BENJAMIN K. DICHTER, PH.D.

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142 Limestone Dr.
Vallejo, CA 94589

EDUCATION

PhD UC Berkeley and USCF Joint Program in Bioengineering — September 2017
Major: Neural Systems
Minor: Machine Learning

BS University of Pittsburgh, Bioengineering — April 2012
Concentration: Biosignals & Imaging Systems
GPA 3.92, Graduated *Summa Cum Laude*
Outstanding Biosignals & Imaging Systems Student

RESEARCH

Stanford University

Data Science Consultant under Dr. Ivan Sotlesz — Jan 2018 - present

- Lead Data Scientist for a U19 Data Science Core
- Converting electrophysiology data, optical physiology data, and simulation outputs to the Neurodata Without Boarders format using MATLAB and python

University of California- Berkeley and San Francisco — Sept 2012-Sept 2017

Graduate Researcher, Advisor: Dr. Edward Chang (UCSF)

- Applying machine learning to neural responses of auditory tasks recorded in humans using ECoG
- Studying the neural control of the glottis for pitch variation in speech
- Studying variability in neural response to linguistic auditory stimuli

Rotating graduate student, Advisor: Dr. Philip Sabes (UCSF)

- Explored theoretical computational models for neural sensory integration by developing new recurrent neural networks.

Rotating graduate student, Advisor: Dr. Jack Gallant (Berkeley)

- Used deep belief networks to model the fMRI response of the human visual system

NeuroVista Corporation, Seattle, WA — Summer 2012

Algorithm Development Intern

- Used Machine Learning to analyze large ECoG datasets in MATLAB
- Applied my skills acquired in academic research to industry

University of Pittsburgh

Undergraduate Researcher, Advisor: Dr. Aaron Batista — 2010 to 2012

- Data analysis of multi-unit intracranial neural recordings
- Non-human primate training and caretaking

- Spike sorting using TDT

Undergraduate Researcher, Advisor: Dr. Andy Schwartz 2009 to 2010
- Spike sorting using Plexon

University of Pennsylvania

Lab Assistant, Epilepsy Research Center Summers 2004 to 2009
- Helped design and test video seizure detection
- Implanted intracranial electrodes in mice and rats
- Analyzed intracranial EEG during seizures using MATLAB

TEACHING

University of California - San Francisco

Taught MATLAB for Neural and Behav. Data Analysis grad course Fall 2016
Co-taught a student-run graduate course on MATLAB Summer 2013

Calliope Mentoring 2015-2016
Mentored high school students in AP Physics, Calculus, Statistics, and Geometry

University of San Francisco Fall 2014
TA- Instructed and evaluated a physics lab.

University of California - Berkeley Summer 2013
Teaching Assistant for CRCNS workshop: computational models of neural data

University of Pittsburgh

Undergraduate Teaching Assistant Spring 2011
Course: Circuits Lab - Biodevices

Mission Acceptance Mentor 2010-2011
Mentored high school students during college selection and application

PUBLICATIONS

Dichter BK, Bouchard KE, Chang EF (2016) "Dynamic Structure of Neural Variability in the Cortical Representation of Speech Sounds." *Journal of Neuroscience*.

Makin JG*, **Dichter BK***, Sabes PN (2015) Learning to Estimate Dynamical State with Probabilistic Population Codes. *PLoS Comput Biol* 11(11): e1004554. doi:10.1371/journal.pcbi.1004554

Bouchard KE*, Conant DF*, Anumanchipalli GK, **Dichter BK**, Chaisanguanthum KS, Johnson K, Chang EF (2016) High-resolution, non-invasive imaging of upper vocal tract articulators compatible with human brain recordings. PLOS ONE

Godlove J, Gulati T, **Dichter BK**, Chang EF (2016) Muscle synergies after stroke are correlated with perilesional high-gamma oscillations. Annals of Clinical and Translational Neurology.

Makin JG, **Dichter BK**, Sabes PN (2016) Recurrent Exponential-Family Harmoniums without Backprop-through-Time. Journal of Machine Learning Research (currently in review)

Jiang W, Pailla T, **Dichter BK**, Chang EF, Gilja V (2016) Decoding speech using the timing of neural signal modulation. IEEE EMBS Conference Proceeding.

Pailla T, Jiang W, **Dichter BK**, Chang EF, Gilja V (2016) ECoG Data Analyses to Inform Closed-loop BCI Experiments for Speech-based Prosthetic Applications. IEEE EMBS Conference Proceeding. (talk)

POSTERS AND PRESENTATIONS

Dichter, B., Breshears, J., Leonard, M., Chang E. F., Human larynx cortex in speech production. Cognitive Neuroscience Conference, Neural Basis of Speech Production Symposium. San Francisco. (2017).

Dichter, B., Breshears, J., Leonard, M., Chang E. F., Human larynx cortex in speech production. Center for Neural Engineering and Prostheses Annual Retreat. San Francisco. (2016).

Dichter, Benjamin, Leonard, Matthew, Chang, Edward. Cortical control of pitch. Society for the Neurobiology of Langauge, Sensorimotor Speech Processing Symposium. (2016).

Dichter, B, Bouchard, K. E., Chang E. F., Dynamics of variability and information encoding in electrocorticography recordings during production and perception of syllables. 2014 Neuroscience Meeting Planner. Washington D.C.: Society for Neuroscience, 2014. Online.

Dichter B*, Makin J*, Sabes P, The recurrent exponential family harmonium as a model for tracking a moving stimulus. 2014 Sloan-Swartz poster, Seattle USA

Makin J*, **Dichter B***, Sabes P, Learning to track moving stimuli with population codes. 2014 Cosyne Abstracts 2014, Salt Lake City USA

Dichter B*, Makin J*, Sabes P, Learning to Track a Moving Stimulus with Population Codes. 2013 Neuroscience Meeting Planner. San Diego, CA: Society for Neuroscience, 2013. Online.

University of Pittsburgh

Bioengineering Senior Design Symposium April 2012
Title: TissueTouch Pressure Sensor for Pelvic Exam Simulator
Presenters: **Benjamin Dichter**, Grace Telford, Anna Yoney, Chris Zimmerman

Bioengineering Internship Symposium Dec 2010
Title: Functional Roles of Neurons in the Dorsal Premotor Cortex
Presenter: **Benjamin Dichter**

HONORS AND AWARDS

Graduate Research Fellowship Program - National Science Foundation	2014-2017
Guggenheim Scholarship – Guggenheim Foundation	2008-2012
Brackenridge Fellowship - University of Pittsburgh Honors College	2011
Dean's List – University of Pittsburgh	2008-2011
Swanson School of Engineering Scholarship – University of Pittsburgh	2008-2012
Full Tuition Scholarship - University of Pittsburgh	2008-2012