Darshan Thaker

Curriculum Vitae

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Education

2018-2019 **Master of Science, Computer Science**, *Columbia University*, New York, NY, *GPA: 3.78 / 4.0*.
MS Thesis Track advised by Dr. John Wright

2014–2018 **Bachelor of Science, Computer Science**, *The University of Texas at Austin*, Austin, TX, *GPA: 3.81 / 4.0*.
Turing Scholars Honors Student

2014–2018 **Bachelor of Science, Mathematics**, *The University of Texas at Austin*, Austin, TX, *GPA: 3.81 / 4.0*.
Concentration in Pure Mathematics

Publications

5. Q. Ma, S. Ge, D. He, **D. Thaker**, and I. Drori. *Combinatorial Optimization by Graph Pointer Networks and Hierarchical Reinforcement Learning*. arXiv preprint arXiv:1911.04936, 2019. (Submitted CF).
4. I. Drori, **D. Thaker**, A. Srivatsa, D. Jeong, Y. Wang, L. Nan, F. Wu, D. Leggas, J. Lei, W. Lu, W. Fu, Y. Gao, S. Karri, A. Kannan, A. Moretti, M. AlQuraishi, C. Keasar, and I. Pe'er. *Accurate protein structure prediction by embeddings and deep learning representations*. arXiv preprint arXiv:1911.05531, 2019. (Submitted CF).
3. I. Drori, **D. Thaker**, A. Srivatsa, D. Jeong, Y. Wang, L. Nan, F. Wu, D. Leggas, J. Lei, W. Lu, W. Fu, Y. Gao, S. Karri, A. Kannan, A. Moretti, C. Keasar, and I. Pe'er. *Accurate protein structure prediction by embeddings and deep learning representations*. Machine Learning in Computational Biology, 2019. (WS).
2. I. Drori, **D. Thaker**, A. Srivatsa, D. Jeong, Y. Wang, L. Nan, F. Wu, D. Leggas, J. Lei, W. Lu, W. Fu, Y. Gao, S. Karri, A. Kannan, A. Moretti, C. Keasar, and I. Pe'er. *Protein structure prediction with deep learning representations* (extended abstract). NeurIPS Workshop on Learning Meaningful Representations of Life, 2019.(WS).
1. **D. Thaker**. *Generating Synthetic Question-Answer Pairs for Transfer Learning in Biomedical Question Answering*. UT Austin Undergraduate Honors Thesis, 2018. (TR).

Work Experience

Spring 2020 **Research Intern**, Salesforce Research, Palo Alto, CA.
- Incoming research intern working with Dr. Yu Bai

2019-Present **Course Assistant**, Columbia University, New York, NY.
- Spring 2019: Course Assistant for *Deep Learning* taught by Prof. Iddo Drori. Responsibilities included holding office hours, grading and helping to design homeworks, and advising 5 groups of students with their final projects throughout the semester
- Fall 2019: Course Assistant for *Analysis of Algorithms* taught by Prof. Alexandr Andoni. Recipient of CA Fellowship with full tuition waiver for excelling as a Course Assistant

Summer 2018 **Research Intern**, The Curious AI Company, Helsinki, Finland.

- Researched techniques for modeling uncertainty in model-based reinforcement learning applied to factory control
- Trained various uncertainty models such as Bayesian neural network models for quantifying prediction uncertainty

Summer 2017 **Software Engineering Intern**, Facebook Inc., Menlo Park, CA.

- Worked on WPR (Whole Page Ranking) for Facebook Search on improving ranking of modules (Pages, Groups, People, etc.)
- Introduced new C++ API for module interleaving that allows quick prototyping of different strategies to interleave modules on the Search Engine Result Page
- Trained new result-level ranking machine learning models and integrated them into the Search pipeline to rank and split modules using this ranker

Summer 2016 **Software Engineering Intern**, Google Inc., Menlo Park, CA.

- Worked on the HULK (Holistic User-Location Knowledge) team on online segmentation (classifying location points as stationary or moving)
- Set up a pipeline to tune hyper-parameters of the segmentation algorithm
- Adapted the algorithm from a heuristic-based clustering approach to one that uses machine learning
- Created an efficient C++ pipeline that allowed generation of training data, modular feature computation, evaluation in model, and evaluation of results

Summer 2015 **Machine Learning Intern**, Symantec: Center for Advanced Machine Learning, Mountain View, CA.

- Collaborated with a mentor to develop a robust machine learning classifier using gradient boosted decision trees to identify targeted malicious e-mail attacks
- Explored feature engineering steps such as using spectral clustering for identifying clusters of criminal networks sending out similar email attachments
- Project selected as one of top 12 company-wide projects from a group of $\approx$ 200 interns

Projects

One-shot Learning for Action Recognition.

- Used memory-augmented neural networks on videos to perform one-shot learning for action recognition

Visual Semantic Planning.

- Implemented deep successor network in Tensorflow with both imitation learning and reinforcement learning training for visual semantic planning in a toy MDP domain
- Follows paper *Visual Semantic Planning Using Deep Successor Representations* - Zhu et al. 2017

Conflict Graphs for Parallel Stochastic Gradient Descent.

- Exploration of conflict graphs to parallelize stochastic subgradient descent in the context of training SVMs using PEGASOS algorithm

Honors and Awards

- Course Assistant Fellowship, Columbia University Fall 2019
- Turing Scholar Honors, UT Austin 2018