

# Alex Moran

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## Experience

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### LEAD INTELLIGENT SYSTEMS SOFTWARE ENGINEER, SUPERNAL, FREMONT, CA 2022-2024

- Created platform for research and development of autonomy for eVTOL aircraft. The platform was adopted by a dozen researchers across the R&D department.
- Managed Advanced R&D software team and developed SDK for vectorization and analysis of sensor data.
- Technology: Python, Javascript, C++, Robotics (ROS2), Unreal Engine, TileDB, SciPy, Platform Engineering, Kubernetes, Ubuntu

### SCIENTIFIC ENGINEER, LAWRENCE BERKELEY NATIONAL LABORATORY, BERKELEY, CA 2017-2021

- Designed architecture for multi-sensor robotic system. The resulting system was reliable and allowed for arbitrary combinations of physical sensors and sensor fusion nodes. The system was used at numerous demonstrations and field measurements, and several systems were shipped to customers at the Japanese Atomic Energy Agency, International Atomic Energy Agency, and several labs in the USA. Several papers were published, a patent was issued, continuing government funding was secured, and a startup was created to commercialize the technology.
- Created human-robot interface for gamma-ray sensor fusion device. Using intuition and first principles, a new kind of interface needed to be created that would allow a non-expert user to make informed decisions about spectral data. This led to new understandings of how activity could be reconstructed, and new techniques for conducting searches for radioactive sources.
- Built autonomous drone software. The system is able to avoid obstacles and make complex behavioral decisions. The software was tested in simulation and in the field.
- Technology: Python, Javascript, C, Robotics (ROS), Unity, AR, VR, Autonomous Systems, SciPy, OpenCV, Cython, NodeJS

### PRINCIPAL ENGINEER, AIRGRUB.COM, MILLBRAE, CA 2015-2016

- Created app for robot and human food delivery at airports. Both client and concessionaire apps were launched at several airports. Robotic food delivery was demonstrated at shopping centers and offices. The app had wide adoption by airport employees.
- Technology: Objective-C, Javascript, PostgreSQL, MySQL, Firebase, API Development

### MOBILE ENGINEER, KHAYLO.COM, SAN FRANCISCO, CA 2014-2015

- Built mobile app for automatic exercise tracking using machine learning. The app could track 20 different exercises accurately with signal processing and machine learning techniques applied to sensor fusion data.
- Technology: Objective-C, C, iOS, Signal Processing, Machine Learning, Mobile Development

### DEVOPS ENGINEER, EAT24.COM, SAN BRUNO, CA 2011-2014

- Maintained servers and computing infrastructure and security, supported development team with tools and services, and helped develop the company's first native iOS app, as a result the customer base grew 50% annual every year, and the company was subsequently acquired by Yelp.
- Technology: PHP, PHP-FPM, PostgreSQL, CentOS, Zabbix

### GAME DEVELOPER, PRESENT CREATIVE, SAN FRANCISCO, CA 2006-2011

- Developed website and casual games. Published multiple games to web and iOS App Store which helped the company be acquired.
- Technology: Objective-C, ActionScript, PHP, Javascript

## Publications

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- 3D Gamma-ray and Neutron Mapping in Real-Time with the Localization and Mapping Platform from Unmanned Aerial Systems and Man-Portable Configurations - [arXiv:1908.06114](https://arxiv.org/abs/1908.06114) - Aug 16, 2019
  - Improved Gamma-Ray Point Source Quantification in Three Dimensions by Modeling Attenuation in the Scene - [arXiv:2104.11318](https://arxiv.org/abs/2104.11318) - 2 Apr, 2021
  - Immersive Operation of a Semi-Autonomous Aerial Platform for Detecting and Mapping Radiation, IEEE Transactions on Nuclear Science - doi:10.1109/TNS.2021.3122452 - 25 Oct, 2021

## Education

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- San Francisco State University — Bachelor of Physics, 2004.
  - Whitewater Rafting and Swift water rescue technician.
  - Capoeira master and teacher.