Alexander K. Le

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Brown University: *Computational Biology Sc.B (Computer Science, Applied Math, and Biology)* *GPA: 3.83 (Expected: May 2023)*
Relevant Coursework: Software Engineering, Computer Vision, Computational Molecular Biology, Computational Linguistics, UI/UX, Linear Algebra, Statistics, Managerial Decision Making, RISD Industrial Design, Biomaterials, Biochemistry, Organic Chemistry I/II

Technical Skills

Software Engineering: Python, Java, JavaScript, MATLAB, AWS, GCP, Docker, SQL, React, NodeJS, CSS/HTML, SQLite, Git
Machine Learning: TensorFlow, Keras, PyTorch, Jax, Ray, pandas, NumPy, OpenCV, scikit-learn, spacy, matplotlib, bokeh

WORK EXPERIENCE

Insitro (Biotech): ***Software Engineering and Computational Imaging Intern*** *San Francisco, CA | May 2022—**Present***

- Developed computational imaging and microcopy pipelines for live cell imaging and machine learning applications
- Validated and optimized differential phase contrast reconstruction algorithm, reducing runtime by 70%

Brown University: ***Undergraduate Teaching Assistant Program*** *Providence, RI | Aug 2020—**Present***

Developed technical workshops, course material, and homework. Held weekly office hours and graded exams.

- Computational Linguistics: Overhauled and redeveloped new course material and projects for CS1460 from scratch. Taught natural-language processing algorithms such as word embeddings, machine translation, recurrent neural networks, sequence-to-sequence models, hidden Markov models, and generative adversarial networks.
- Computer Vision: Improved course material and taught computer vision algorithms such as image filtering, feature detection/extraction, 3D image reconstruction, RANSAC, and convolutional neural networks (CNN).
- Introduction to Engineering: Mentored students in human-centered design and technical machine proficiency.

Harvard University: ***Neuroscience Machine Learning Intern*** *Cambridge, MA | Jun 2021–Aug 2021*

- Implemented a deep learning project analyzing correlations between neurological activity and movement in rats.
- Developed a TensorFlow deep learning model to construct a CNN to identify unmarked 3D rat joints using spatial and temporal data. Created a variational autoencoder to predict coordinates of missing joints in raw video feed.

University of California, Davis: ***SARS-CoV-2 Vaccine Development Assistant*** *Davis, CA | Jun 2020–Aug 2020*

- Optimized methods to efficiently grow Covid vaccines, thereby reducing laboratory resources and time by 50%.
- Determined antibody generation efficacy of adenovirus vector vaccines by designing plasmids, growing cell lines, operating flow cytometry, and performing ELISA tests on Covid infected *rhesus macaque* blood samples.

Pointz: ***Full Stack Developer*** *Providence, RI | Jun 2020 – Aug 2020*

- Managed database architecture, designed login functionality, implemented the ability to create points of interest along bike routes, and incorporated APIs to generate map and routing capabilities to find the safest bike route.

PROJECT MANAGEMENT AND TECHNICAL PROJECTS

Google Biodesign Sprint Contest First Place 2021: ***Team Mobius***

- Worked cross-functionally in collaboration with two RISD classmates to engineer a methodology to develop a biodegradable, eco-friendly printed circuit board using chitin from local shellfish. Google-Biodesign Award link

Computational Biology Undergraduate Head: **Academic University Club Leadership**

- Managed formal and informal events for students to gain professional experiences, resources, and connections.

Debiasing Melanoma Images: ***Deep Learning Project***

- Developed a deep learning computer vision program that generates melanoma images for people with pigmented skin tones with the goal of debiasing lighter skin predominant medical imaging databases. Melanoma link

Maestro: ***Computer Vision Project***

- Implemented a convolutional neural network to identify hand gestures and correlate it with audio controls. The program has a live video function and was able to obtain a 99.58% recognition accuracy. Maestro link

RESEARCH

Center for Computational Molecular Biology: ***Deep Learning Research Assistant*** *Providence, RI | May 2022—**Present***

- Supervised the counterfactual autoencoder project that deploys explainable artificial intelligence to better understand the effects of gene expression in single-cell RNA sequencing in Professor Ritambhara Singh's Lab.

Brown University Medical School: ***Artificial Intelligence Radiology Lab Assistant*** *Providence, RI | Jun 2021–Dec 2021*

- Awarded an UTRA grant to develop a deep learning program using natural language processing and computer vision to predict Covid mortality rate in the ICU by analyzing physician free text and MRI datasets from hospitals.