KEVIN WANG

Secret Security Clearance • kevinw@berkeley.edu • kevw.dev • github.com/itskevinwang

EDUCATION

University of California, Berkeley | Berkeley, CA August 2020 - May 2024
Bachelor of Arts in Computer Science

- **Organizations:** UC Berkeley IEEE, Engineering Student Council, Fung Fellowship, CS 61A Academic (Teaching) Intern
- **Undergraduate Coursework**: Data Structures, Discrete Math and Probability Theory, Statistics, Data Science, Artificial Intelligence
- **Graduate Coursework**: Optimization Models, Machine Learning, Audio Signal Processing, Deep Learning and Phonology (Seminar)

WORK EXPERIENCE

Berkeley Speech and Computation Lab | Undergraduate Researcher Aug 2022 – Present

- Developing deep learning models for acoustic data using PyTorch and using speech to understand how neural nets learn.
- Modeling language acquisition with GANs and VAEs to develop interpretable systems to process language in humanlike ways.
- Exploring the application of diffusion models in computational models for the implementation of speech technologies.
- Constructing and applying neural networks to sperm whale bioacoustics data to learn meaningful representations of underwater whale vocalizations as part of Project CETI, machine learning and linguistics towards decoding sperm whale communication.

Skills: **Python, PyTorch, PyTorch Lightning, TensorFlow, Pandas, Matplotlib, Scikit-Learn, Librosa, Slurm, AWS EC2, LaTeX**

MIT Lincoln Laboratory | Research Intern, Software Development May 2022 – Aug 2022

- Developed a low-cost, rapidly deployable transponder for radar validation, saving 98% of prior transponder field deployment costs.
- Engineered supporting transponder codebase written in C++ to interface with hardware components, allowing for accurate flight tracking and logging, microsecond GPS timekeeping, and full-duplex Rx/Tx capabilities.
- Applied graph neural networks through PyTorch for radar signal classification to increase accuracy from prior YOLO model.
- Assisted operations and testing of HF over-the-horizon radar array project through onsite Agile software development and hardware maintenance at White Sands Missile Range, NM.

Skills: **Python, C++, PyTorch, PyTorch Lightning, MATLAB, R, Matplotlib, Scikit-Learn, ArrayFire, Agile Development**

NASA Goddard Space Flight Center | Research Engineer Intern May 2021 – Aug 2021

- Developed and tested custom TensorFlow and Keras applications on the DGX high-performance computing (HPC) cluster to improve parallel training performance of deep networks.
- Drafted a standard tutorial and report for migrating geoscience deep learning applications to GPU and multi-GPU-based environments, increasing the efficiency of distributed computing on the NASA Discover supercomputer and Prism clusters.
- Delivered a package containing four geoscience deep learning applications for testing distributed machine learning platforms.
- Presented 'AI/ML/DL Benchmarks for Earth Science' at the ACM/IEEE SC21 conference.

Skills: **Python, PyTorch, PyTorch Lightning, TensorFlow, Keras, Scikit-Learn, TensorBoard, Weights & Biases, Slurm**

National Science Foundation | Undergraduate Research Fellow May 2021 – Aug 2021

- Developed an image classification service deployed on AWS to enable rapid sea ice processing for climate and cryosphere research.
- Engineered UNet, FCN, and DeepLabV3 semantic segmentation models trained on high spatial resolution sea ice imagery.
- Implemented a novel deep learning semantic segmentation model pipeline to improve sea ice classification accuracy by 36%.
- Contributing author for 'ArcCI: a sea ice high resolution aerial image management and processing platform' in Recent Advancements in Geoinformatics and Data Science (GSA Books).

Skills: **Python, PyTorch, PyTorch Lightning, AWS Sagemaker, AWS EC2, OpenCV, Weights & Biases, Slurm**

United Nations | Research Engineer Intern May 2021 – July 2021

- Engineered semantic networks to correlate data from financial, criminal, and other records to counter the financing of terrorism.
- Applied univariate time series forecasting on GTD dataset to predict if a terrorist attack might occur within a given timeframe.
- Modeled AMLSim synthetic banking transaction data on graph convolutional networks and XGBoost for the UN Office of Counter-Terrorism's goFintel platform to detect and counter illegal money laundering and terrorism financing activities.

Skills: **Python, XGBoost, PyTorch, Matplotlib, Pykg2vec, PyKEEN, AWS EC2**

Harvard University Center for Geographical Analysis | Research Intern Nov 2020 – June 2021

- Documented over 100 key community resources and underlying infrastructure important for the mitigation of COVID-19 impacts.
- Produced a literature review of 1,298 papers on the state and utility of geospatial analysis tools in the COVID-19 research community.
- Conducted NLP data analysis with NLTK, Matplotlib, NetworkX, and Pandas to identify the utility of geospatial analysis tools.
- Contributing author for 'Quantitative geographical approaches in COVID-19 research: A review on first- and second-order impacts' in Geospatial Stories of the Global COVID-19 Pandemic (Springer Nature).

Skills: **Python, NLTK, Matplotlib, NetworkX, Pandas, Scikit-Learn, LaTeX**

VOLUNTEER EXPERIENCE

GitHub Education | GitHub Campus Expert Apr 2021 – Present

- Building strong technical communities, teaching valuable skills, and creating new opportunities for disadvantaged students.
- Leading in-person and online conferences, meetups, and hackathons, and maintaining open-source projects.
- Working with the GitHub Education team to build and grow diverse technology communities at UC Berkeley.

CITRIS and the Banatao Institute | Research Associate Feb 2021 – Present

- Conducting research into diversity, equity, and inclusion in UC-wide startup incubators.
- Exploring available funding and opportunities through identifying and engaging with potential external partners, preparing grant proposals, and coordinating with UC-affiliated groups including the office of the dean of the UC Berkeley College of Engineering.
- Supported operations at the fifth and sixth annual Women in Tech Symposium at UC events; assisted with technical difficulties, answered attendee questions, and supported career fair booths as well as fireside chats and deep dives.

PROJECTS

Video Models for Efficient Disease Detection using Echocardiograms (2022) – Built and tested state-of-the-art DNN video model architectures and pre-training approaches using **PyTorch** and **PyTorch Lightning** to improve the training efficiency and overall accuracy of video-based disease detection models. Developed for the UCSF Tison Lab with support from Berkeley Research IT.

Modeling Amyloid Beta Plaque Formation in Alzheimer's Disease (2021) – Engineered explainable CNN and VAE models through **PyTorch**, learning the relationship between plaque morphology and molecular variation and determining the presence of amyloid plaques (protein aggregates). Trained models and worked with sensitive bioinformatics data through a secure **Apache Guacamole** environment. Developed as part of The Alan Turing Institute's Data Study Group on Alzheimer's Research for the UK Dementia Research Institute.

Citation.ai (2021) – Built a web application using **Python**, **React**, and the **OpenAI GPT-3 API** to generate accurate and efficient citations following APA guidelines for researchers, students, and research librarians. Developed with support (GPT-3 credits) from the Harvard Undergraduate Machine Learning Research Lab and Harvard Innovation Labs.

Telepath Application (2020) – Engineered a mobile application using deep autoencoders for video compression coupled with hardware acceleration to allow for people with unstable internet connections to remain connected with their healthcare professionals. Developed for the Cal Hacks hack:now hackathon using **TensorFlow Lite**, **Gradle**, and **GCP**, winner of the IBM and Clinton Global University award.

Multimodal Deepfake Detection (2019) – Created a deep learning model through **PyTorch** with PredRNN++ for video predictive learning with improvements over then-state-of-the-art prediction results. Assessed recurrent network model with synthetic and real datasets from the Facebook Deepfake Detection Challenge. Developed alongside researchers at the University of Illinois at Urbana-Champaign.

HONORS AND AWARDS

MIT Lincoln Laboratory I3C Best Poster Award (2022) – Awarded Best Poster as part of a team participating in the Lincoln Lab Intern Innovative Idea Challenge poster presentation. Pitched an accessible deep-sea research vessel to laboratory staff and director.

The Leadership Award (2021) – Recipient of the CAA Leadership Award, a one-year, merit-based scholarship that recognizes undergraduate students at UC Berkeley who demonstrate innovative, initiative-driven leadership impacting their academic, work, or community environments.

UN Millennium Fellow (2021) – Accepted into the UC Berkeley cohort of a semester-long leadership and social impact development program hosted by the United Nations Academic Impact and MCN. Developed an educational data science and machine learning program for underrepresented students to tackle UN SDG 4 (Quality Education).

Unite Ideas Financial Crime Data Challenge Winner (2021) – Contributing researcher on the winning team of the United Nations Unite Ideas Financial Crime Data Challenge.

IBM CGI U Award at Cal Hacks (2020) – Received an award from IBM and the Clinton Global Initiative University for developing a mobile tele-health application using deep autoencoders allowing for people in rural areas to remain connected to healthcare professionals.

SKILLS

Programming Languages: Python • Java • C/C++ • R • Go • Julia • C# • MATLAB • SQL • Node.js • React • Angular • LaTeX
AI & ML: PyTorch • PyTorch Lightning • TensorFlow • Keras • XGBoost • Scikit-Learn • NLTK • Weights & Biases • NumPy • SciPy
Data Analysis and Visualization: Pandas • NetworkX • Tableau • PowerBI • Matplotlib • Seaborn • Google Charts • MS Excel
Other: Linux OS (Ubuntu, RedHat Enterprise) • AWS • GCP • MS Azure • Docker • Qualtrics • Slurm • Agile Development • DevOps