

Vivek Verma

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EDUCATION

University of California, Berkeley

May 2024

B.A. Computer Science, B.A. Applied Mathematics

GPA: 3.96/4.00

Relevant Coursework: Combinatorial Algorithms and Data Structures (Graduate)*, Natural Language Processing (Graduate, Audit), Operating Systems*, Machine Learning*, Machine Structures, Efficient Algorithms, Abstract Algebra. In Progress*

Honors: Upsilon Pi Epsilon (top 33% of CS students), Dean's List (top 10% of undergraduates).

Teaching: Math 198 (DeCal - Speedcubing and Group Theory).

EXPERIENCE

Google

August 2022 – December 2022

Software Engineering Intern, Google Cloud

Sunnyvale, CA

- Designed variance-weighted linear regression algorithm for multi-source clock synchronization in distributed systems.
- Achieved 2x speedup over traditional averaging methods, wrote simulations and implemented algorithm to verify results.

Berkeley Artificial Intelligence Research (BAIR)

January 2022 – Present

Undergraduate Researcher at Berkeley NLP Group, Advisors: Nicholas Tomlin, Dan Klein

Berkeley, CA

- Currently researching surprisal trends in documents by comparing entropies of distributions from neural language models.
- Developed and implemented sliding window algorithm for a 32x speed-up of GPT-2 text generation.

3blue1brown

June 2021 – August 2021

Software and Content Intern

San Mateo, CA

- Created interactive math lessons using next.js, p5.js and react.js on Fourier Series, Partial Differential Equations, Riemann Zeta Function and Differentials, published on 3blue1brown.com, with 4,500,000 subscribers and 288,000,000 views.

NYU Deep Learning

June 2020 – Present

Teaching Assistant, Advisors: Alfredo Canziani, Yann LeCun

New York, NY

- Researched and programmed visualizations of neural networks using Manim, published as YouTube videos with 150,000 views, used in DS-GA 1008: Deep Learning (Graduate), with 15,000+ online students.

PROJECTS

Math Content Creator on YouTube | Python, C, GLSL, OpenGL, PyTorch, NumPy, Cairo, Manim

- Programmatically created 25+ explanatory math videos that visualize Complex Analysis, Multivariable Calculus, Fractional Calculus, Measure Theory and Graph Theory.
- 62,000 subscribers, 2,000,000 views, 111,000 hours of watch time and 23,900,000 impressions.
- Videos utilized by courses at UC Berkeley, Stanford and UToronto.; 25+ universities across 7 countries.

ML-Python | Python, TensorFlow, Keras, NumPy, Matplotlib, PyPi

- Created high-level python library with 88,000+ downloads for common ML algorithms and structures such as ANNs, CNNs, Regression, K-Means, Deep-Q-Learning.
- Implemented visualizations for training process and optimized training with C/C++ extensions for Python.

Super Mario NEAT | Python, Lua, Gym, Multiprocessing, Keras, NumPy

- Used NEAT - Neuroevolution of Augmenting Topologies to evolve a neural network that plays Super Mario Bros (NES).
- Used multithreading and encoded representations to optimize training on CPUs, wrote paper on implementation and results.

HONORS/AWARDS

1st Place, ACM ICPC Pacific Northwest, Division 2

2022

1st in intercollegiate competitive programming contest with 85+ teams from pacific northwest region.

Round 2 Qualifier, Google Code Jam

2022

Ranked Top 500 out of ~20,000 international contestants in Round 1A.

SKILLS

Areas: NLP, Reinforcement Learning, Deep Learning, Machine Learning, Back-end Web Development, Statistics.

Languages/Frameworks: Python, Java, C/C++, GLSL, SQL, JavaScript, HTML/CSS, Scheme, PyTorch, Huggingface, TensorFlow, Flask, NumPy, OpenGL, Unity, OpenCV, Matplotlib, PyQt, Manim.

Tools: Jupyter, Git, Docker, TravisCI, Unix/Bash, Vim, Google Cloud.

PUBLICATIONS

- **Vivek Verma***, Nicholas Tomlin*, and Dan Klein. Revisiting Entropy Rate Constancy in Text. *In Submission, Association for Computational Linguistics (ACL) 2023.*