

Kevin Elaba

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EDUCATION

Carnegie Mellon University, Pittsburgh, PA

Master of Science, Computational Biology. GPA: 3.5

Coursework: **Bioimage Analysis, Intermediate Deep Learning, Machine Learning for Large Datasets**

May 2023

College of the Holy Cross, Worcester, MA

Bachelor of Arts, Computer Science, Concentration in Pre-Medical Studies. *Cum Laude*

Coursework: **Data Structures and Algorithms, Computer Networking, Topics in Genomics**

May 2021

SKILLS

Programming - Python, Golang, R, SQL, PyTorch/TensorFlow, PySpark, Databricks, NumPy/Pandas, ScanPy, OpenCV

Web Development/DevOps - AWS Elastic Beanstalk/EC2/CloudWatch/Lambda, Git, React, Node.js, Javascript

WORK EXPERIENCE

Computational Biologist, Machine Learning Co-op: Flagship Labs 75, Boston, MA

January 2023 - Present

- Developing **single-cell RNAseq pipelines** to identify cell type specific genes within public atlases
- Will configure **AWS** resources and fine-tune **diffusion models** for **generative protein design**
- **Dockerized** Jupyter and RStudio and integrated the environment within **AWS EC2** instances

Cloud Engineer Intern: Foundation Medicine, Cambridge, MA

June - August 2022

- Developed, designed, and deployed a customizable **AWS CloudWatch** dashboard template to monitor 100+ alarms and visualize the health of the company's cloud environments
- Automated the dashboard update process using **AWS Lambda**, deployed the tool via **Docker** and **Terraform**
- Configured the AWS DevOps pipeline and built the **Node.js** backend API of Patiently: An Interactive Medical Report

Web Applications Developer Intern: Notovox, Inc. Boston, MA

July 2020 - February 2021

- Transferred the company's previous website deployments from Heroku to **AWS Elastic Beanstalk**
- Constructed **AWS-specific CI/CD pipelines** to handle changes to websites and servers
- Developed two proof-of-concept web applications: a **React/Node.js** messaging application used for deployment testing and a **React/MongoDB** application used for user authentication

Computer Science Teaching Assistant - College of the Holy Cross. Worcester, MA

September - December 2020

- Evaluated ~50 students' **Java-based** object-oriented-programming lab assignments and projects
- Compiled and reported student feedback regarding the course during weekly faculty-TA meetings
- Hosted voluntary office hours for students who needed additional assistance learning the material

Research Intern: University of Massachusetts Chan Medical School. Worcester, MA

June - September 2020

- Built **Bash/Unix scripts** to compile lncRNA annotation data from public gene libraries, performed statistical analysis with **Python/R**
- Modeled the correlation between relevant lncRNAs tissue types and their developmental timepoints
- Presented findings during weekly project updates and literature review meetings

PROJECTS

Model Compression: Computer Vision (PyTorch)

November - December 2022

- Pruned a **neural network** with **~600,000 parameters** on a five-class classification task
- Implemented L1-norm based filter pruning from scratch, pruning **70% of parameters** while achieving **63% accuracy**

Tissue Segmentation with U-Net Models (PyTorch + Colab)

October - December 2022

- Built an in-house and fine-tuned a pre-trained **U-Net model** for functional tissue unit segmentation from biopsy slides
- Performed exploratory analysis, data cleaning and augmentation, achieving **0.80/0.68 mean dice coefficient scores** on the validation/test sets

French to English Translation with Transformers (PyTorch)

October - November 2022

- Built a **Transformer architecture** to translate French sentences to English, using a ~10,000 sentence pair dataset.
- Implemented positional encoding, self-attention, and beam search from scratch, achieving **0.55 BLEU-4 score**

Distributed Machine Learning: Million Song Dataset (280 GB) (Spark + AWS)

October - November 2022

- Configured **AWS S3, EC2, EMR, and PySpark** resources, built **Linear Regression** and **Random Forest models** to classify popular songs.
- Performed exploratory data analysis, data cleaning, featurization, and model tuning, achieving **0.81 AUC score**

Skin Cancer Classification with Neural Nets (Golang)

September - December 2021

- Built, trained, and tested a 100-unit **feed-forward neural network** for binary classification of benign and malignant melanoma, achieving **65% accuracy**
- Implemented ZCA preprocessing, forward propagation, and back propagation functions from scratch

PUBLICATIONS

Cancer-related Subreddits: A Comprehensive Survey. *Journal of Clinical Oncology (Python)*

May 2021

- In collaboration with University of Pennsylvania Perelman School of Medicine, developed a Python script to pull posts and metadata from cancer-related subreddits. Analyzed the findings using R and Excel.