Alex Kashi

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Summary

Accomplished **Staff Software Engineer** and **Machine Learning Researcher** with **10 years of experience** in software development and machine learning. Demonstrated expertise through work at **top universities, startups, and in published research**. Skilled in leading **mobile app development** and creating **machine learning models**, with a strong track record of enhancing user experience and performance. Proficient in **managing multidisciplinary teams** and aligning technology with business goals. Visit **alexkashi.com** for more details.

Education

Harvard University — **GPA: 3.9**
M.S. Computational Science and Engineering — *Cambridge, MA*

University of California Berkeley — **High Honors (Top 10%) - GPA: 3.9**
B.S. Electrical Engineering and Computer Sciences — *Berkeley, CA*

Relevant Coursework

- Computer Vision
- Reinforcement Learning
- Visual Navigation (SLAM)
- Performance Computing
- Machine Learning
- Operating Systems
- Artificial Intelligence
- Internet Architecture
- Computer Security
- Efficient Algorithms
- Feedback Control
- Robotic Manipulation

Experience

Lucid Motors — **May 2022 – Present**
Staff Software Engineer | Swift, Python — *Newark, CA*

- Led the development of the **next-generation native mobile app**, introducing previously unachievable features and enhanced performance, **completed ahead of schedule**, and raised the App Store rating by **0.2 points**.
- Designed a **passive entry system** using **Bluetooth and location APIs**, enhancing reliability and user convenience.
- Integrated an **interactive 3D model**, elevating aesthetics and identified as the **most liked new feature** by customers.
- **Reported directly** to the **Senior VP of Digital** to align development with strategic initiatives.

Dubbles.ai — **Devember 2023 – Present**
Co-Founder CTO | Python, PyTorch, Swift, Javascript, Next.js — *Sunnyvale, CA*

- Developed and launched an **AI-powered text-to-video app** that generates short videos of target celebrities with accurate **lip and voice synthesis**.
- Led a **cross-functional team** through design and deployment, resulting in **high user engagement** and **viral growth**.

Harvard Medical School — **May 2023 – Aug 2023**
Machine Learning Research Scientist | Python, PyTorch — *Cambridge, MA*

- Adapted protein structure **prediction models** for RNA, achieving a **state-of-the-art F1 score** of 0.52 (up from 0.47).
- Curated a diverse database of **over 300,000 RNA secondary structures**, enhancing the model training dataset.
- Developed **synthetic data training algorithms**, significantly **reducing** the **generalization gap** between RNA types.

Spur — **Jan 2019 – Dec 2022**
Founder CEO/CTO | Swift, Kotlin, GraphQL, Javascript, Lambda, DynamoDB, Elasticsearch — *Sunnyvale, CA*

- Founded and developed a **native social media app** for iOS and Android, reaching over **350,000 downloads**.
- Admitted into the **Harvard Innovation Labs Venture Program** and selected for the semester-long **Harvard Business School accelerator** course, Field X.
- Crafted and executed a comprehensive **go-to-market strategy, pitch deck, and business plan**, which were presented to **angel investors and venture capitalists** to secure **pre-seed funding**.
- Engineered a **microservice-based backend** utilizing **AWS** technologies including **DynamoDB, Elasticsearch, S3, Lambda, EC2, Kinesis, and Rekognition**.
- Established a complete **DevOps pipeline** for streamlined deployment, analytics, logging and operational management.
- Directed a multidisciplinary **team of over five professionals**, in **marketing, competitive analysis, and design.**

Stanford **Sep 2017 – Sep 2021**

Research Associate | Python, TensorFlow *Stanford, CA*

- Developed the ***first* classifier for Myalgic Encephalomyelitis (ME)**, results **published in *PNAS***.
- Engineered **hardware and software** in **C** for an impedance measurement device, **cutting costs by 98%**.
- Authored the **statistical theory** on the **metabolic origin of ME**, published in ***Diagnostics***.
- Led a team on **cell semantic segmentation, cutting computation time by 94%** and **boosting accuracy by 2%**.
- **Supervised** computer vision and machine learning **interns**, supported by the **Stanford Bio-X program**.

Intel **May 2017 – Sep 2017**

Software Engineer | C, C++ *Santa Clara, CA*

- Enhanced **I2C and UART drivers**, extending support to **touch screens and cameras**.
- Developed **firmware for x86 R&D devices**, implemented additional features, and configured new peripherals.

Zspace **May 2016 – Aug 2016**

Computer Vision Research Intern | Python *Sunnyvale, CA*

- Developed a **gaze tracking system** using **deep learning and computer vision**, achieving **95% accuracy**.
- Curated dataset, trained model, and developed **real-time API**, launching on schedule **without additional hardware**.

Intel **May 2015 – Aug 2015**

Software Engineering Intern - Client R&D | Java, Android *Santa Clara, CA*

- Developed a **MapReduce framework** for **big data** processing on **Android**, using **C/C++** for parallelization.
- Applied it by implementing **k-means clustering** for local data preprocessing before server transmission.

Mux Wiring **May 2014 – May 2015 and Sep 2015 – Apr 2016**

Software Engineer | Python *Campbell, CA*

- Developed an interpreter for a Raspberry Pi alternative, translating human-readable code into machine-level instructions.
- Automated hardware testing to verify that both the hardware and interpreter met performance benchmarks.

Projects

Microsoft Capstone: Socioeconomic Future of Kenya | Python, PyTorch **December 2022**

- Analyzed **Kenya's socioeconomic indicators using Bayesian models**, covering fertility rates, education, GDP by sector, and gross county product.
- Presented an interactive **dashboard to Microsoft** on population and industrialization trends, aiding strategic decisions.

Compressing and Accelerating Stable Diffusion | Python, PyTorch **December 2022**

- Accelerated **Stable Diffusion**, achieving an **80% memory reduction** and a **4x speed increase** through **mixed-precision quantization** and **Flash Attention** maintained **image quality**.

Uncertainty Quantification in Question-Answering Models | Python, PyTorch **December 2022**

- **Analyzed uncertainty quantification methods** (MC-Dropout, Deep Ensembles, SNGP) on ALBERT and DistilBERT for SQuAD v2.0 **in span-extractive question answering**.

Design Choices for Dual-arm Robotic Manipulator Control | Python **December 2022**

- Developed **control strategies** for dual-arm **robotic manipulation** using KUKA IIWA robots, implementing **separate and unified controllers** and **collision avoidance** in complex tasks.

Evaluation of Optimal Decision Making in High-risk Environments | Python, PyTorch **May 2022**

- Investigated the effectiveness of **Q-Learning and Fitted Q Iteration**, and **analyzed the impact of data collection policies** on model performance.

Dogegan: An End-to-end Solution for Generating NFTs | Python, PyTorch **May 2022**

- Developed a **GAN pipeline** to generate **NFT artwork**, utilizing **CLIP** to guide **image generation with input text**.

Planetary Impact Simulator | C++ **May 2022**

- Developed using **Smoothed-particle hydrodynamics** and the Barnes-Hut algorithm, achieving a **12x speedup on 32 cores** with OpenMP and Eigen for simulations involving over **10 million particles**.

AlphaHoldem: An Efficient Poker Agent Using RL | C++ **May 2022**

- Implemented **PPO and DQN** in a poker environment, **outperforming Monte Carlo-based equity agents**, and **demonstrated PPO's superior performance** by consistently learning to defeat DQN and equity agents.

Visual-Inertial Odometry on the MIT Racecars | C++, ROS **Dec 2021**

- Implemented **Visual-Inertial Odometry (VIO)** on the MIT Racecar using an IMU, depth camera, and LiDAR.
- Utilized **GPU acceleration** to enable **real-time SLAM, loop closure detection, and voxel mesh creation** simultaneously on a resource-constrained embedded Nvidia platform.
- Validated VIO system against OptiTrack, **achieving precise path estimation and waypoint following**.

Low-cost Reliable Localization of Drone | Python, ROS **May 2015**

- Developed an **indoor package delivery drone** with a custom-built **quadcopter controlled via ROS**.
- Created a **low-cost motion capture system** using redundant AR tags and **RANSAC, and path planning**.

Technical Skills

Programming Languages: Python, Swift, Java, Kotlin, C++, C, JavaScript

Databases: PostgreSQL, DynamoDB, Elasticsearch, SQLite

Networking/Communication Protocols: REST, GraphQL, gRPC

Developer Tools: Git, Docker, JIRA, Postman, Figma

Technologies/Frameworks: PyTorch, TensorFlow, SwiftUI, AWS, React, Next.js, Vercel, Supabase, Linux, ROS

Spoken Languages: Native English Speaker, Conversational in Spanish

Publications

Diverse Database and Machine Learning Model for RNA Structure Prediction **Harvard - 2024**

de Lajarte, A. A., Martin des Taillades, Y. J., Kalicki, C., Fuchs Wightman, F., Aruda, J., Salazar, D., Allan, M. F., L'Esperance-Kerckhoff, C., **Kashi, A.**, Jossinet, F., & Rouskin, S. (2024). Diverse database and machine learning model to narrow the generalization gap in RNA structure prediction. *bioRxiv*

A nanoelectronics-blood-based diagnostic biomarker for (ME/CFS) **Stanford - 2019**

Esfandyarpour, R., **Kashi, A.**, Nemat-Gorgani, M., Wilhelmy, J., & Davis, R. W. (2019). A nanoelectronics-blood-based diagnostic biomarker for myalgic encephalomyelitis/ chronic fatigue syndrome (ME/CFS). *Proceedings of the National Academy of Sciences*

The IDO Metabolic Trap Hypothesis for the Etiology of ME/CFS **Stanford - 2019**

Kashi, A. A., Davis, R. W., & Phair, R. D. (2019). The IDO Metabolic Trap Hypothesis for the Etiology of ME/CFS. *Diagnostics*

Affiliations / Awards

Nexus Hackathon 3rd Place — Lucid Motors

Eta Kappa Nu IEEE Honor Society Member — UC Berkeley

Valedictorian — Fremont High School

Academic All American — USA Water Polo