Dr. Brian A. Cohn, Ph.D.

https://briancohn.com/   Menlo Park CA: (323) 455-4184
GitHub.com/bc   briancohn@kaspect.com
brian.cohn@obviohealth.com

Curriculum Vitae
July 16, 2022

Professional Areas

National Science Foundation Graduate Fellow, focused on studying neuromechanics of vertebrates and robots, application of AI, VR, and AR to clinical exam-room and ambulance environments, strategic biotech consulting to Fortune 10 and 500 companies for 7 years, design and fabrication of scientific signal-processing electronics and mobile robots. Leading research & development for a clinical research organization (CRO) across FDA-regulated clinical trials for medical devices and pharmaceutical therapeutics. Leadership and management of a scientific and technical research team.

Academic Summary

Ph.D. - **Computer Science**, **Viterbi Dean's Merit Fellowship**   *2020*
University of Southern California

Graduate Certificate in Health Technology and Engineering   *2019*
University of Southern California, Viterbi School of Engineering

M.S. - **Computer Science**   *2018*
University of Southern California

B.A. with Honors - **Computational Biology**   *2014*
Pitzer College

Active Research Support

https://viterbiinnovation.usc.edu/mousetrap-fund/   *2020-2021*
Co-I's: Valero-Cuevas FJ and **Cohn BA**

     2017-2020
National Science Foundation Graduate Research Fellowship (GRFP)
PI: **Cohn BA**

     2019-2021
Consortium for Technology & Innovation in Pediatrics (CTIP)
An FDA-Funded Medical Technology Accelerator
Co-PIs: **Cohn BA** and Laine, CM

     2020
USC Marshall School of Business Incubator: Incubated Venture
Co-PIs: **Cohn BA**, Dr. Kenneth Hayashida, M.D.

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Experience

ObvioHealth   *January 2021 - Present*
New York City, New York   **Director of Research**

- Responsible for R&D technical development, hiring, and strategic partnerships for research at ObvioHealth, a Clinical Research Organization (CRO)
- Managing a multidisciplinary research and technical team to implement new digital instruments for sponsored clinical trials.
- Establishing strategic partnerships with hospital networks, nonprofits, and technology companies in the US, APAC, the EU and Sub-Saharan Africa.
- Instantiated the ObvioHealth capstone program and led a team of 9 undergraduate, graduate, and medical school students.

Microsoft Research   *June 2019 - August 2019*
Redmond, Washington   **Doctoral Research Intern**

- EPIC (Extended Perception Interaction and Cognition) with Mar Gonzalez-Franco
- Culminated in two peer-reviewed full-length papers in IEEE-VR 2020 and IEEE-AIVR 2020.

Tools: Vive Pro and Hololens 2; Unity, C#, R, Python, Bash

Toyota Motor Sales   *January 2015 - April 2015*
Torrance, California   **Consultant to**

- Identified root-cause flaws in a deployed model, and provided exceptional data-driven evidence for the new redesign.
- Single-handedly developed a crowd-sourced data-validation system, connecting over 10k 'Mechanical Turkers' to label data.

Tools: Scala/Spark, AWS mTurk/boto, Python, R

Eli Lilly and Company   *September 2013 - May 2014*
Indianapolis, Indiana   **Consultant to**

- 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, and R

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Peer-Reviewed Journal Articles

"Enjoyable Physical Therapy Experience with Interactive Drawing Games in Immersive Virtual Reality" *2021*
SUI '21: Symposium on Spatial User Interaction
Baron L, Wang Q, Segear S, **Cohn BA**, Kim K, Barmaki R

"Temporal Control of Muscle Synergies is Linked with Alpha-band Neural Drive" *2021*
Cover Article Journal of Physiology
Laine CM, **Cohn BA**, Valero-Cuevas FJ

"SnapMove: Movement Projection Mapping in Virtual Reality" *2020*
Proceedings of IEEE AIVR
Cohn BA, Maselli A, Ofek E, Gonzalez-Franco M

"The Self-Avatar Follower Effect in Virtual Reality" *2020*
IEEE Conference on Virtual Reality and 3D User Interfaces
Gonzalez-Franco M, **Cohn BA**, Ofek E, Burin D

"Autonomous Functional Movements in a Tendon-Driven Limb via Limited Experience" *2019*
Nature Machine Intelligence: Cover Article, March 2019
Marjaninejad A, Urbina-Meléndez D, **Cohn BA**, Valero-Cuevas FJ

"Feasibility Theory reconciles and informs alternative approaches to neuromuscular control" *2018*
Frontiers in Computational Neuroscience
Cohn BA, Szedlák M, Gärtner B, Valero-Cuevas FJ

"Eye histology and ganglion cell topography of northern elephant seals (Mirounga angustirostris)." *2016*
The Anatomical Record, 2016.
Smodlaka H, Khamas W, Palmer L, Lui B, Borovac J, **Cohn BA**, Schmitz L

"Exploring the nature of muscle redundancy via subject-specific and generic musculoskeletal models" *2015*
Journal of Biomechanics, 2015; *Featured Publication*
Valero-Cuevas FJ, **Cohn BA**, Yngvason HF, Lawrence EL

"Retinal topography maps in R: new tools for the analysis and visualization of spatial retinal data." *2015*
Journal of Vision July 2015, Vol.15, 19.
Cohn BA, Wainwright P, Collin S, Schmitz L

Full-length Peer-Reviewed Conference Papers

"Simulating clinical confidence intervals for black-box algorithmic predictions of liver steatosis" *2020*
Hepatology 2020.72;1(Suppl):943A (Abstract 1553)
Cohn BA Munteanu MC, de Ledinghen V, Safadi R, Pavlov C, Gonzalo T, Quiambao R

"Evaluating serum biomarkers: LiverFASt surrogates of liver fibrosis and steatosis could identify risks in a clinical population experiencing SARS-COV2 infection (COVID)" *2020*
Hepatology 2020.72;1(Suppl):273A (Abstract 435)
Raskin M Syed S, Corbett E, Sharak Z, Managadze G, Munteanu M, **Cohn B**, Gonzalo T, Amiel R, Quiambao R, Alam I.

"Virtual Reality for Post-Stroke Rehabilitation" *2020*
Proceedings of IEEE VR 2020, March 2020
Boyd TA, Nahe E, **Cohn BA**, Barmaki R

"Structure of the set of feasible neural commands for complex motor tasks" *2015*
37th Annual International Conference of the IEEE Engineering in Medicine and Biology Society
Valero-Cuevas FJ, **Cohn BA**, Szedlák M, Gärtner B, Fukuda K

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Whitepapers

"Quantifying and attenuating pathologic tremor in virtual reality"   *2018*
Quantitative Biology: arXiv.org
Cohn BA, Shah DD, Marjaninejad A, Shapiro M, Ulkumen S, Laine CM, Valero-Cuevas FJ, Hayashida KH, Ingersoll S

Project Involvement

Kaspect Reach
Clinical study in motor planning across health and disease PI: **Cohn BA**, Co-PI: Kenneth Hayashida, M.D. Active IRB: USC-HS-18-00345

ReachVR Therapeutic application of virtual reality: development of a neuromotor reflex assessment system — Co-Investigator
Collaborators: Franklin S, Franklin D, (TUM Institute of Cognitive Systems and TUM Neuromuscular Diagnostics), and Valero-Cuevas FJ. Active IRB: HS-12-00228, CCI-13-00324; BaCaTech Grant2

Adventure Biofeedback A choose-your-own-adventure style game to provide voice therapy treatment for Cerebral Palsy patients
Co-I's: **Cohn BA**, Laine CM

Kleo Dextrous control of a bio-inspired tendon-driven robot — Responsibilities: Transfer Learning and Data Acquisition
Collaborators: Marjaninejad A, Urbina-Meléndez D, Valero-Cuevas FJ

Intellectual Property

Cohn, BA. et. al. Patent Serial 17/372,852.
Scheduled for examination c. 8/25/2022. Scheduled to be published on 1/12/2023."

Cohn, BA. "EFS ID 36180052"
U.S. Provisional Patent Application No.: 62856238. Jun. 3, 2019.

Cohn, BA. "NON-INTUITIVE MUSCULOSKELETAL MAPPING TO MIXED REALITY"
U.S. Provisional Patent; USC-0237-PRV; 2018-140, Nov. 15, 2018
USC Stevens Center for Innovation, Technology Transfer Office

Cohn, BA. "METHOD AND APPARATUS FOR CONTINUOUSLY PRODUCING ANALYTICAL REPORTS"
U.S. Patent Application No.: 15/645,860. Jul. 7, 2017.

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News and Press

Science World Report	Apr-2019
Electronics Weekly	Apr-2019
Elite CME	Apr-2019
UDaily: University of Delaware	Mar-2019
TuniseSoir News	Mar-2019
ScienceDaily	Mar-2019
Nature: Editorial	Mar-2019
Longroom	Mar-2019
Nanowerk	Mar-2019
TechXplore: Robotics	Mar-2019
Neuroscience News	Mar-2019
USC Viterbi School of Engineering	Mar-2019
PCMag	Mar-2019
EurekAlert-AAAS Photo	Mar-2019
EurekAlert-AAAS Article	Mar-2019
USC Daily Trojan	Feb-2019
USC News	Jan-2019
Boston Globe ('Move2Improve')	Jan-2019
PCMag	Sep-2018
InMotion Magazine; Archive	Fall-2018
WITH FoundationVideo	Sep-2018
The Ambient	Sep-2018
Chicaco Now	Sep-2018
KeckGrad Podcast- Keck Graduate Institute	Jul-2018
USC News	Mar-2017
Pitzer College News	Apr-2017
USC-News: Health	Apr-2017
USC-Dornsife News	Apr-2017
Design News	Jun-2016

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Awards and Distinctions

Major Awards

National Science Foundation Graduate Research Fellowship | **Recipient**	Mar-2017
National Science Foundation Graduate Research Fellowship | **Honorable Mention**	Mar-2016
Cancer Research Fellowship, USC Michelson Center for Convergent Bioscience	Apr-2017
USC Viterbi Dean's Doctoral Fellowship	May-2015
Keck Science Department Summer Research Grant	Apr-2013

Distinctions

Semi-Finalist, Humana-Mays Healthcare Analytics Case Competition on Opioid Prediction (AUC 0.92)	Sep-2019
4th Place, Viterbi Innovation Maseeh Prize Competition	Mar-2019
1st Prize, Amazon Alexa Voice Prize Competition - USC Viterbi	Mar-2019
2nd Prize, Consortium for Technology and Innovation in Pediatrics - Pitch Competition, ScaleLA	Jan-2019
Finalist, American Academy of Neurology (AAN) Brain Storm	Apr-2018
HTC Vive Industry Pick, Creating Reality Hackathon	Mar-2017
3rd Place, Oral Presentations. 6th Annual SWOB SICB Meeting	Oct-2017
Top 10 Finalist, USC Stevens Innovator Showcase	Oct-2017
Young Investigator Award, Alternative Muscle Club & Genera Biocells, San Diego, CA	Sep-2017
2nd 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
Semi-Finalist, Microsoft US Imagine Cup	Dec-2015
USC Health Technology Innovation Fellowship in Digital Health	Aug-2015

Awards

$7,500 Grand Prize, USC Viterbi - Alexa Prize	Apr-2019
$5,000 Legal Support, USC Maseeh Entrepreneurship Prize Competition	Mar-2019
$3,490 Grant, USC Viterbi - Alexa Prize	Mar-2019
$3,000 Grand Prize, Best VR, MIT Media Lab Reality Virtually Hackathon	Jan-2019
$10,000 Grand Prize, USC CBC & WITH Foundation Voice-Computing Hackathon	Jul-2018
Student Travel Grant, De Luca Foundation	May-2017
$10,000 Grand Prize (USC Virtual Medicine Competition) IEEE Standards Association	Oct-2015
Pitzer College Student Research Award	Nov-2013
Pitzer College Student Research Award	Mar-2013

Compute Resources Awarded

$5,000 AWS Credits, USC Maseeh Competition	Mar-2019
$24,000 Rackspace Startup Credits, USC Viterbi Startup Garage	Dec-2015
$5,000 AWS Credits, USC Venture Incubation Program (Virtual Reality)	Nov-2015
$5,000 AWS Credits, USC Venture Incubation Program (Biomedical Compute Cloud)	Nov-2015

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Conference Presentations

Peer Reviewed Abstracts

"Extracting muscle-to-force properties across arbitrary tendon-driven limbs"
South West Regional Meeting of Organismal Biologists SICB, UC Irvine, CA   Oct-2017

"Analytics for tendon-driven robotic limb endpoint force production"
37th Annual International IEEE Engineering in Medicine and Biology Society, Milan Italy   Aug-2015

National Society for Integrative and Comparative Biology, Austin TX   Jan-2014
"Structure of the set of feasible neural commands for complex motor tasks"

"Influence of Zooplanktivory on Retinal Ganglion Cell Topography in Labrid Reef Fishes"
Regional Society for Integrative and Comparative Biology, UC Riverside, CA   Oct-2013

Symposia

Talk: NeuroRehab Series, USC Department of Biokinesiology and Physical Therapy   Dec-2018
Invited Demo: WITH Foundation Beta Day, California Community Foundation   Nov-2018
Poster and Demo: USC Virtual Technologies for Health Symposium   Sep-2018
Talk: USC Viterbi School of Computer Science Seminar Series   Aug-2015
Talk: Masters Capstone Research Symposium, Keck Graduate Institute   May-2014
Talk: UC Davis College of Biological Sciences, FishLab   Oct-2013

Peer-Reviewed Posters

"Inter-rater variability of the Bristol Stool Scale on diapered stool"
North American Society for Pediatric Gastroenterology, Hepatology and Nutrition,   Dec-2021

"Automatic Image Segmentation to Preprocess Pediatric Stool Photos"
Drug Information Association Global Annual Meeting   Jun-2021

"Clinician Versus Caregiver Ratings of Pediatric Stool Consistency"
Drug Information Association Global Annual Meeting   Jun-2021

Society for Neuroscience (Poster A, Poster B), Chicago IL   Oct-2019
Society for Brain Mapping and Therapeutics, Los Angeles, CA   Mar-2019
Society for Neuroscience, San Diego, CA   Nov-2018
Society for Neuroscience, San Diego, CA   Nov-2016
Winter Workshop on Neuromechanics, New Orleans, LA   Jan-2016
39th Annual Conference of the American Society of Biomechanics, Columbus, OH   Aug-2015
25th Annual Conference of the Society for the Neural Control of Movement, Charleston, NC   Apr-2015
Mathematical Bioscience Institute, Ohio State University, Columbus OH   Jul-2013

Non-Academic Presentations

Talk: 5th Annual Virtual Reality and Healthcare Global Symposium, Online   Mar-2021
Talk: Unity for Humanity Summit, San Francisco CA   Oct-2020
Keynote: Foundations of Digital Games "Games for Everyone"; Co-talk with Microsoft XBOX   Aug-2019
Talk: Unity Headquarters, San Francisco CA   Apr-2019
Expo Demo: Special Interest Group on Computer Science Education, Minneapolis MN   Feb-2019
Talk: Microsoft Health, Redmond WA   Jan-2019
Talk: Microsoft General Engineering, Redmond WA   Jan-2019
Talk: Microsoft University Relations, Accessiblity, and Device Teams, Redmond WA   Jan-2019
Talk: USC Body Computing Conference, Los Angeles   Sep-2018
Pitch: The Southern California Biomedical Council, Los Angeles   Feb-2018
Pitch: Los Angeles Venture Association, Los Angeles   Feb-2018
Talk: MedTechWorld-West Annual Conference, Anaheim   Feb-2017
Talk: National Science Foundation - Innovation (I) Corps Fall Networking Event   Nov-2015

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Teaching

T.A. For Computer Science 401: Capstone   Spring-2018
Professor Jeffrey Miller, Ph.D. Role: Mentored over 30 teams working on industry-academia joint
projects, each composed of 2-8 undergraduate students

Academic Guest Lectures

Invited *IndustryTalk*   Oct-2018
Keck Graduate Institute, Corporate Partnerships
"The Use of Virtual Reality Platforms for Clinical Applications"

Invited *IndustryTalk*   Jul-2018
Keck Graduate Institute, Corporate Partnerships
"Artificial intelligence as a competitive strategy in biotech"

Invited Lecturer   Feb-2016
USC Marshall School of Business, MBA Program
"Financial analytics and scalable visualizations in R"

Invited Lecturer   May-2015
ETH-Zúrich Department of Computer Science
"Hit-and-Run Sampling of Neuromechanical Polytopes"
Guest Lecture for BME 504   Oct-2015
USC Viterbi School of Engineering; Graduate School Department of Biomedical Engineering
"Linear program design for tendon driven systems"

Guest Lecture for Neuromuscular Systems   Oct-2014
USC Division of Biokinesiology and Physical Therapy
"Neuromechanical optimization in open source software"

Guest Lecture for Sensory Evolution   Apr-2014
W.M. Keck Science Department
"Retinal Specializations in the Vertebrate Eye"

Panels

Panelist   Dec-2016
BioTech Connection Los Angeles, UCLA

Panelist   Jun-2016
MedTech-World Conference EAST, New York City, NY
"Making Sense of Big Data: Determining Actionable Data & Your Roadmap for Utilization (II)"

Panelist   Feb-2016
Annual Medical Device & Manufacturer - MedTech-World Conference WEST, Anaheim, CA
"Making Sense of Big Data: Determining Actionable Data & Your Roadmap for Utilization (I)"

Corporate Talks

Eli Lilly and Company Headquarters, Indianapolis, IN   May-2014
"Big Data Analytics in Post-Market Surveillance and Pharmacological Vigilance"

Workshops Led

Invited Speaker   Jul-2018
Keck Graduate Institute, *IndustryTalk*, Claremont CA
"Artificial intelligence as a competitive strategy in biotech"

Workshop Speaker   Aug-2016
Summer School in Computational Sensory-Motor Neuroscience, Minneapolis, MN

PharmaPack North America Conference   Jun-2014
"Driving Pharmaceutical Product Design with Consumer Intelligence"

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Professional Engagements

Scientific Advisory Board Member

ARK Venture Capital,   Aug-2020 - Current
ObvioHealth Inc   June-2020 - Current

Journal Reviewer

Nature, Scientific Reports   Jul-2018 - Current
Elsevier, Journal of Biomechanics   Sep-2017 - Current

Professional Mentoring

Mentor, Children's Hospital of Los Angeles' Center for Innovation

Society Memberships

Finance Chair, Society for Brain Mapping and Therapeutics, US-USC Chapter
Member, Society for Neuroscience
Member, Society for Integrative and Comparative Biology
Member, Southwestern Regional Meeting of Organismal Biologists
Member, HPC Technical Computing Advisory Panel