

## Skills

|                                 |  |
|---------------------------------|--|
| <b>Programming Languages</b>    | Scala, Python, R, MatLab, C#, $\LaTeX$ , Bash                        |
| <b>Databases</b>                | S3, MongoDB, SQL   |
| <b>Distributed Technologies</b> | Apache Spark, Spark-Streaming, HDFS                                  |
| <b>Technologies</b>             | Docker, AWS, Unity/VR, Travis-CI                                     |
| <b>Software Development</b>     | Agile, SCRUM, GitFlow, Code Review, Sprint Planning and Review, JIRA |

## Experience

### USC Viterbi School of Engineering

Los Angeles, California

May 2015 - Present

**Computer Science Ph.D. Student**

- Led a 5 person team composed of 2 Masters Students, 2 PhD Post-Docs, and 1 PhD Student.
- Wrote a robotic learning algorithm to control a human cadaveric hand by its muscles.
- Designed partnerships with USC and Pomona College to hire 18 internship fellows with funding or credit, and led teams in designing research-grade code.
- Implemented a Scala REST API to handle a neural simulation data stream of 10GB/s.

*Tools: Scala, Spark, EMR, HDFS, R, D3.js, Meteor.*

### Swiss Federal Institute of Technology

Zürich, Switzerland

April 2015 - May 2015

**Computer Scientist**

- Taught biostatistical techniques to 5 professors and 6 students at the Department of Theoretical Computer Science.
- Presented multiple research talks in Zürich.
- Derived and implemented a highly theoretical hit-and-run algorithm in Spark.
- Published an international conference proceeding at the IEEE Engineering in Medicine and Biology Society.

*Tools: Scala, Java, Spark, HDFS, Python, R, Amazon EC2, and MongoDB.*

### Toyota Motor Sales

Torrance, California

January 2015 - April 2015

**Consultant**

- Single-handedly developed a crowd-sourced data validation platform that connected with tens of thousands of participants.
- Evaluated the statistical effectiveness of machine learning algorithms implemented.
- Identified significant flaws in the C360 Dealer-Concerns model, and provided exceptional proof of their existence.

*Tools: Amazon Mechanical Turk, Python, R, D3.js, Scala, mllib, and HDFS.*

### Keck Graduate Institute

Claremont, California

May 2014 - August 2014

**Project Data Scientist**

- Created massively distributed in-memory machine learning frameworks to hold the 10-terabyte network and graph database from the USPTO.
- Applied a gradient boosted decision tree to predict new utility patent clusters.

*Tools: AWS EC2, HDFS, R, h2o.ai, Spark, Amazon RDS.*

### Eli Lilly and Company

Indianapolis, Indiana

September 2013 - May 2014

**Consultant**

- Interfaced directly with Tony Zhang, the Vice President of R&D-Asia for 9 months.
- Led a team of six people in developing proprietary software to improve patient compliance.
- Wrote a real-time machine-learning pipeline that tags tweets about issues with competing medications.

*Tools: AWS, Python, scikit-learn, R and D3.js.*

### **Peer-reviewed Publications**

"Feasibility Theory reconciles and informs alternative approaches to neuromuscular control"

Manuscript under Review with minor revision: *Frontiers in Computational Neuroscience*. Jun 2018

Cohn BA, Szedlak M, Gartner B, Valero-Cuevas FJ

"Exploring the nature of muscle redundancy via subject-specific and generic musculoskeletal models"

Featured Publication: *Journal of Biomechanics*, 2015.

Valero-Cuevas FJ, Cohn BA, Yngvason HF, Lawrence EL

"Structure of the set of feasible neural commands for complex motor tasks"

37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 2015

Valero-Cuevas FJ, Cohn BA, Szedlák M, Gärtner B, Fukuda K

"Retinal topography maps in R: new tools for the analysis and visualization of spatial retinal data."

*Journal of Vision* July 2015, Vol.15, 19. 2015. <https://github.com/briancohn/retina>

Cohn BA, Wainwright P, Collin S, Schmitz L

"Eye histology and ganglion cell topography of northern elephant seals (*Mirounga angustirostris*)."

Accepted: *The Anatomical Record*, 2016.

Smolaka H, Khamas W, Palmer L, Lui B, Borovac J, Cohn BA, Schmitz L

### **Patents**

Cohn, BA. "METHOD AND APPARATUS FOR CONTINUOUSLY PRODUCING ANALYTICAL REPORTS"

U.S. Patent Application No.: 15/645,860. 7 Jul. 2017.

## Education

|   |              |
|---|--------------|
| <b>University of Southern California</b>                          | 2015-Present |
| <i>Ph.D. Computer Science, Viterbi Dean's Doctoral Fellowship</i> |              |
| <b>University of Southern California</b>                          | 2018         |
| <i>Masters Degree in Computer Science</i>                         |              |
| <b>Pitzer College</b>   | 2014         |
| <i>B.A. with Honors - Computational Biology</i>                   |              |

## Major Awards

|   |          |
|---|----------|
| NSF Graduate Research Fellowship   Recipient                                | Mar-2017 |
| NSF Graduate Research Fellowship   Honorable Mention                        | Mar-2016 |
| USC Michelson Center for Convergent Bioscience   Cancer Research Fellowship | Apr-2017 |
| USC Viterbi Dean's Doctoral Fellowship                                      | May-2015 |
| Howard Hughes Medical Institute Research Grant                              | Apr-2013 |

## Selected Awards

|   |          |
|---|----------|
| Submission Acceptance, USC Center For Body Computing: Voice-Computing Applications for Health | Jul-2018 |
| Finalist, American Academy of Neurology (AAN) Brain Storm                                     | Apr-2018 |
| Finalist and HTC Vive Industry Pick, Creating Reality Hackathon                               | Mar-2017 |
| 3 <sup>rd</sup> Place, Oral Presentations. 6 <sup>th</sup> Annual SWOB SICB Meeting           | Oct-2017 |
| Top 10 Finalist, USC Stevens Innovator Showcase   | Oct-2017 |
| Alternative Muscle Club Young Investigator Award, by Genera Biocells                          | Sep-2017 |
| Student Travel Grant, De Luca Foundation  | May-2017 |
| 2 <sup>nd</sup> Prize, USC CancerBase Hackathon   | Apr-2017 |
| Top 8 Finalist, Viterbi Innovation Maseeh Prize Competition (\$2.5k Award)                    | Nov-2016 |
| Top 10 Finalist, USC Stevens Innovator Showcase   | Oct-2016 |
| Microsoft US Imagine Cup Winter Semi-Finalist   | Dec-2015 |
| \$24,000 Rackspace Startup Credits  | Dec-2015 |
| \$5,000 AWS Prize, USC Venture Incubation Program (Virtual Reality)                           | Nov-2015 |
| \$5,000 AWS Prize, USC Venture Incubation Program (Biomedical Compute Cloud)                  | Nov-2015 |
| \$10,000 Grand Prize (USC Hacking Virtual Medicine) IEEE Standards Association                | Oct-2015 |
| USC Health Technology Innovation Fellowship in Digital Health                                 | Aug-2015 |
| 20,000 Compute-Hour Credits, USC HPC Cluster  | Nov-2014 |
| Pitzer College Student Research Award   | Nov-2013 |
| Pitzer College Student Research Award   | Mar-2013 |

## Talks and Posters

|   |          |
|---|----------|
| Poster: Society for Neuroscience, San Diego   | Nov-2018 |
| Talk: The Southern California Biomedical Council, Los Angeles                                 | Feb-2018 |
| Talk: Los Angeles Venture Association, Los Angeles  | Feb-2018 |
| Talk: South West Regional Meeting of Organismal Biologists SICB                               | Oct-2017 |
| Podium Presentation: Alternative Muscle Club 5th Annual Meeting                               | Sep-2017 |
| Talk: MedTechWorld-West Annual Conference, Anaheim  | Feb-2017 |
| Poster: Society for Neuroscience, San Diego   | Nov-2016 |
| Talk: U. of Minnesota Computational Sensory-Motor Neuroscience (CoSMo)                        | Mar-2016 |
| Poster: Winter Workshop on Neuromechanics, New Orleans  | Jan-2016 |
| Talk: National Science Foundation - Innovation (I) Corps Fall Networking Event                | Nov-2015 |
| Talk: 37th Annual International IEEE Engineering in Medicine and Biology Society, Milan Italy | Aug-2015 |
| Talk: USC Viterbi School of Computer Science Seminar Series                                   | Aug-2015 |
| Poster: 39th Annual Conference of the American Society of Biomechanics                        | Aug-2015 |
| Poster: 25th Annual Conference of the Society for the Neural Control of Movement              | Apr-2015 |
| Talk: Masters Capstone Research Symposium, Keck Graduate Institute                            | May-2014 |
| Talk: Masters Project Thesis Defense, Keck Graduate Institute                                 | Apr-2014 |
| Talk: Public Masters Capstone Talk, Keck Graduate Institute                                   | Dec-2013 |
| Invited speaker: UC Davis FishLab   | Oct-2013 |
| Talk: Regional Society for Integrative and Comparative Biology, UC Riverside                  | Oct-2013 |
| Talk: Science Department Symposium, Keck Graduate Institute                                   | Oct-2013 |
| Poster: Mathematical Bioscience Institute, Ohio State University                              | Jul-2013 |
| Talk: Howard Hughes Medical Institute Student Seminar   | Apr-2013 |

### Teaching & Workshops

|  |          |
|--|----------|
| Panelist<br>BioTech Connection Los Angeles, UCLA   | Dec-2016 |
| Workshop Speaker<br>Summer School in Computational Sensory-Motor Neuroscience, Minneapolis, MN   | Aug-2016 |
| Panelist<br>MedTech-World Conference EAST, New York City, NY<br>"Making Sense of Big Data: Determining Actionable Data & Your Roadmap for Utilization"   | Jun-2016 |
| Panelist<br>Annual Medical Device & Manufacturer - MedTech-World Conference WEST, Anaheim, CA<br>"Making Sense of Big Data: Determining Actionable Data & Your Roadmap for Utilization"  | Feb-2016 |
| Invited Lecturer<br>USC Marshall School of Business, MBA Program<br>"Financial analytics and scalable visualizations in R"   | Feb-2016 |
| Guest Lecture for BME 504<br>USC Viterbi School of Engineering; Graduate School Department of Biomedical Engineering<br>"Linear program design for tendon driven systems"  | Oct-2015 |
| Guest Lecture for Neuromuscular Systems<br>USC Division of Biokinesiology and Physical Therapy<br>"Neuromechanic optimization in open source software"<br><a href="https://github.com/briancohn/biokinesiology">https://github.com/briancohn/biokinesiology</a>  | Oct-2014 |
| PharmaPack North America Conference<br>"Driving Pharmaceutical Product Design with Consumer Intelligence: What Are Patients Saying about the Design of Your Pharmaceutical Product?"   | Jun-2014 |
| Eli Lilly and Company Headquarters<br>"Big Data Analytics in Post-Market Surveillance and Pharmacological Vigilance"   | May-2014 |
| Guest Lecture for Sensory Evolution<br>W.M. Keck Science Department<br>"Retinal Specializations in the Vertebrate Eye: Spatial Interpolations and Phylogenic Comparisons of Retinal Ganglion Cell Density Maps"  | Apr-2014 |
| National Society for Integrative and Comparative Biology<br>"Influence of Zooplanktivory on Retinal Ganglion Cell Topography in Labrid Reef Fishes"<br><a href="http://sicb.org/meetings/2014/schedule/abstractdetails.php?id=1100">http://sicb.org/meetings/2014/schedule/abstractdetails.php?id=1100</a> | Jan-2014 |