Geoffrey Newman

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EDUCATION

Ph.D. Biomedical Engineering, Johns Hopkins University, Expected September 2015.
- *Dissertation:* "Network Models of Neural Recordings".
- *Committee:* N. Thakor, N. Crone, E. Niebur.

B.Eng. Biomedical Engineering, *Magna Cum Laude*, City College of the City University of New York, 2008.
- *Minor:* Applied Mathematics.

RESEARCH EXPERIENCE

Research Assistant–JHU. Brain Computer Interface, PI: Nitish Thakor, 2008–Present.
- Employed graph theory and signal processing techniques to solve neuroscience problems.
- Utilized machine learning techniques to decode movement intent from neural recordings.

Research Assistant–CCNY. Eye Movement and Vision, PI: Jay Edelman, 2006–2008.
- Investigated movement planning of saccades via eye tracking data and non-invasive neural recordings.
- Created a graphical user interface to simplify data preprocessing.

PUBLICATIONS

Geoffrey Newman, Matt Fifer, Heather Benz, Nathan Crone, and Nitish Thakor. Eigenvector centrality reveals the time course of task-specic electrode connectivity in human ECoG. In *Neural Engineering (NER), 2015 7th International IEEE/EMBS Conference*. IEEE, In Publication.

Nitish Thakor, Matthew Fifer, Guy Hotson, Heather Benz, **Geoffrey Newman**, Griffin Milsap, and Nathan Crone. Neuroprosthetic limb control with electrocorticography: Approaches and challenges. In *Engineering in Medicine and Biology Society (EMBC), 2014 36th Annual International Conference of the IEEE*, pages 5212–5215. IEEE, 2014.

Geoffrey Newman*, Vikram Aggarwal*, Marc Schieber, and Nitish Thakor. Identifying neuron communities during a reach and grasp task using an unsupervised clustering analysis. In *Engineering in Medicine and Biology Society, EMBC, 2011 33rd Annual International Conference of the IEEE*, pages 6401–6404. IEEE, 2011.

Sarah Ying, **Geoffrey Newman**, Young-Seok Choi, Hyoung-Nam Kim, Alessandro Presacco, Mayuresh Kothare, and Nitish Thakor. Cerebellar ataxia patients are able to use motor imagery to modulate mu-band power in a pilot study of EEG-based brain-computer interface control. In *Neural Engineering (NER), 2011 5th International IEEE/EMBS Conference*, pages 192–195. IEEE, 2011.

Rong Liu, **Geoffrey Newman**, Sarah Ying, and Nitish Thakor. Improved BCI performance with sequential hypothesis testing. In *Engineering in Medicine and Biology Society, EMBC, 2011 33rd Annual International Conference of the IEEE*, pages 4215–4218. IEEE, 2011.

Simon Kelly, John Foxe, **Geoffrey Newman**, and Jay Edelman. Prepare for conflict: EEG correlates of the anticipation of target competition during overt and covert shifts of visual attention. *European Journal of Neuroscience*, 31(9):1690–1700, 2010.

Geoffrey Newman, Sarah Ying, Young-Seok Choi, Hyong-Nam Kim, Alessandro Presacco, Mayuresh Kothare, and Nitish Thakor. Brain computer interface in cerebellar ataxia. In *26th Southern Biomedical Engineering Conference SBEC 2010*, April 30-May 2, 2010, College Park, Maryland, USA, pages 289–292. Springer, 2010.

PUBLICATIONS IN PREPARATION

Geoffrey Newman, Matt Fifer, Nathan Crone, and Nitish Thakor. Graph theoretic analysis of human ECoG connectivity. *Neuroimage*, In Preparation.

Geoffrey Newman*, Ryan Smith*, Nathan Crone, and Nitish Thakor. Detecting communities of motor and premotor neurons during a reach and grasp task. *Frontiers in Computational Neuroscience*, In Preparation.

Geoffrey Newman, Nathan Crone, and Nitish Thakor. K-means cluster analysis of human ECoG high gamma power reveals distinct phases of neural processing. *Neural Systems and Rehabilitation Engineering, IEEE Transactions on*, In Preparation.

AWARDS & FELLOWSHIPS

NIH Neuroengineering Training Initiative Training Fellowship, 2008–2010. National Institute of Biomedical Imaging and Bioengineering (NIBIB), National Institute of Health (NIH) Grant T32EB003383.

Howard Hughes Undergraduate Research Award, City College of New York, 2008.

Whitaker Foundation Undergraduate Research Scholarship, City College of New York, 2004–2008.

Advanced Placement Scholar with Distinction, Bronx High School of Science, 2004.

PROFESSIONAL ACTIVITIES	**Assistant Managing Editor**, Medical and Biological Engineering and Computing, 2013–Present. **Reviewer**, Medical and Biological Engineering and Computing, 2014–Present. **Member**, Institute of Electrical and Electronics Engineers (IEEE). **Member**, Society for Neuroscience (SfN). **Member**, Tau Beta Pi Engineering Honors Society (TBP).

TEACHING ASSISTANTSHIP	System Bioengineering II (Neuroscience): • Led weekly recitation for 50 students. Biomedical Instrumentation: • Assisted 10 groups of 4 students in circuit design and debugging, in addition to Computer Aided Design.

MISCELLANEOUS	*Programming Languages:* • Matlab, C++, Java, LaTeX, Python, Qt, HTML, SQL. *Computer Systems and Software:* • Linux, Cloud Computing (Digital Ocean: Droplets, Amazon: EC2, S3, Map Reduce), Photoshop/GIMP, Cadence VLSI design tool, PTC Creo, SolidWorks, AutoCAD. *Languages:* • Native in English, reading and basic speaking competence in Japanese.