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Education

University of Washington, Seattle

Ph.D. in Genome Sciences (entering class of 2014)

University of Washington, Seattle

B.S. in Bioengineering with College Honors (2012)

3.79 Departmental GPA ; 3.69 Overall GPA

Research Experience

University of Washington Department of Genome Sciences 9/2014 – 9/2014

**Graduate Student**

* Working with Jay Shendure and Cole Trapnell on a variety of projects within functional genomics, applications of single-cell technologies to dynamic cell responses like differentiation, and computational tools for genomics.

MacArthur Lab of Massachusetts General Hospital/Broad Institute of MIT and Harvard 9/2013 – 9/2015

**Research Assistant**

* Developed python API and scripts to extract/refine data from Leiden Open Variation Databases.
* Performed extensive automated validation of variants mapped from HGVS to VCF format.
* Developed methods for automating detection of misannotated protein coding exons in GENCODE using metrics for evolutionary conservation, constraint in a large reference panel, and tissue expression levels.
* Wrote software to detect and analyze multi-nucleotide polymorphisms derived from ~65K exome sequencing samples that change LoF variant interpretation compared to individual variants.
* Led pilot effort with Software Carpentry to implement best software development practices within lab.

**Tekscan, Inc.** 9/2012 – 1/2014

**Applications Engineer**

* Conducted engineering research projects for new applications of force and pressure sensors.
* Implemented machine learning algorithms to estimate shoe-size from pressure sensor data.
* Signal processing and data analysis for IMU position/angle tracking of human gait.
* Greatly improved algorithms for gait-analysis from Tekscan pressure sensor data.
* Developed automated test fixtures and data-analysis scripts with MATLAB and LabVIEW.
* Provided engineering support and/or training to customers and all internal departments.

**UW Biorobotics Lab (Professors Blake Hannaford and Howard Chizeck)** 1/2010 – 6/2012  
**Undergraduate Research Assistant**

* Thesis: Online Modeling of the *In Vivo* Mechanical Properties of Soft Tissue for Robotic Surgery
* Designed, built, and programmed electromechanical device to quantify in vivo tissue dynamics.
* Developed Unscented Kalman Filter/signal processing using MATLAB/C++.
* Co-developed hardware and microcontroller code for haptic-enabled glove.
* Developed hardware and microcontroller code to detect peg-contact in FLS block-transfer task.

Professor Joan Sanders Lab 8/2009 – 1/2010

**Undergraduate Research Assistant**

* Collected/analyzed data to calibrate tri-axis force sensor for amputee gait analysis.
* Designed and built Plexiglas housing for patient-mounted electronics.

Selected Coursework

Data Visualization (CSE 512) Applied Biostatistics I (BIOSTAT 517) Machine Learning (CSE 546)

Embedded Microcomputer Systems (EE 472) Digital Signal Processing Signal Processing

**Independent Coursework**

* Machine Learning Coursera (Stanford)
* Algorithms Design and Analysis – Part 1 Coursera (Stanford)
* Circuits and Electronics MIT Open Courseware
* Manual Machining and Layout (Mill and Lathe) Artisan’s Asylum

Skills

* **Computing:** Python, R, Bash, Java, C#, C/C++, MATLAB, LabVIEW
* **Web Development:** HTML, CSS, JavaScript, D3.js, jQuery
* **Software Development Tools:** Git, Mercurial, Eclipse, Visual Studio
* **Operating Systems:** Windows and UNIX-based operating systems
* **Bioinformatics:** GATK, BED Tools, SAM Tools, VCF Tools, Variant Effect Predictor, UCSC Genome Browser
* **Embedded Systems:** ARM and Arduino embedded system programming
* **Machining:** CNC mill, lathe, band-saw, drill-press, various hand tools

Coaching and Teaching Experience

iD Tech Camps Summer 2012

**Summer Camp Instructor: Programming in Java and Adventures in Robotics**

**UW Bioengineering Department Circuitry Workshops** Winter 2012

**Volunteer Instructor**

UW Bioengineering Outreach Program 12/2011 – 6/2012

**Ultrasound Education Module Co-Developer and Instructor**

**United States Gymnastics Training Camps** Summers 2005 – 2010

**Counselor and Coach**

Leadership Experience and Activities

**Dana-Farber Cancer Institute, Brigham and Women’s Hospital** 9/2012 – 4/2013

**Volunteer – Kraft Family Blood Donor Center**

**UW Biomedical Engineering Society** 6/2011 – 6/2012

**Vice President and Webmaster**

**UW Honors Department** 9/2008 – 9/2009

**Peer Mentor**

**Washington Men’s Gymnastics Team** 8/2008 – 10/2009

***Team Member***

Selected Awards and Honors

* National Science Foundation Graduate Research Fellowship (5 year fellowship, 3 years funding)
* Mary Gates Research Scholarship
* Annual Dean’s List
* USA Gymnastics Men’s Program Scholarship
* Friends of Gymnastics Scholarship

Publications

* Xinxian Deng, Wenxiu Ma, Vijay Ramani, **Andrew Hill**, Fan Yang, Ferhat Ay, Joel B. Berletch, Carl Anthony Blau, Jay Shendure, Zhijun Duan, William S. Noble, and Christine M. Disteche. Bipartite structure of the inactive mouse X chromosome. **Genome Biology 2015 Aug**, 16:152.

Presentations

* **Andrew Hill**, Beryl Cummings, Konrad Karczewski, Monkol Lek, and Daniel MacArthur. “Phased annotation of protein-coding variants across 60,706 human exomes.” Presented at the 65th Annual Meeting of The American Society of Human Genetics, **October, 2015** in Baltimore, MD.
* **Andrew Hill**, Xiaojie Qiu, and Cole Trapnell. “Pseudotemporal ordering of cells undergoing immune stimulation and peturbations to cell-cell signaling.” Genome Training Grant Symposium invited trainee speaker. **July, 2015**.
* **Andrew Hill**. “Calibration and Synchronized Data Acquisition for High-Speed Applications.” Tekscan North American Distributor Meeting. Boston, MA. **April, 2013**.
* **Andrew Hill**, Sina Kosari, Blake Hannaford, and Howard Chizeck. “Online Modeling of the *In Vivo* Mechanical Properties of Soft Tissue for Robotic Surgery.” University of Washington Mary Gates Undergraduate Research Symposium. Seattle, WA. **May 2012**.

Study Abroad

* Creative Travel Writing and Sustainability in Ecuador Summer 2010