

## EDUCATION

### UNIVERSITY OF CALIFORNIA BERKELEY | BS IN ELECTRICAL ENGINEERING AND COMPUTER SCIENCES

Graduated May 2017 | Berkeley, CA

Graduated with High Honors (Top 10%) • Cum. GPA: 3.85 / 4.0 • Major GPA: 3.84 / 4.0

### PUBLICATIONS | STANFORD

Healthcare • Nano-electronics Biosensor • Machine Learning • Artificial Intelligence

- Esfandarypour, 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*

Bioinformatics • Biology • Systems Biology

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

## WORK EXPERIENCE

### STANFORD GENOME TECHNOLOGY CENTER | RESEARCHER

Sep 2017 – Present | Stanford, CA | Advisors: Prof. Ronald W. Davis & Dr. Robert Phair

Python

- Devised the first classifier for myalgic encephalomyelitis (ME/CFS) based on data collected by our sensor and my feature extraction algorithm, published in *PNAS*
- Developed hardware and software for a low-cost impedance measurement device up to 100 kHz
- Optimized the above technologies from inception to a commercially viable product
- Designed an image segmentation algorithm to extract individual cells from SEM images
- Used CNNs to determine the distribution of blood cells for clinical diagnostics
- Manuscript published in *Diagnostics* for the metabolic and genetic origin of ME/CFS

### INTEL | SOFTWARE ENGINEER

Jun 2017 – Sep 2017 | Santa Clara, CA

C • ASL

- Improved drivers for I2C and UART interfaces, including touch screens and cameras
- Debugged BIOS ASL code, added features and configuring new peripherals
- Programmed firmware for x86 based R&D devices

### ZSPACE | SOFTWARE ENGINEERING RESEARCH INTERN

May 2016 – Aug 2016 | Sunnyvale, CA | Python • C++ • C#

- Utilized deep convolutional neural networks to design a gaze tracking system compatible with polarized 3D glasses
- GPU accelerated using the Theano machine learning framework
- Trained on over 10 GB of data collected from 36 participants on a proprietary data collection application
- Processed and classified images from infrared cameras in real-time

### INTEL | UNDERGRADUATE TECHNICAL INTERN - CLIENT R&D

May 2015 – Aug 2015 | Santa Clara, CA

Java • C++ • C

- Architected a MapReduce framework for local big data processing on Android devices
- Parallelized the framework using pthreads in native C/C++ using the Android NDK
- Created an application for my framework by implementing k-means clustering to preprocess data locally before sending the result to the server
- Reduced server storage requirements and average query time

## PROJECT EXPERIENCE

### FULL-STACK ANDROID DEVELOPMENT

Java • GraphQL • AWS • Python • Elasticsearch • NodeJS

- Created a production-ready, fully-featured Android social media application
- Integrated Android Jetpack libraries for robust presentation and navigation of content
- Designed a back-end, based in AWS, using Amplify, DynamoDB, S3, Lambda, Elasticsearch, Pinpoint, IAM, and Rekognition
- Automated AWS deployments using the Serverless Framework
- Applied best practices using Android architecture components for caching and loading data from the back-end

## LOW-COST RELIABLE LOCALIZATION OF DRONE

Python • ROS

- Created a low-cost, alternative to a Vicon Motion capture system to enable indoor aerial delivery via drone
- Reduced the cost by only requiring a standard HD webcam and an array of ARTags
- Connected multiple ARTags to the origin, allowing for rigid body transforms to locate the drone in global coordinates
- Acquired a single-pose estimation with the ROS package `ar_track_alvar` and used MAVROS to communicate with the Pixhawk PX4 2.4.8 flight controller

## ARTIFICIAL INTELLIGENCE | VARIOUS TECHNIQUES FOR A PACMAN AI

Python

- Implemented Q-learning, value iteration, policy iteration, and policy extraction to determine which action an agent should take at a given state
- Enacted Bayes nets for predicting the behavior of adversaries conditioned on observations of their actions
- Applied hidden Markov models and particle filtering to determine location of agents when observations are noisy
- Used Minimax with alpha-beta pruning, and A\* path finding with consistent heuristics

## ANALOG CIRCUIT DESIGN 90 NM PROCESS | SYSTEM ON A CHIP FOR INTERNET OF THINGS

Cadence

- Constructed a 1.2 V bandgap voltage reference that was independent of temperature over the industrial range and voltage from 1.6 V to 3.2 V up to a tolerance of 2 mV
- Engineered a 8-bit 10 kHz SAR ADC with no LSB errors over the full temperature and voltage range
- Developed LDO voltage regulator for analog and digital circuitry
- Designed a 4-bit PGA using a Folded Cascode amplifier with an open-loop gain of 110 DB and unity gain frequency of 6 MHz
- Stabilized the PGA with a phase margin of 10° using miller capacitance

## PRESENTATIONS AND POSTERS

- **Kashi, A.** (2019, September). Morphological Classification of RBCs: A Machine Learning Approach. Presented at the Third Annual Working Group Meeting and Community Symposium on the Molecular Basis of ME/CFS, Stanford CA
- **Kashi, A.** and Phair, R. (2018, November). A Search for Common Damaging Mutations in ME/CFS using the SIPS Cohort. Presented at the annual Stanford Genome Technology Center Retreat, Los Altos Hills, CA
- Esfandyarpour, R., **Kashi A.**, Wilhelmy J., & Davis R. W. A Low-cost, Blood-based Diagnostic for ME/CFS. Poster session presented at: Inflammation, Aging and Chronic Disease; 2017 November 27-28; Stanford, CA.

## COURSEWORK

### UNDERGRADUATE CS

Introduction to Machine Learning  
Operating Systems  
Artificial Intelligence  
Internet Architecture and Protocols  
Computer Security  
Efficient Algorithms

### UNDERGRADUATE EE

Feedback Control Systems  
Analog Integrated Circuits  
Introduction to Robotics  
Introduction to Embedded Systems  
Signals and Systems  
Microelectronic Devices and Circuits

## CONTINUING EDUCATION

### UC BERKELEY

CS 285 Deep Reinforcement Learning

### COURSERA

Visual Perception for Self-Driving Cars

## PROGRAMMING

Professional Proficiency

Python • Java • Android • C++

High Proficiency

C • GraphQL • AWS • ElasticSearch  
Tensorflow • OpenCV • L<sup>A</sup>T<sub>E</sub>X

Working Proficiency

Qt • ROS • C# • NodeJS

## LINKS

 [AlexKashi.github.io](https://github.com/AlexKashi)

 [AlexKashi](#)

 [AlexKashi](#)

## AFFILIATIONS

2016 Camp Kesem

2015 Eta Kappa Nu IEEE Honor Society

2013 Academic All American (Water Polo)

## AWARDS

Regional Silicon Valley Eng. Council

National Intel Scholarship

Regional Silicon Valley AARP

Regional Top Senior Thesis

Regional High School Valedictorian