

Kaleb Vinehout, PhD

klvinehout@gmail.com
(815) 370-6518
USA

github.com/kvinehout
linkedin.com/in/kaleb-vinehout
researchgate.net/profile/Kaleb_Vinehout

Summary

Strong research professional with seven years of experience focused in Biomedical Engineering, seeking to utilize my data science and machine learning experience to find novel solutions to problems within the healthcare field.

Technical Skills

- Matlab (9+ years)
- Linux (9 years)
- Image & Signal Processing (8+ years)
- Technical Writing (6+ years)
- Docker (1+ year)
- Advanced statistical analysis (5 years)
- Machine learning (4+ years)
- Cloud Computing (9 years)
- Python (3+ years) & PyTorch (2 years)
- AWS, R, SQL, C++ (< 1 year)

Relevant experience

Cold Spring Harbor Laboratory – Postdoctoral Fellow

Remote

August 2020 – Present

Registration of two photon and confocal imaging | August 2020 – Present

- Used machine learning and image processing methods to register two photon and confocal imaging data.

Genetic Bottleneck Machine learning architecture | June 2021 – Present

- Use neuroscience to inspire the development of machine learning architecture.

Biomedical Engineering Dept, Marquette University and Medical College of Wisconsin – Research Assistant

Milwaukee, WI

August 2014 – June 2020

Predicting Task-based Connectivity Project | Dec 2018-Jan 2020

- Implemented a single-layer neural network to predict task-based neuronal connectivity from resting state and structural neuronal connectivity on a 900-subject dataset
- Collaborated and communicated ideas across disciplines, bringing together a range of experts across computer science and biological disciplines
- Designed neuroimaging pipeline using MATLAB, R, and Python to analyze multidimensional data for public use

Task-based connectivity reveals unique stroke changes | Dec 2018-Jan 2020

- Designed experiment, collected and analyzed 30 subject's data for novel study examining stroke neurological function

Botulinum toxin therapy effect on stroke survivor neurological function | Jan 2016-Jan 2019

- Provided weekly guidance to master's level student on analysis and interpretation

Assistive device reveals stroke-related functional connectivity deficits | Jan 2016-Jan 2019

- Analyzed data from previous project to draw additional conclusions with novel methodology

APN Health LLC - Research & Development Engineer

Milwaukee, WI

May 2013 – May 2015

- Researched and Designed novel signal processing techniques via Matlab to identify atrial fibrillation
- Verification and validation of FDA approved Navik 3D software

Professional experience

Marquette University - Lab Assistant

Milwaukee, WI | January 2011 – May 2013

- Used a rat model and electrophysiology recordings with reward and aversive stimuli
- Presented work in a poster session

U.S. FDA, Computed Axial Tomography Lab - Intern

Silver Spring, MD | July 2010 – August 2010

- Designed and created via 3D printing breast CT phantom
- Presented work in a poster session

Education

Doctor of Philosophy: Biomedical Engineering, June 2020

Global and Local Task-Based Connectivity in Stroke Survivors

Sept 2014-June 2020

Medical College of Wisconsin & Marquette University

Milwaukee, WI

Bachelor of Science: Biomedical Engineering, May 2013

Minor Biological Sciences

Sept 2009-May 2013

Marquette University

Milwaukee, WI

Professional Societies & Awards

- Biomedical Engineering Society (BMES)
- Alpha Eta Mu Beta (AEMB)
- National Outstanding Member AEMB
- Master of Rube Goldberg Invention award – Argonne National labs
- Neuromatch Academy Deep Learning Teaching Assistant

Publications

Vinehout, K., Sotelo, M. R., Hyngstrom, A. S., McGuire, J. R., & Schmit, B. D. (2021). Botulinum Toxin and brain activity in stroke Changes in cortical activity in stroke survivors undergoing botulinum neurotoxin therapy for treatment of focal spasticity. *Frontiers in Rehabilitation Sciences*, 99.

Vinehout, K., Schindler-Ivens, S., Binder, J. R., & Schmit, B. D. (2021). Task effects on functional connectivity measures after stroke. *Experimental brain research*, 1-16.

Kalinosky, B, Schmit, B.D., **Vinehout, K.**, Sotelo, M., Hyngstrom, A. (2019) Tasked-based Functional Brain Connectivity in Multisensory Control of Wrist Movement after Stroke. *Frontiers in Neurology, section Applied Neuroimaging*

Vinehout, K., Schmit, B. D., & Schindler-Ivens, S. (2019). Lower limb task-based functional connectivity is altered in stroke. *Brain connectivity*.

Murphy, M. P., Rammer, J. R., **Vinehout, K. L.**, Caballero, M. R., Cornwell, C. M., Fritz, J. M., & Harris, G. F. (2018, July). Inverse Kinematic Assessment of Rehabilitative Therapy in Children Using Orthotics. In 2018 40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC) (pp. 2813-2816). IEEE.

Abboud, S., Lee, K., **Vinehout, K.**, Paquerault, S., & Kyprianou, I. S. (2011, March). A comparison of methods for estimating the line spread function of a CT imaging system. In *Proceedings of SPIE* (Vol. 7961, p. 79615V).