Kian Zohoury

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About Me

As a new graduate from the University of California, Berkeley, I am eager to enter the industry and develop my skills as a machine learning engineer. With a strong foundation in mathematics, I'm capable of understanding concepts from machine learning and implementing them efficiently in code. I am driven to write great software and work alongside smart individuals that share my passion.

Education

University of California, Berkeley   Berkeley, CA
B.A., Computer Science   2015 – 2016; 2019 – 2022
Major GPA: 3.51/4.0

Relevant Coursework: Data Structure, Deep Neural Networks, Discrete Math & Probability, Efficient Algorithms, Intro to AI, Intro to ML, Linear Algebra/Differential Equations, Machine Structures, Multivariate Calculus, Natural Language Processing, Principles & Techniques of Data Science

Projects

Music Source Separation with Deep Learning – Auralflow, a PyPi Package   2022
github.com/kianzohoury/auralflow

- Built a light-weight deep learning toolkit for training music source separation models in PyTorch, to solve the task of splitting music tracks into *stems* (i.e. vocals, drums, bass and other). Implements modifiable U-Nets, LSTM networks and Variational Autoencoders – model architectures that can be trained natively with auralflow or ported to custom training pipelines, enabling efficient workflows and faster development time.
- Incorporated techniques from digital signal processing (DSP): discrete Fourier transform, time-frequency masking and noisy phase approximation. Additionally, automatic mixed precision, gradient scaling, layer-specific learning rates and scheduling were used to stabilize gradient flow and training.
- Pre-trained models achieved impressive evaluation results on the MUSDB18 dataset – outperforming previous state-of-the-art models.

Recycling Assistant using Image Classification – Envyre, a React Web App   2021
github.com/kianzohoury/envyre

- Developed a prototype mobile web application – a collaborative effort that received 2nd place in a final project competition for a UI Design course at UC Berkeley – that classified a product as recyclable or perishable given its barcode as input from the user. A novel inference procedure was used: images related to metadata retrieved from an item's universal product code (UPC) were scraped from the web by rank, transformed and fed into a majority vote binary classifier – which was hosted via Django.

Skills

- *Languages*: Python, Java, C, JavaScript, HTML, SQL, Scheme
- *Libraries/Frameworks*: PyTorch, NumPy, Scikit, Django
- *Theory*: Runtime/asymptotic analysis, graph theory, dynamic programming, data structures, approximation algorithms, probability theory, least squares, optimization, proofs
- *Other*: Creating APIs, writing documentation, unit/integration testing, data cleaning/processing, debugging
- *Soft Skills*: Writing, speaking, drawing/diagrams, creating presentations

Experience

Audio Engineering - Freelance   Burbank, Hollywood, East Los Angeles
Certified Audio Engineer, Icon Collective   2016 – 2018

- Delivered quality mixing and mastering services to independent vocal artists and popular electronic music producers (50k+ followers).
- Harnessed Digital Signal Processing (DSP) techniques such as spectral balancing/equalization, multi-band compression, gain staging, limiting, stereo imaging and phase correction.

Awards

- Regents' and Chancellor's Scholarship, UC Berkeley (2015)