

## HAN DONG

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<https://github.com/handong32/>

### EDUCATION

Boston University

PhD candidate in Computer Science 2014 – Present

University of Maryland Baltimore County

Thesis: A System for Social Media Data Analytics Applied To Hurricane Sandy

M.S. in Computer Science 2011 – 2013

University of Maryland Baltimore County

B.S. in Computer Science 2006 - 2010

### TEACHING EXPERIENCE

Boston University

Teaching Fellow – CS 210 Introduction to Computer Systems Spring 2015

Teaching Fellow – CS 210 Introduction to Computer Systems Spring 2016

Teaching Fellow – CS 210 Introduction to Computer Systems Fall 2017

Teaching Fellow – CS 451/651 Distributed Systems Spring 2018

Teaching Fellow – CS 451/651 Distributed Systems Fall 2018

University of Maryland Baltimore County

Teaching Assistant – CMSC 491/671 Parallel and Distributed Processing Spring 2012

### WORK & RESEARCH EXPERIENCE

Scalable and Elastic Systems Lab (SESA), Boston University

Graduate Student 2014 – Present

1. Porting a fetal MRI imaging application for the EbbRT library operating system to dynamically launch subsets of computation on baremetal hardware in parallel. Demonstrated proof of concept via a web application running on the Massachusetts Open Cloud (MOC) that uploads fetal brain images to a compute backend.
2. Developing device driver for RISC-V (an open source ISA specification) linux kernel so that it can be booted off Zybo/Zed FPGA boards for neural network computation via the Fast Artificial Neural Network Library (FANN).
3. Writing device driver for Intel 82599 10GbE NIC

Office of Science and Engineering Labs, Food and Drug Administration, Silver Spring, MD

ORISE Fellow @ Division of Imaging and Applied Mathematics 2012 – 2014

1. Developing and porting a 3D Breast Imaging reconstruction code to CUDA, attained a ~20x performance increase.
2. Developed visualization tools for hybridMANTIS (Monte Carlo modeling of indirect x-ray detectors using CPU and GPU).
3. Designed and coded a Microsoft Kinect program for real-time radiation dose monitoring system through automatic patient location and orientation detection; co-authored abstracts for poster and paper submission to SPIE conference.

University of Maryland Baltimore County

Graduate Research Assistant @ CHMPR (Center for Hybrid Multicore Productivity Research) Fall 2011 – Spring 2013

1. Project with the National Oceanic and Atmospheric Administration (NOAA) to design a real time system that applies learning algorithms to analyze social media data in order to provide better evacuation and public feedbacks during extreme weather disasters; also implemented a parallel Boosting algorithm in OpenMP to distribute the workload.
2. Optimized NASA climate physics code multicore CPUs and GPUs; achieved performance speedup by using Intel SSE and AVX vector registers.
3. Improved the National Biomedical Imaging Archive (NBIA) servers for downloading large DICOM image files by implementing bittorrent protocol using Azureus API; programmed both the server backend and client frontend for serving image files to users; benchmarked downloading speed using Amazon EC2 clusters.

Los Alamos National Lab, Los Alamos, NM

Los Alamos Information Science & Technology Center (IS & T) Co-design Summer School 2011

1. Implemented neutron transport equation solver on heterogeneous architectures; developed multicore CPU with MPI and hybrid CPU-GPU versions; presented poster at SuperComputing 2011, Seattle, WA. Open source code: <https://github.com/losalamos/HILO>

Google Summer of Code with Scilab

Summer 2010

1. Collaborated with mentors from France in developing and improving GUI applications in Scilab (an open source version of MatLab); updated weekly progress reports in Scilab wiki. (<http://wiki.scilab.org/handong>)

## RESEARCH PAPERS

*EbbRT: A Framework for Building Per-Application Library Operating Systems*

Dan Schatzberg, James Cadden, Han Dong, Orran Krieger, and Jonathan Appavoo

Proceedings of the 12th USENIX Symposium on Operating Systems Design and Implementation (OSDI 2016), November 2–4, 2016, Savannah, GA, USA.

*A Scalable System for Community Discovery in Twitter during Hurricane Sandy*

Yin Huang, Han Dong, Yelena Yesha and Shujia Zhou

SCRAMBL: The 1st Workshop on Scalable Computing for Real-Time Big Data Applications, May 26-29, 2014, Chicago, IL

*Web-based, GPU-accelerated Monte Carlo simulation and visualization of indirect radiation imaging detector performance*

Han Dong, Diksha Sharma and Aldo Badano

Medical Physics, 41, 121907 (2014), DOI:<http://dx.doi.org/10.1118/1.4901516>

*Social Media Data Analytics Applied to Hurricane Sandy*

Han Dong, Milton Halem, Shujia Zhou

Proceedings of 2013 ASE/IEEE International Conference on Social Computing, September 8- 14, 2013, Washington, DC

*A real-time radiation dose monitoring system for patients and staff during interventional fluoroscopy using a GPU accelerated Monte Carlo simulator and an automatic 3D localization system based on a Kinect depth camera*

Andreu Badal-Soler, Fahad Zafar, Han Dong, Aldo Badano

Proceedings of SPIE (The International Society for Optics and Photonics) Medical Imaging 2013, Florida, USA

*Cross-Platform OpenCL Code and Performance Portability for CPU and GPU Architectures Investigated with a Climate Physics Model*

Han Dong, Dibyajyoti Ghosh, Fahad Zafar, Shujia Zhou

Proceedings of Fifth International Workshop on Parallel Programming Models and Systems Software for High-End Computing, September 10, 2012, Pittsburgh, PA

*Hybrid Deterministic/Monte Carlo Neutronics using GPU Accelerators*

Jeff Willert, C. T. Kelley, D. A. Knoll, Han Dong, Mahesh Ravishankar, Paul Sathre, Michael Sullivan, William Taitano

Proceedings of 11th International Symposium on Distributed Computing and Applications to Business, Engineering & Science, October 19 – 22, 2012, Guilin, Guangxi, China

*X10-Enabled MapReduce*

Han Dong, Shujia Zhou, David P. Grove

Proceedings of the Fourth Conference on Partitioned Global Address Space Programming Model, October 12, 2010, New York, NY

\*\*Presented poster at ACM Student Poster Session, SuperComputing 2010, New Orleans, LA

*Computer Visualization of Optical Network Behavior*

Han Dong, Ray Chen

UMBC CSEE Research Review 2010, University of Maryland Baltimore County, June 2010

## **AWARDS**

UMBC CSEE Research Review Best M.S. Research Paper	2012
UMBC CSEE Research Review Best Undergraduate Research Paper	2010
UMBC Undergraduate Research Award full funding	2009
Full funding for Graduate Research Assistantship by NSF-CHMPR	2011 - 2013