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, Managerial Decision Making, Computer Vision, Computational Molecular Biology, Computational Linguistics, UI/UX, RISD Industrial Design, Linear Algebra, Statistics, Biomaterials, Organic Chemistry I/II, Biochemistry

Technical Skills

Software Engineering: Python, Java, JavaScript, MATLAB, AWS, GCP, Docker, SQL, React, NodeJS, CSS/HTML, sqlite, Git
Machine Learning: TensorFlow, Keras, PyTorch, Jax, pandas, NumPy, OpenCV, scikit-learn, predictive and cluster modeling

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
- Optimized the differential phase contrast reconstruction algorithm using multi-threading, batching, Jax, and Ray.

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**: Redeveloped course material for CS1460, which has not been taught in over a year. 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 Medical School: ***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.

UC Davis Medical Center: ***SARS-CoV-2 Vaccine Development Assistant*** *Davis, CA | Jun 2020–Aug 2020*

- Optimized methods to efficiency grow Covid vaccines, thereby reducing laboratory resources and time by 600%.
- 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***

- Engineered a methodology to develop a biodegradable, ecology-friendly printed circuit board using chitin derived from local shellfish waste in collaboration with two RISD classmates. Google-Biodesign Award link

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

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

Maestro: ***Computer Vision, and Deep Learning Project***

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

Yoki: ***Full Stack and Web Development Project***

- Developed a website that fosters friendships by pairing registered users with similar interests using a KD tree data structure to find optimal compatibility between people using SQL, Java, JavaScript, and HTML/CSS. Yoki link

RESEARCH

Brown University: ***Molecular Biology Deep Learning Lab Research Assistant*** *Providence, RI | May 2022—**Present***

- Undergraduate researcher in Professor Ritambhara Singh's Lab applying deep learning algorithms, such as autoencoders, to better understand the effects of gene expression in single cell RNA sequencing.

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.