TYLER LABONTE

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EDUCATION

University of Southern California, Viterbi School of Engineering **Los Angeles, CA**
Bachelor of Science, Computer Science and Applied and Computational Mathematics (Double Major) **May 2021**
- USC Trustee Scholarship (top 2% of USC Class of 2021) **GPA: 3.77**
- USC Viterbi Fellowship (top 6% of Viterbi Class of 2021) **Ph.D. Courses: 2**

Skills: Python, TensorFlow, Keras, PyTorch, Scikit-Learn, Linux CLI, C++, Git, Vim, LaTeX

PUBLICATIONS

1. **LaBonte**, Martinez, and Roberts. 3D Bayesian Convolutional Neural Networks for Credible Uncertainty Quantification of Binary Segmentations for Material Simulations. *Under Preparation for 2020 IEEE Conference on Computer Vision and Pattern Recognition (CVPR).*

EXPERIENCE

Sandia National Laboratories **Albuquerque, NM**
Machine Learning Intern **May 2019 - August 2019**
- Developed novel 3D Bayesian V-Net with TensorFlow Probability to quantify uncertainty in CT scans used in safety-critical simulations, achieving 98% accuracy and beating state-of-the-art dropout technique.
- Designed pipeline to accelerate development of machine learning-based intrusion detection systems for cyber defense.
    - Built Random Forest-based classifier for malicious RTFs, achieving 99.9% accuracy and usage in production.
- Briefed research results and implications to leadership including Associate Laboratory Director of Mission Assurance.

Air Force Research Laboratory (AFRL) **Kihei, HI**
Machine Learning Intern **June 2018 - August 2018**
- Delivered a lightweight, RESTful remote inference library in TensorFlow Serving for decoupling deep learning development and deployment, enabling model usage on classified networks, IoT devices, and production systems.
    - Offset $100,000 of machine learning engineer salary on Machine Intelligence for Space Superiority portfolio.
- Implemented a CycleGAN in TensorFlow to impose organic deep-space noise profiles on anomalous priors, augmenting existing Faster R-CNN for astronomical anomaly detection.
- Briefed research results and implications to a dozen key Department of Defense leaders.

PROJECTS

Crystallize **TreeHacks Hackathon, Stanford University**
- Won 1st Place Computer Vision AI Hack and 1st Place Healthcare Hack out of over 120 projects.
- Achieved 2x resolution upscaling for DIY medical imaging and real-time video streaming on mobile phones.
- Compressed state-of-the-art 50GB super-resolution GAN by a factor of 100k yet preserved performance.
    - Used TensorFlow to integrate VGG embeddings into a GAN for low-complexity, high-speed inference.

Embedding Fairness **CAIS++: Center for Artificial Intelligence in Society**
- Compared fairness metrics of SVD and skip-gram word embeddings on a dataset of 50k news articles, using Keras.
    - Developed methods for debiasing embeddings including a novel fairness-based regularizer.

AI for Adversarial Games **CAIS++: Center for Artificial Intelligence in Society**
- Developed Deep Q-Networks in PyTorch to beat minimax and alpha-beta pruning algorithms in adversarial games.

World's Stage **SB Hacks IV Hackathon, University of California Santa Barbara**
- Won National Top 20 Ethical Hacking Finalist award (top 0.004% out of 4500 total projects).

LEADERSHIP

CAIS++: Center for Artificial Intelligence in Society **Los Angeles, CA**
Artificial Intelligence Curriculum Lead **August 2019 - Current**
- Developed AI curriculum for experimental accelerated cohort, including graph neural networks & Bayesian methods.
- Led five USC students through AI curriculum, building proficiency in using ethical AI to solve real-world problems.

USC Viterbi Adopt-a-School/Teacher (USC VAST) **Los Angeles, CA**
Associate Director of Robotics Outreach **January 2018 - December 2018**
- Led five USC volunteers and designed curriculum for robotics workshops, educating 30 teachers in basic coding.
- Coordinated local schools, USC labs, and student groups for annual Robotics Open House with 2,400 attendees.
- Delivered $66,000 budget to establish Sphero robotics programs at three inner-city elementary schools.