Karthik Vegesna

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EDUCATION

University of California, Berkeley **August 2018 - May 2022**

Major: Computer Science B.A. (GPA: 3.61)

Relevant Coursework: Computer Programs, Data Structures, Computer Architecture, Advanced Algorithms, Deep Neural Networks, Principles of Data Science, Discrete Math and Probability, Information Device & Systems Design 1 and 2, General Biology, General Chemistry, Organic Chemistry 1 and 2, Biochemistry, Physiology, Intermediate Macroeconomics

EXPERIENCE

Drubin Lab @ UC Berkeley, Computational Biology Researcher **April 2020 – Present, Summers 2020 & 2021**

- Conducted independent research focused on mathematical modeling of crosslinking proteins in cell interior using a C++ based cytoskeleton engine and performed computationally expensive simulations on GPU clusters.
- Ran biophysical simulations using data from live-cell imaging experiments to understand the nature of the molecular interactions that drive clathrin-mediated endocytosis.
- Used image analysis & computer vision tools such as Napari & OpenCV to evaluate results from live-cell imaging.
- Developed data analysis tool sets using pandas & MATLAB to gain new insights into molecular dynamics underlying core cellular processes.
- Published these insights as a preprint in Bioxiv and pending review from a high impact factor scientific journal.

EM-Translate, Co-Founder and Software Engineer **May 2019 – December 2020, Summer 2019**

- Created EMTranslate, a healthcare startup that helps emergency medical technicians communicate with patients with limited language proficiency.
- Developed application using Swift and Firebase along with three other UC Berkeley students.
- Participated in the Spring 2020 Berkeley Skydeck HotDesk Incubator and Fall 2019 Berkeley StEP Program.
- Connected with 20+ EMTs and healthcare clients to assess design choices and specific needs of EMTs.

Open Networking Foundation, Software Engineer Intern **May 2017 – August 2017, May 2016 - July 2016**

- Developed an application displaying live packet statistics for network debugging by parsing through packet metadata.
- Created a web UI displaying collected packet statistics using internal Web UI API, d3 Library, and React.
- Implemented application for the ONOS software defined network controller using Java and REST API.

PERSONAL PROJECTS

Tiny ImageNet Classifier

Technologies Used: Pytorch, Slurm

- Built custom architecture for classification on Tiny ImageNet based on Vision Transformers using PyTorch.
- Achieved 85% top 1 accuracy, and explored use of different attention mechanisms, data augmentation methods, and pretrained base models for improving out of distribution robustness. (https://github.com/kvegesna/182cvproj)

BearMaps

Technologies Used: Java, Maven, Heroku

- Developed a web application with Maven and Java that finds the fastest route to a destination in Berkeley.
- Implemented A* search for routing, rastering for rendering map, and XML parsing for location data.

SKILLS

Programming Languages: Python, JavaScript, Java, C, C++, MATLAB, HTML

Tools & Technologies: React, Pytorch, Pandas, Numpy, D3.js, SQL, Slurm, Flask, Linux, Matplotlib, Scikit-learn, Jenkins