Kale J. Franz

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Education

Princeton University   2009
PhD in Electrical Engineering
- ▸ Wallace Fellow (top 24 recognition within PhD cohort)
- ▸ Wu Prize for Excellence

Princeton University   2006
MA in Electrical Engineering
- ▸ With coursework through the Woodrow Wilson School of Public & International Affairs
- ▸ National Science Foundation Graduate Research Fellowship

Colorado School of Mines   2004
BS in Physics
- ▸ Minors: Electrical Engineering, Public Affairs
- ▸ GPA 4.00/4.00 (1st in class)
- ▸ Dean's Service Award
- ▸ Member, Board of Trustees

Software Skills

Core Language Proficiencies: Python, Java, Bash, C, Go

Configuration Management & Orchestration: Ansible, Terraform, Kubernetes, Nomad

Packaging & Package Managers: Conda, Maven, RPM, pip, npm, Helm

Virtualization & Containerization: Docker, Vagrant, Packer, VitualBox, VMWare

Relational Databases: MySQL, PostgreSQL, SQLite

Distributed Data Grids & Caching: Redis, Memcached, Terracotta, Hazelcast

NoSQL Databases: MongoDB, Cassandra, Elasticsearch

Message & Task Queues: Kafka, RabbitMQ, AWS SQS, Celery

Application & Web Servers: nginx, Apache, uWSGI, Tomcat, Jetty, ejabberd

Cloud Infrastructure: Amazon Web Services, Google Cloud Platform, Azure, Digital Ocean

Continuous Integration & Automation: Jenkins, TravisCI, CircleCI, AppVeyor, Concourse

Load Testing Frameworks: JMeter, Grinder, Tsung, Locust

TDD: pytest, JUnit, nose

E2E Testing: Selenium, SauceLabs

Frameworks: Django, Flask, Qt

Microservices

Event-driven Architecture

Design Patterns

RESTful APIs

Web and Network Security Best Practices

Agile / Scrum / Jira

Experience

Anaconda, Inc   2018–present
Principal Software Engineer   Austin, TX
- ▸ Building the next generation of the Anaconda Enterpise data science platform and binary repository.

Anaconda, Inc   2016–2018
Conda Lead Developer   Austin, TX
- ▸ Conda is an open source software delivery platform that counts some 16 million users installing more than two petabytes of software every month. It is compatible with all operating systems and all programming language ecosystems. With roots in the data science community, Conda's built-out package support is especially strong for Python and R on Linux, macOS, and Windows. Conda is the package manager that drives the Anaconda data science platform.
- ▸ As the project lead for more than 2.5 years, I filled the roles of both lead developer and product manager. Interacting with users via the project's GitHub issue tracker, feature development priorities were set collaboratively, integrating over input from a diverse set of stakeholders. Not only did we deliver impactful new features and capabilities, but we also advanced test coverage from 40% to over 90% while stabilizing release cycles to provide reliability for our users.

23andMe, Inc   2015
Cloud Infrastructure and Automation Tech Lead   Mountain View, CA
- ▸ Founded, lead, and managed the first dedicated DevOps team.
- ▸ With four engineers, transitioned infrastructure from bare metal colo hardware to AWS, within the context of the stringent information security requirements of a regulated industry.

23andMe, Inc   2013–2015
Senior Software Engineer   Mountain View, CA
- ▸ Member of the backend performance and security group.
- ▸ Introduced message queues within the engineering infrastructure, and implemented the first use cases.
- ▸ Created and deployed local vagrant-based development environments so engineers could write and test code on their local machines. With a legacy eight years' development on a single monolithic app, veteran engineers thought it couldn't be done. Previously, all dev was done on a single, centralized mainframe.
- ▸ Successfully abstracted and decoupled the engineering application stack from the techops infrastructure stack with a "deploy anywhere" philosophy.

BioDiscovery, Inc   2013
Senior Software Engineer   El Segundo, CA
- ▸ Implemented numerically-efficient versions of several published algorithms for analyzing DNA microarray and Next Generation Sequencing data.
- ▸ Introduced and implemented modern software development practices, including a code and architecture documentation strategy, a transition from Subversion to Git version control, and a peer code review process.

Grindr LLC & Blendr LLC   2012–2013
Core Software Engineer   Hollywood, CA
- ▸ Developed proprietary location algorithm at the heart of the company's location-based technology offering. The algorithm eliminated the use of 3000 Google App Engine instances, which were replaced with a single AWS EC2 m1.large instance for production-scale traffic. The new algorithm resulted in a savings to the company of $1.4 million per year.
- ▸ Architected scaling and redundancy strategies for multiple technologies.
- ▸ Authored 78% of server-side code for next-gen technology platform.

Non-Technical Strengths

Mentoring and teaching

Conflict resolution

Acute attention to detail

Analytical writing

Public affairs and business foundation

Political campaigning and public policy

Research and self-learning

Root cause problem solving

Hardware Specialization

Quantum cascade lasers

Compound semiconductor device fabrication

Opto-electronic packaging

Mid-infrared laser sources

Sensors and sensing applications

Analytical instrumentation

Awards

Jet Propulsion Laboratory Team Award	2011
Princeton University Wallace Fellow (signifying top 24 recognition within PhD cohort)	2008
Princeton University Wu Prize for Excellence	2008
Sigma Xi	2008
IEEE Indium Phosphide and Related Materials Conference Best Student Paper Award	2006
National Science Foundation Graduate Research Fellowship	2004
Colorado School of Mines Highest Scholastic (first in class) Honors	2004
Colorado School of Mines McBride Honors Program Philipose Senior Award	2004
Colorado School of Mines Physics Faculty Distinguished Graduate Award	2004
Colorado School of Mines Dean's Service Award	2004
Tau Beta Pi	2002
American FFA Degree	2000

Experience (continued)

NASA Jet Propulsion Laboratory
Microdevices Engineer
2010–2012
Pasadena, CA

- Principal Investigator for JPL award "Low power consumption lasers".
- Developed ErwinJr software package for quantum cascade laser simulation; NTR #48342; released publicly as open source. Written in a combination of Python and C++.
- Designed, fabricated, and tested 4.x μm quantum cascade lasers for CO detection.
- Demonstrated high power (>100 mW) room temperature continuous wave 2.05 μm single spatial mode lasers for CO_2 lidar.
- Developed advanced packaging techniques and procedures for high reliability laser operation.
- Mentored multiple graduate student interns.

Primis Technologies LLC
Founding Partner & Senior Engineer
2006–2009
Princeton, NJ

- Founded a startup company leveraging graduate research in mid-infrared laser and systems technology.
- Authored funding proposals for spectroscopic sensor systems and laser development.
- Developed core intellectual property, including
  - advanced quantum cascade laser design software
  - novel quantum cascade laser designs and strategies
  - mid-infrared spectroscopic sensing systems

Princeton University
Research Assistant
2004–2009
Princeton, NJ

- Developed infrared lasers for applications in medical diagnostics, explosives sensors, and infrared countermeasures.
- Invented new mechanism for achieving lasing in quantum cascade lasers through "high k-space lasing"; U.S.Patent Application 11744508.
- Invented "short injector" quantum cascade lasers that led to lowered threshold current and deeper understanding of QC laser physics.
- Invented ultra-strong coupling quantum cascade laser designs that led to world record 50% wall-plug efficiencies; U.S. Patent Application 12795954.
- Demonstrated world's first intersubband emission from II-VI quantum cascade structures.

National Renewable Energy Laboratory
Research Intern
2003–2004
Golden, CO

- Researched novel approaches to carbon nanotube synthesis.
- Constructed an automated prototype nanotube growth system.
- Synthesized carbon nanotubes through a laser vaporization process.
- Used Raman spectroscopy, transmission electron microscopy, and thermogravimetric analysis characterization techniques.

Colorado State House of Representatives
Legislative Intern
2002
Denver, CO

- Aid to Representative Brad Young, Chairman of the Joint Budget Committee
- Drafted responses to constituent mail
- Assisted in analysis of TaBOR effects on state budget

U.S. Department of Energy, Office of Science
Intern
2001–2002
Washington, D.C.

- Traveled to DOE National Labs assisting University of Washington Center for Workforce Development in internship program review and evaluation, examining program value and customer (intern) satisfaction.
- Advised on strategic direction for individual programs and department mission.
- Editor and contributing author for first and second volumes of DOE Office of Science Journal of Undergraduate Research.
- Worked directly under an Office of Science director in policy-related matters, including program management and Congressional budget proposals.