Liam Li

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Education

Carnegie Mellon University **Pittsburgh, PA**
PhD, Masters in Machine Learning *May 2020 (Expected)*
Conducting research with Prof. Talwalkar on hyperparameter optimization and AutoML.

Caltech **Pasadena, CA**
Bachelors in Applied Math *2007–2011*

Employment

Google **New York, NY**
Software Engineering Intern *June 2017 – September 2017*

- Developed new meta-algorithm for batch mode active learning.
- Implemented active learning algorithms in production code using C++.
- Built experimentation suite for active learning in python.

BlueMountain Capital **New York, NY**
Risk Analyst *May 2014 – July 2015*

Cornerstone Research **Los Angeles, CA**
Senior Analyst *August 2011–April 2014*

Publications

- Li, L., Jamieson, K., DeSalvo, G., Rostamizadeh, A., and Talwalkar, A. *Efficient Hyperparameter Optimization and Infinitely Many Armed Bandits.* ICLR 2017.
  - Speed up hyperparameter optimization through principled early-stopping, thereby allocating more resources to promising hyperparameter configurations.
  - More than an order-of-magnitude faster than non-early-stopping methods.
- Li, L., Jamieson, K., DeSalvo, G., Rostamizadeh, A., and Talwalkar, A. *Hyperband: A Novel Bandit-Based Approach to Hyperparameter Optimization.* JMLR, 18(185):1–52, 2018
  - Extended journal version of the project above with extended proofs for complexity bounds of the Hyperband algorithm.
- Li, L., Jamieson, K., Rostamizadeh, A., Gonina, E., Hardt, M., Recht, B., and Talwalkar, A. *Massively Parallel Hyperparameter Tuning.* NIPS 2018 Systems for Machine Learning Workshop.
  - Adapt Hyperband to the parallel setting with an asynchronous algorithm that scales

linearly with the number of available parallel workers.
  - Achieves state-of-the-art results for hyperparameter tuning in the parallel setting.
- Li, L., Sparks, E., Jamieson, K., and Talwalkar, A. *Exploiting Reuse in Pipeline-Aware Hyperparameter Tuning.* NIPS 2018 Systems for Machine Learning Workshop.
  - Eliminate redundant computation in machine learning pipelines and achieve more than an order-of-magnitude speedups with reuse through caching.
- Li, L. and Talwalkar, A. *Random Search and Reproducibility for Neural Architecture Search.* UAI 2019.
  - Develop novel random search with weight-sharing algorithm that is much simpler than existing methods while achieving comparable results.
  - Provide missing comparisons to leading standard hyperparameter optimization methods.
  - Summarize the status of reproducibility in the field and quantify the reproducibility of our novel method.

Talks and Panels

- *ICML AutoML Workshop Panel Discussion* *June 2019*
- *Random Search and Reproducibility for NAS*
  - Stanford DAWN Lab *April 2019*
  - Berkeley RISE Lab *April 2019*
  - Determined AI *April 2019*
  - MILA *May 2019*
  - UCLA ScAi Lab *June 2019*
  - ICML AutoML Workshop *June 2019*
- *Parallelizing Hyperband for Large-Scale Tuning*
  - Bloomberg *September 2017*
- *Learning Optimal Mixtures of Active Learning Methods*
  - Google Research Intern Seminar *August 2017*
- *Hyperband: A Novel Bandit-Based Approach to Hyperparameter Optimization*
  - UCLA Electrical Engineering Annual Research Review *February 2015*
  - Southern California Machine Learning Symposium *November 2016*

Service

- CMU ML Blog, Founding Editor *2018 – Present*
- Conference and Workshop
  - ICLR Volunteer *2017*
  - SysML Reviewer *2018*
  - ICML Reviewer *2019*
  - ICML AMTL Workshop Program Committee *2019*
  - ICML AutoML Workshop Program Committee *2019*
  - NIPS Reviewer *2020*

Awards

- ICLR Travel Award *2017*
- Southern California Machine Learning Symposium Best Talk Award *2016*
- Eugene V. Cota-Robles Fellowship, UCLA *2015–2017*
- Wasserman Scholar, Caltech *2009–2011*

Teaching

10-718: Data Analysis **CMU**
Teaching Assistant *Fall 2018*
Designed data analysis project to develop machine learning pipeline for single cell gene expression data.

10-403: Deep Reinforcement Learning and Control **CMU**
Teaching Assistant *Spring 2019*
Led recitation and designed homework assignments focused on implementing standard reinforcement learning algorithms.

Technical Skills

- **Programming Languages:** Python, R, C++, Scala, Matlab
- **Frameworks:** Tensorflow, Keras, PyTorch, Apache Spark