

Brian R. Keating

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Summary

Ph.D. physicist with 10 years of experience in numerical programming for medical imaging and fluid simulation. Expert in real-time signal processing for motion tracking with multiple publications validating new technologies. Image analyst in an interdisciplinary group, comfortable communicating with non-technical colleagues. Independent researcher with proven ability to conceive and execute complex projects.

Skills

Data Analysis & Statistics

signal processing, Kalman filtering, modeling of biomechanical motion, independent component analysis, conjugate gradient optimization, manipulation and analysis of large datasets for fMRI, classical statistics for clinical data analysis.

Image Analysis

segmentation, registration, filtering, tracking, calibration.

Programming Languages

Python, C++, Matlab; some Java (Android) for personal projects; Fortran and MPI for graduate work.

Research and Presentations

start-to-finish design, coding, execution and publication of human studies to validate new motion-correction technologies; multiple conference presentations for mixed audiences of engineers and physicians.

Education

College of William & Mary , Williamsburg, VA M.S. and Ph.D. in Physics	2007
St. Mary's College of Maryland , St. Mary's City, MD B.A. in Physics	2003

Employment & Research Experience

Image Analysis & Data Visualization Consultant 2015-present

Research Computing Center (RCC), University of Chicago

- Scripting image processing -- segmentation, registration, filtering, tracking, calibration -- for microscopy and MRI research.
- Software installation and tech support for users of RCC's 13,000 node cluster
- Taught workshops "Image Analysis in Python" and "Introduction to RCC"

Assistant Researcher (Junior Faculty) 2011-2014

Dept. of Medicine, University of Hawaii

- Pioneered novel methods for correction of patient motion during MR image acquisition.
- Implemented cutting edge real-time motion correction algorithms in C++ for use in clinical studies.
- Received an intramural NIH grant to adapt MRI motion correction technology for use in a neonatal population.

- Created a simple, fast, Matlab-based method for retrospectively correcting motion artifacts in anatomical images.
- Supported the lab by scripting data analysis, mentoring new hires, organizing journal club.

MR Research Specialist

2008-2011

Dept. of Medicine, University of Hawaii

- Designed and implemented MR pulse sequences and image reconstruction programs in C++.
- Implemented a brain imaging program that was used in a large multi-center pediatric study.
- Provided general lab support: Matlab scripting for fMRI statistics, scanner operation, recruiting study volunteers.

Research Assistant / Ph.D. Candidate

2004-2007

Dept. of Physics, College of William & Mary

- Programmed fluid and plasma simulations for massively parallel computers using the Lattice Boltzmann Method (LBM).
- Investigated numerical stability, subgrid modeling, and boundary conditions implementation in LBM simulations of turbulent flow.
- Coded simulations from scratch in MPI-Fortran.