

# Katherine A. Aiello

## RESEARCH EXPERIENCE

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CURRENT, FROM JULY 2012

### Graduate Research Assistant *Genomic Signal Processing Lab*

Mathematically formulate and computationally implement novel matrix- and tensor-based decompositions for analyzing large biological datasets in brain and ovarian cancers. Develop and maintain high-performance bioinformatics pipeline for genomic data analysis and visualization. Use statistical models to determine the clinical effectiveness of genomic signatures for prediction of patient survival and response to treatment. Collaborate with clinicians to develop laboratory tests.

JAN 2011 – MAY 2012

### Undergraduate Research Assistant *Cardiac Biomechanics Group*

Studied the structural and mechanical remodeling of the heart due to atrial fibrillation. Refined and implemented statistical model of contrast-enhanced medical images to analyze structural remodeling. Quantified mechanical changes in the heart by modeling the passive pressure-volume relationship of left atrium to determine tissue stiffness.

SEPT 2011 – MAY 2012

### Undergraduate Thesis Research *University of Virginia*

Used clustering and support vector machines to data mine the Human Protein Atlas. Identified novel proteomic biomarkers for glial cells. Designed and implemented flexible pipeline for data mining large-scale histology databases.

## TEACHING EXPERIENCE

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AUG 2013 – DEC 2013

### Graduate Teaching Assistant *University of Utah*

Assisted 70 graduate and undergraduate students with course material and assignments in weekly office hours for *Introduction to Statistics for Bioengineers*. Developed advanced course material and gave lectures in instructor's absence. Prepared lectures covering new material and review of previous topics.

JAN 2011 – MAY 2012

### Undergraduate Teaching Fellow *University of Virginia*

Mentored a team of 20 undergraduate students through the engineering design process in *Biomedical Engineering Design and Discovery*. Under my leadership, the team successfully developed a novel screening test for strabismus, an ocular misalignment.

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## EDUCATION

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2012 – PRESENT **Doctor of Philosophy**  
BIOENGINEERING  
*University of Utah*

DEC 2014 **Master of Science**  
BIOENGINEERING  
*University of Utah*

MAY 2012 **Bachelor of Science**  
*with Distinction*  
BIOMEDICAL ENGINEERING  
ENGINEERING BUSINESS, MINOR  
*University of Virginia*

## SELECTED AWARDS

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2012 – PRESENT **Fellowship in Computational Biology**  
*Scientific Computing and Imaging Institute*

2015 **Grace Hopper Scholar**  
*Anita Borg Institute*

2015 **International High Performance Computing Summer School Fellow**  
*XSEDE, NSF-US*

2013 **CRA-W Grad Cohort Member**  
*Computing Research Association – Women*

## COMPUTER SKILLS

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BASIC C, Java, OpenMP, MPI  
INTERMEDIATE Python, L<sup>A</sup>T<sub>E</sub>X  
ADVANCED Matlab, Mathematica, R

## COMMUNICATION SKILLS

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TALKS 2014 – SIAM Annual Meeting, Invited

POSTERS 2015 – BMES Annual Meeting  
2014 – 48<sup>th</sup> Asilomar Conference on  
Signals, Systems, and Computers  
2013 – BMES Annual Meeting

WRITTEN NIH-Style Grant Writing (F-series)  
Scientific Manuscript Writing