

ALEC THOMPSON

908-723-9712 | thompalec@berkeley.edu | [linkedin.com/in/alec-w-thompson](https://www.linkedin.com/in/alec-w-thompson) | thompalec.github.io

EDUCATION

University of California, Berkeley

August 2021 – May 2025

Bachelor of Arts in Computer Science

GPA: 3.546

Relevant Coursework: Computer Vision, Natural Language Processing, Machine Learning, Optimization Models, Stochastic Processes, Algorithms, Data Structures, Operating Systems, Database Systems, Computer Architecture, Discrete Math, Probability Theory, Linear Algebra, Multivariable Calculus

EXPERIENCE

AWS

May 2024 – August 2024

Software Development Engineer Intern

Seattle, WA

- Modified GameLift matchmaking system to store relevant statistics over the course of a game session placement
- Collaborated with PM to determine ideal event shape to emit through Amazon EventBridge and SNS
- Updated AWS Java SDK to include new API flag allowing customers to opt-in to new event
- Developed comprehensive unit and E2E tests to validate logic

PROJECTS

LSTM Language Model | *Python, Pytorch, NumPy*

September 2024 – October 2024

- Developed an LSTM language model to create a probabilistic model of language using the Penn Treebank dataset
- Implemented temporal activation regularization to reduce overfitting and improve model generalization
- Incorporated learning rate scheduling to dynamically adjust the learning rate during training
- Achieved a validation perplexity of 114, demonstrating effective capture of long-term language dependencies

Hybrid Images | *Python, NumPy, SciPy, scikit-learn*

August 2024 – September 2024

- Developed image processing algorithms for low and high-pass filtering using Gaussian filters and 2D convolutions
- Combined the low-spatial frequencies of one picture with the high spatial frequencies of another picture
- Produced images with interpretations that change with viewing distance

PintOS | *C, x86 Architecture, Docker, Make*

January 2024 – May 2024

- Collaborated in a team of four to design an operating system framework for the x86 instruction set architecture
- Developed common system calls, thread and memory synchronization, scheduling algorithms, LRU cache, inode file allocation, and persistence after shutdown

Cipher Decoder | *Python, NumPy, SciPy, pandas*

October 2023 – November 2023

- Implemented Markov Chain Monte Carlo Metropolis-Hastings algorithm to decrypt ciphered messages
- Developed a probabilistic language model based on character bi-grams to evaluate likelihood of proposed ciphers
- Optimized the decryption process by intelligently sampling using proposal and acceptance functions

WordleBot | *Python, NumPy*

September 2023 – October 2023

- Implemented an entropy-based Wordle solver leveraging information theory to optimize word selection
- Developed algorithm using conditional probability and entropy calculations to minimize guesses
- On average, algorithm solves Wordle's in 3.48 guesses (the average American takes 3.48 guesses)

Terminal West Coast Regional | *Python, C*

January 2022 – February 2022

- Led a team of three to compete in Terminal, a tower defense game sponsored by Citadel
- Simulated game state using an implementation of A* to evaluate potential moves at each turn
- Placed 3rd place out of the 90 strongest West Coast Terminal competitors

TECHNICAL SKILLS

Languages: Python, C, C++, Rust, Java, SQL, JavaScript, TypeScript, HTML, CSS

Developer Tools: Git, Vim, Docker, AWS, Maven, Gradle, Make, GDB

Libraries: Pytorch, NumPy, SciPy, scikit-learn, OpenCV, Matplotlib, pandas, JUnit, Project Lombok, Apache Commons, React