Dany Haddad

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EDUCATION

University of Texas at Austin: *Master of Science, Electrical Engineering* May 2019
Thesis Title: Strengthening Weak Supervision for Information Retrieval
Courses: Bayesian Methods, Responsible AI, Data Mining, Deep Unsupervised Learning, Time Series Analysis, Large-Scale Optimization, Genomic Data-Science and Bioinformatics

WORK AND RESEARCH EXPERIENCE

Cognitive Scale Austin, TX
Machine Learning Engineer January 2018 — Present

- Developed an entity linking model using deep learning, matching 2017 state of the art performance.
- Developed a framework for explaining predictions of complex classification models.
- Implemented approximate soft-max techniques for deep neural NLP models.
- Built a recommendation engine which incorporates user feedback as well as discrimination and privacy concerns.
- Developed an interpretable anomaly detection system in the context of noisy labels and severe class imbalance.
- Built a streaming data pipeline for training machine learning models using content from Wikipedia.
- Determined trends and seasonalities in clickstream data to provide recommendations for SEO.

University of Texas Austin, TX
Graduate Research Assistant — Intelligent Data Exploration and Analysis Lab August 2017 — Present

- Introduced two novel contributions for training neural networks using weak supervision for document retrieval (published in SIGIR 2019).
- Developed techniques that identify training instances that explain the bias learned by a model.
- Extended techniques for unbiased recommendation and fair ranking algorithms.
- Improved state of the art defense mechanisms against adversarial examples for neural network classifiers.
- Improved the robustness of a deep network based commonsense-reasoning model using adversarial training.
- Applied robust statistics techniques to achieve performance guarantees for time series forecasting in the context of arbitrary noise.

Originate Los Angeles, CA
Software Engineer, Technical Lead March 2016 — June 2017

- Transitioned the data model of a 20 kloc codebase from a schema-less Firebase data-store to a PostgreSQL database utilizing a GraphQL API.
- Developed a scalable and reliable data aggregation backend for a commercial real estate search tool.

PUBLICATIONS

Learning More From Less: Towards Strengthening Weak Supervision for Ad-Hoc Retrieval
Published in: SIGIR, *2019*

SKILLS

- Model selection and validation for predictive and prescriptive applications.
- Data exploration, feature extraction and selection.
- Proficient in Python, Clojure, and Javascript.
- Working knowledge of Apache Spark.
- Experience with OCaml.
- Strong theoretical understanding of trade-offs of SVM, RF, GLMs, non-parametric methods.
- Deep network training and architecture selection methodology.
- Proficient in `pytorch`, `numpy` and `pandas`.
- Proficient SQL and No-SQL database user.
- Experience writing CUDA GPU code.

INDEPENDENT PROJECTS

- Developing a tool for coordinating the development of ML models and their corresponding datasets to ensure the reproducability of results: `rabbit-ml`
- Developed a symbolic electronic circuit solver for teaching introductory electrical engineering.
- Built a melody extraction tool for transcribing polyphonic music.
- Contributor to `StumpWM`, written in Common Lisp.
- Contributor to `dumpster-dive`, a tool for parsing Wikipedia markup and dumping it to a local datastore.
- Contributor to `Tertestrial`, a software testing framework.
- Contributor to `core.matrix.complex`, a Clojure library for working with complex valued matrices.
- Contributor to multiple open source Emacs Lisp tools.

AWARDS

- Received the Charles W. and Margaret A. Tolbert Endowed Scholarships and Fellowships in Electrical and Computer Engineering.
- Received the Nicholas and Maria Weber Electrical Power Endowed Scholarship, 2014
- Named an Engineering Scholar, Cockrell School of Engineering, 2013
- Received the C.W. Cook Endowed Presidential Scholarship, 2013
- Received the Gulf Coast Power Association Program in Electric Power Scholarship, 2012