Thomas Kao

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EDUCATION:

University of Illinois at Urbana-Champaign *Fall 2013 – Winter 2017*

B.S. in Electrical Engineering, Minor in Computer Science

Honors: Dean's List in Fall 2013 and Spring 2014

Relevant Coursework: Advanced Distributed Systems, Machine Learning, Distributed Systems, Algorithms and Models of Computation, Communication Networks, Systems Programming, Data Structures, Computer Architecture, Digital Signal Processing, Digital Signal Processing II, Digital Systems Lab

EXPERIENCES:

Student Researcher in Cognitive Computation Group at UIUC *Summer 2016 – Present*
Illinois CloudNLP

- Analyzed and implemented a more general classifier inside of CloudNLP, a cloud-based framework for NLP and text analytics
- Improvements include identification of document language, automatic extraction and augmentation of feature sets, and determination of best model to use (e.g. Naïve Bayes) for document classification
- Integrated Cognitive Computation Group's NLP infrastructure into CloudNLP framework

Student Researcher in Distributed Protocols Group at UIUC *Fall 2015 – Present*
Getafix: Adaptive Replication in a Distributed Data Store

- Wrote deployment scripts, data ingestion scripts, and workload generation scripts for Druid (developed by Metamarkets) and Pinot (developed by Linkedin)
- Implemented adaptive replication scheme inside of Pinot and Druid codebase to reduce memory overhead and increase throughput
- Conducted experiments in the Druid system to determine effect of different query workloads on metrics such as memory utilization

REU Intern in Zhu Lab at Columbia University *Summer 2015*

- Fabricated and characterized monolayer samples of 2-dimensional transition metal dichalcogenides using photoluminescence spectroscopy in order to determine density of trap states in material

Research Intern at SLAC *Summer 2011 – Summer 2012*

- Developed MATLAB code that uses statistical analysis of very large amounts of x-ray data to determine variation of chemical compositions in a sample.

PROJECTS:

Object Classification on 3D Data with Applications to Autonomous Vehicles *Fall 2016 - Present*

- Working on enhancing volumetric convolutional neural networks by improving performance as 3D resolution of data is scaled up
- Investigating the disparity in performance between multi-view convolutional neural networks and volumetric convolutional neural networks
- Improve real-time capabilities of these architectures with applications to autonomous vehicles

SumItUp *Summer 2016 – Present*

- Developed messaging app for iOS for automated text analysis and summary
- Sinch SDK used to handle instant messaging, Parse SDK used to store users and messages

Computer Networks Project *Fall 2015*

- Implemented TCP congestion control system for packet transmission via datagram sockets
- Implemented Go-Back-N algorithm, allowing for recovery from congestion-induced packet loss
- Implemented dynamic threshold adjustment, allowing for adaptation to changes in congestion

SKILLS:

Programming Languages: Python, Java, C++, C
Technologies: Tensorflow, Apache Kafka, MySQL, AWS, Git, Eclipse, Linux

PUBLICATIONS:

[1] "Nanoscale elemental sensitivity study of Nd2Fe14B using absorption correlation tomography." Kao, T. L., Shi, C. Y., Wang, J., Mao, W. L., Liu, Y. and Yang, W; Microsc. Res. Tech. 76 No 11 (2013) 1112–1117.