

# Brian R. Keating

La Jolla, CA

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## Summary

Computer vision engineer with over ten years of experience analyzing medical images using both classical image processing and deep learning. Expert in real-time signal processing for motion tracking with multiple publications validating new technologies. Technical leader with proven ability to turn cutting-edge research into robust, production-ready software.

## Experience

### Senior Scientist, MLOps Lead

2020–present

Cortechs.ai

San Diego, CA

- Led the technical development of an AI-driven brain cancer app from conception through FDA submission.
- Built scalable machine learning ops using mlflow, quiltda, and github actions.
- Designed and developed a clean, well-documented, well-tested Python package for medical image analysis.

### Machine Learning & AI Engineer

2018–2020

Healthlytix, Inc. (merged with Cortechs 5/2020)

San Diego, CA

- Designed and trained convolutional neural networks for segmentation of prostate MRIs.
- Developed two academic prototypes into robust, production-level apps and helped guide them through FDA 510(k) clearance.
- Registration and segmentation of head CTs for use by ER radiologists.

### Computer Vision Engineer

2016–2018

Uptake, Inc.

Chicago, IL

- Led a small Data Science R&D group responsible for building Uptake's capabilities in image analytics.
- Developed object detection and change detection algorithms using both classical image analysis and deep learning for use with satellite imagery.
- Designed, implemented, and trained convolutional neural networks; created and labeled a 30,000-image dataset.

### Image Analysis & Data Visualization Consultant

2015–2016

Research Computing Center (RCC), University of Chicago

Chicago, IL

- Scripted image processing – segmentation, registration, filtering, tracking – for microscopy and MRI research.
- Installed software and provided tech support for users of RCC's 13,000 node cluster.
- Taught "Image Analysis in Python" and "Introduction to RCC" workshops.

## **MR Research Specialist / Assistant Researcher**

2008–2014

Dept. of Medicine, University of Hawaii

Honolulu, HI

- Pioneered novel methods for correction of patient motion during MR image acquisition.
- Designed, implemented and published real-time motion correction algorithms for use in clinical studies.
- Received an intramural NIH grant to adapt MRI motion correction technology for use in a neonatal population.
- Supported the lab by scripting data analysis, mentoring new hires, and organizing a journal club.

## **Education**

**College of William & Mary**, Williamsburg, VA

2007

Ph.D. in physics

**St. Mary's College of Maryland**, St. Mary's City, MD

2003

B.A. in physics

## **Skills**

### **Computer Vision & Image Analysis**

Convolutional neural networks for image segmentation and object detection; image filtering, registration, and segmentation; object tracking; camera calibration.

### **Programming Languages**

Python and scientific Python stack (numpy, scipy, sklearn, pandas, skimage); pytorch; opencv; working knowledge of bash/Linux; Matlab; C++ (rusty); a little Javascript/html/css

### **Data Analysis & Machine Learning**

Standard techniques for supervised learning (linear models, random forests, neural networks) and unsupervised learning (PCA, k-means clustering); Kalman filtering; modeling of biomechanical motion; manipulation, labeling and analysis of large image datasets; classical statistics for clinical data analysis.

### **Devops**

Jenkins; docker; git; github actions; mlflow; airflow; basic AWS (S3, EC2, ECR).

## **Patent Pending**

“Systems, devices, and methods for detecting false movements for motion correction during a medical imaging scan”, [US patent application 15222811](#), with Thomas Ernst, Aditya Singh, Maxim Zaitsev, and Michael Herbst.