEARCH & WORK EXPERIENCE

BOSTON DYNAMICS AI INSTITUTE **Cambridge, MA**

Research Engineer (1st intern) *November 2022 - present*

- Developed a Task and Motion Planning system with hand designed skills and perception for BDAII's quadruped robotic dog Spot, as well as integrated a basic simulator enabling IK and FK motion planning, enhancing system efficiency for planning in real-time
- Designed human interfacing capabilities with our planning system utilizing LLMs for automated translation to propositional logic

GOOGLE RESEARCH **Mountain View, CA**

Research Scientist *October 2020 - December 2021*

- Improved unsupervised and semi-supervised computer vision systems by adding the ability to learn representations that are equivariant to data augmentations during Contrastive Learning, creating a 100x improvement in augmentation time for new datasets
- Implemented modern and traditional RL algorithms as baselines (Dynamic Programming, Monte Carlo, TD-Learning, Sarsa, DDPG, A3C, DQN, etc.) and explored research directions in improving the convergence speed of Deep Hierarchical RL approaches

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY **Gaithersburg, MD**

Summer Undergraduate Research Fellow *May 2017 - August 2017*

- Parsed the YFCC100M and HAVIC databases (>100 Million vids) with SQL to synthesize eval datasets for the competition
- Reduced scoring time by 10x 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

RESEARCH EXPERIENCE

MIT CSAIL (Drs. Leslie Kaelbling, Tomas Lozano-Perez, and Armando Solar-Lezama) **Cambridge, MA**

Visiting Research Assistant and Graduate Student *January 2020 - present*

- Developed new approaches to learn state and action abstractions and neuro-symbolic models for Bilevel Planning in robotics.
- Surveyed over a dozen modern program synthesis and deep learning techniques for neuro-symbolic programming.

USF SOCIAL COMPUTING LAB (Dr. Sriram Chellappan) **Tampa, FL**

Software Engineer and Research Assistant *January 2018 – January 2020*

- Led a team of 4 to build an Android application that collected and detected distress in users' non-textual SMS message data.
- Incorporated a classifier using Scikit-Learn and Tensorflow to identify user distress from features extracted from the meta-data.
- Created a cross-platform mobile app with React Native integrating deep learning for detecting mosquito disease-carriers with over 80% accuracy, using TensorFlow Lite and Firebase API. Patents: US Patent 11048928 and 10963742.

SELECTED PUBLICATIONS

1. "Learning Efficient Abstract Planning Models that Choose What to Predict" McClinton*, W., and Kumar*, N. et al. Best Paper at *RSS Workshop on L4TAMP. CoRL Conference on Robot Learning* (2023)
2. "Predicate Invention for Bilevel Planning" Silver, T., et al. *AAAI Conference on Artificial Intelligence* (2023)
3. "Steerable Representation Learning" Bhardwaj, S., and McClinton, W., et al. *[https://arxiv.org/abs/2302.11349]* (2023)
3. "HAC explore: Accelerating Exploration with Hierarchical Reinforcement Learning" McClinton, W., and Levy, A., et al. *[https://arxiv.org/abs/2108.05872]* (2021)
4. "Evaluating Ad-hoc and Instance Video Search, Events Detection, Video Captioning, and Hyperlinking" Awad, G., et al. *TREC Video Retrieval Evaluation (TRECVID)* (2017)

SKILLS & INTERESTS

- **Software:** Android/iPhone, Git, LaTeX, Numpy, OpenCV, Pytorch, React Native, SciPy, Scikit-learn, TensorFlow, and Unix/Linux
- **Languages:** Proficient in C, C++, JavaScript, Matlab, Python; prior experience in Bash, C#, Lisp, Java, R, Ruby/Rake, and SQL
- **Interests:** Volunteering, Cryptocurrency, Hobby-Robotics, and Brazilian Jiu Jitsu