VIHAN LAKSHMAN

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(912) 704-8286

EDUCATION

Stanford University *June 2018*
M.S. in Computational & Mathematical Engineering

Stanford University *June 2016*
B.S. in Mathematical & Computational Science

EXPERIENCE

ThirdAI Corp March 2022 - present
Research Scientist *Houston, TX*

- Research in randomized, hashing-based algorithms for training large neural network models on commodity CPU hardware.

Stanford University Digital Education September 2021 - present
Teaching Fellow/Course Advisor *Remote*

- Teaching Fellow for *Introduction to Computer Science (CS105E)*, a dual-enrollment course offered by Stanford University and the National Education Equity Lab to provide college credit opportunities to low-income high school students across the United States. Contribute to designing and organizing course materials and teaching weekly sections and advising.
- Recognized for outstanding teaching and mentorship at the conclusion of the first iteration of the course.

Amazon June 2018 - November 2021
Applied Scientist *Palo Alto, CA*

- Contributed to the development and launch of one of the industry's first vector-based retrieval engines for product search, utilizing large-scale deep learning.
- Conducted research projects in billion-scale nearest neighbor search, learning-augmented search engine indexing architectures, negative sampling for representation learning, and neural network model compression.

Amazon June 2017 - September 2017
Applied Science Intern *Palo Alto, CA*

- Implemented multiple popular neural information retrieval architectures from the academic literature to investigate applying deep learning techniques for Amazon product search.

PUBLICATIONS

Preprints/Working Papers

· V. Lakshman, et al (2022). BOLT: A Sparse Deep Learning Engine for Training Billion-Parameter Neural Networks on Commodity CPU Hardware. (In Submission).

· J. Engels, B. Coleman, V. Lakshman, A. Shrivastava (2022). DESSERT: An Efficient Algorithm for Vector Set Search with Vector Set Queries. (In Submission).

· B. Coleman, D. Torres Ramos, V. Lakshman, A. Shrivastava (2022). CARAMEL: A Succinct Read-Only Lookup Table via Compressed Static Functions. (In Submission).

Conference/Workshop Proceedings

· C. Luo, V. Lakshman, A. Shrivastava, T. Cao, S. Nag, R. Goutam, H. Lu, Y. Song, B. Yin. (2022). ROSE: Robust Caches for Amazon Product Search. In Proceedings of the 31st International Conference on the World-Wide Web. (TheWebConf'22).

· N. Jiang, C. Luo, V. Lakshman, Y. Dattatreya, Y. Xue (2022). Massive Text Normalization via an Efficient Randomized Algorithm. In Proceedings of the 31st International Conference on the World-Wide Web. (TheWebConf'22).

· V. Lakshman, C.H. Teo., X. Chu, P. Nigam, A. Patni, P. Maknikar, S.V.N Vishwanathan (2022). Embracing Structure in Data for Billion-Scale Semantic Product Search. In Proceedings of the 1st WSDM Workshop on Interactive and Scalable Information Retrieval Methods for e-Commerce (ISIR-eCOM'22).

· P. Nigam, Y. Song, V. Mohan, V. Lakshman, W. Ding, A. Shingavi, C.H. Teo, H. Gu, and B. Yin. 2019. Semantic product search. In Proceedings of the 25th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining (KDD'19).

MENTORING

· Nan Jiang, Applied Science Intern at Amazon, 2020. Research in locality sensitive hashing for cleaning large text datasets. Work published in TheWebConf 2022.
· Anthony Ko, Software Development Intern at Amazon, 2020. Research in building low-precision representations of vectors for memory-efficient approximate nearest neighbor search indexes. Publication in preparation.
· Yunus Chang, Software Development Intern at Amazon, 2020. Designed, implemented, and launched a scalable and flexible feature processing pipeline for online machine learning inference.
· Gaurav Gupta, Applied Science Intern at Amazon, 2019. Research in probabilistic data structures for approximate multi-set membership. Work subsequently published in SIGMOD 2021.

SERVICE

- The Web Conference 2022 (Program Committee, Industry Track)
- NeurIPS 2019 (Reviewer)
- ICML 2019 (Reviewer)

AWARDS & HONORS

- 2022 NSF CSGrad4US Fellowship (3 years full funding for graduate studies)
- 2017 National Basketball Association (NBA) Hackathon (1st Place Team)
- 2014 Society of American Baseball Researchers (SABR) Case Competition (1st Place Team)