

David Ding

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EXPERIENCE

Google

Software Engineer

New York, NY; 08/14 – 01/17, 05/17 – Present

- My team takes ~100,000 business edit requests to Google Maps daily, and automatically matches them with existing businesses in the canonical Maps database, ensuring that a user searching on Google Maps sees all information in a single listing. The business descriptions are incredibly noisy and come from numerous sources like ad feeds and user edits. What I have done:
 - Engineered high-quality model input features subject to various latency, threading, and memory constraints. Namely, the whole process retrieves all candidates, computes features, and scores everything within 2s 99% of the time, is thread-safe, and has a ~100MB footprint.
 - Achieved a ~30% relative gain in the pipeline’s precision, to over 90%, by improving, retraining, and maintaining the ML model and its input features.
 - Developed and optimized online methods to retrieve matching business candidates for an input business from a database index, ensuring that production systems stay up while processing ~1000 index updates per second.

ML Rotation Participant

Mountain View, CA; 01/17 – 05/17

- Published a research paper in interpretable ML models: specifically, extending the research group’s highly interpretable lattice-based models to deeper and more flexible neural networks.
 - Showed that the proposed idea had real potential in practice, conducting all the theoretical work and spearheading the experimental efforts.
 - Achieved state-of-the-art performance for regression and classification with monotonicity guarantees, published in a NIPS 2017 paper (see below).

Intern (Site Reliability Engineering)

Los Angeles, CA; 06/13 – 09/13

- Designed, wrote, tested, and executed a tool for transferring live monitoring services from one cloud service to another, in preparation for a major infrastructure revision.

PUBLICATIONS

- Seungil You, **David Ding**, Kevin Canini, Jan Pfeifer, Maya Gupta. Deep Lattice Networks and Partial Monotonic Functions. In the proceedings of NIPS 2017. [arXiv:1709.06680](https://arxiv.org/abs/1709.06680).

EDUCATION

Columbia University

M.S.; Machine Learning; GPA 4.0/4.0

New York, NY; 09/14 – 12/16

California Institute of Technology

B.S.; Mathematics and Computer Science; GPA 4.0/4.0

Pasadena, CA; 09/10 – 06/14

TECHNICAL SKILLS

- **Actively using:** C++, Python, Linux, Piper (version control), SQL
- **Significant experience with:** TensorFlow, C, Scheme, \LaTeX , MATLAB

SOME HOBBIES AND INTERESTS

- **Music:** singing (New York City Gay Men’s Chorus, tenor 2), piano, saxophone, guitar
- **Puzzles:** MIT Mystery Hunt (winning team 2012), Google Games (undefeated in LA area among all undergraduate and graduate teams, 2011-2014), and various other puzzle hunts.
- **Outdoors:** mountaineering (Aconcagua, Kilimanjaro, Mt. Whitney, and more), hiking (led week-long treks through the Sierra Nevada and the Pacific Northwest), skiing (type 3)