Tyler LaBonte

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Education

GEORGIA INSTITUTE OF TECHNOLOGY 2021–Present
Ph.D., Machine Learning

UNIVERSITY OF SOUTHERN CALIFORNIA 2017–2021
B.S., Applied and Computational Mathematics, *magna cum laude* GPA: 3.73/4.0
Skills: Python, TensorFlow, Keras, PyTorch, Numpy, Scikit-Learn, C++, Linux CLI, Git, Vim, LaTeX

Selected Publications

1. **Tyler LaBonte**. Finding the Needle in a High-Dimensional Haystack: Oracle Methods for Convex Optimization. Senior Thesis, 2021. Winner of the USC Discovery Scholar distinction.

2. Michael C. Krygier, **Tyler LaBonte**, Carianne Martinez, Chance Norris, Krish Sharma, Lincoln N. Collins, Partha P. Mukherjee, and Scott A. Roberts. Quantifying the Unknown: Impact of Segmentation Uncertainty on Image-Based Simulations. *Nature Communications*, 12(5414), 2021.

Research Experience

MICROSOFT RESEARCH Redmond, WA
Machine Learning Research Intern 2021

- Developed Vision Transformer for weakly supervised object detection with multiple instance learning.
- Achieved object detection performance within 2% of fully-annotated benchmarks using only class labels.
- Created Bing-based workflow to automate training dataset creation, accelerating model development by 4×.
- Integrated pipeline into production system, enabling rapid delivery of new Windows Action Center capability.

GOOGLE X Mountain View, CA
Machine Learning Research Intern 2020

- Invented CNN-LSTM for temporal identity preservation in multiple object tracking for computational agriculture.
- Developed self-supervised method to extract novel time-series features from agricultural video imagery.
- Initiated a time-lapse experiment in raspberry breeding, building an object evolution dataset with 20,000 images.
- Presented results to Google executives, who approved an FTE hire to deploy my research to production systems.

SANDIA NATIONAL LABORATORIES Albuquerque, NM
Machine Learning Research Intern 2019–2020

- Invented novel Bayesian CNN deep learning architecture which scales to billion-voxel 3D segmentation volumes.
- Enabled error bound calculation for physical properties of graphite electrodes and thermal protection systems.
- Integrated codebase with Sandia supercomputers; now an integral component of $10 million simulation system.

Selected Awards

DoD National Defense Science and Engineering Graduate Fellowship ($170,000) 2021

NSF Graduate Research Fellowship ($138,000, one of 5 undergrads in ML, declined) 2021

USC Discovery Scholar (Research distinction for <100 USC graduates) 2021

USC Trustee Scholar (Full scholarship worth $250,000) 2017

USC Viterbi Fellow (Research funding worth $24,000) 2017