Brian R. Keating

brikeats.github.io • brikeats@gmail.com

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, quiltdata, 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.
- Awarded 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; a little AWS (S3, EC2, ECR).

Patent

"Systems, devices, and methods for detecting false movements for motion correction during a medical imaging scan", US patent 15222811, with Thomas Ernst, Aditya Singh, Maxim Zaitsev, and Michael Herbst.