

ASIF RAHMAN

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OBJECTIVE

Enhance biomedical research through my experience in product development/validation, biomedical engineering, computer science, tissue engineering, neurophysiology, and computation.

EDUCATION

The City College of The City University of New York. New York, NY

M.S. Biomedical Engineering (expected, 2011)

- *Thesis topic:* Mechanisms of cortical neuronal excitability & synaptic plasticity by direct current stimulation for non-invasive neuro-therapy.
- *Advisor:* Marom Bikson (Ph.D.)
- *Area of study:* Neural Engineering – Quantitative Neurophysiology

The City College of The City University of New York. New York, NY

B.E. Biomedical Engineering, May 2009

- Computer science and electrical engineering specialization.

EXPERIENCE

Harvard Medical School. Boston, MA.

11/2010 – Present

Visiting Scholar. Children's Hospital Epilepsy Program. Advisor: Alexander Rotenberg (M.D., Ph.D.)

- Device design & CAD modelling for a portable brain stimulation prototype to abort pediatric status epilepticus.
- Brain slice studies of transcranial direct current stimulation to modulate hippocampal plasticity.

Neural Engineering Laboratory. The City College of New York, NY.

5/2009 – Present

Research Assistant. Advisors: Marom Bikson (Ph.D.) & Lucas Parra (Ph.D.)

- Designed and validated a current-controlled low-voltage electrical stimulation prototype.
- Electrophysiology, two-photon calcium imaging, and histological studies of *in vitro* brain slices to elucidate mechanisms of excitability by electrical stimulation in rat primary motor cortex.
- Developed a computational network model to study field-effects on network dynamics by modulation of spike timing in *in vitro* hippocampal brain slices.
- Modulated induced-gamma oscillations in human visual cortex with custom-built electrical stimulation interface, presently in Phase 1 clinical trials.

Soterix Medical Inc. New York, NY.

9/2009 – Present

New Product Manager. Biotechnology Startup

- Responsibilities include consulting with researchers & clinicians on applications of novel non-invasive brain stimulation devices & developing new product directions.

Memorial Sloan-Kettering Cancer Center. New York, NY.

9/2008 – 12/2009

Team Leader, Senior Design. Advisors: Prasad Adusumilli (M.D.), Nabil Rizk (M.D.), Marom Bikson (Ph.D.)

- Developed an endoscopy surgery simulator for surgical training. In clinical trials at MSKCC hospital.

Sophie Davis School of Biomedical Education. New York, NY.

2/2008 – 5/2009

Research Assistant, Neuropsychopharmacology Lab. Advisor: Fortunato Battaglia (M.D., Ph.D.)

- Statistical EEG analysis using EEGLab to study interhemispheric coherence of mirror neuron activity during action observation.
- Cognitive experiments of *in vivo* TMS and electrical brain stimulation on mouse models of Alzheimers & depression.

Mount Sinai School of Medicine. New York, NY.

3/2002 – 7/2004

Research Internship, Neuroscience PET Laboratory

- Segmented PET scans using Multi Image Processing Software.
- Volunteered as a medical assistant and inpatient care provider at the Geriatric Psychiatry Clinic.

SKILLS

- *Programming*: C, Objective-C, PHP, Ruby, Python, & Javascript
- *Computational & Design*: MATLAB, Neuron, LabVIEW, Autocad, SolidWorks, Signal, & EEGLab
- *Microscopy*: Multiphoton microscopy, Fluorescence correlation spectroscopy (FCS), & Confocal microscopy
- *Experimental*: Psychophysics experiments, Rodent behavioral & cognitive tests
- *Biological*: Electrophysiology, Cell cultures, Southern blot, Protein immunoblot, Immunostaining, & ELISA

AWARDS & ACCOLADES

BioAccelerate New York City Prize Finalist (2009, 2010) • Outstanding CCNY Masters Candidate Research Award (2010, 2011) • Howard Hughes Medical Institute Undergraduate Research Scholar (2008, 2009) • Memorial Sloan-Kettering Cancer Center/CCNY Partnership Scholar (2008, 2009) • Elected Vice President of the Biomedical Engineering Society at CCNY (2008, 2009) • Deans List (Fall 2007 – 2009) • Peter F. Vallone Scholarship (2006)

PUBLICATIONS

- Asif Rahman, Davide Reato, Lucas Parra, Marom Bikson. *Weak uniform direct current stimulation modulates excitability and induces long-term potentiation in rat motor cortex in vitro*. Neuron. Submitted.
- Davide Reato, Asif Rahman, Marom Bikson, Lucas Parra. *Low-intensity electrical stimulation affects network dynamics by modulating population rate and spike timing*. Journal of Neuroscience. 2010.
- Marom Bikson, Abhishek Datta, Asif Rahman, Jen Scaturro. *Electrode montages for tDCS and weak transcranial electrical stimulation: Role of "return" electrode's position and size*. Journal of Clinical Neurophysiology. 2010.
- Asif Rahman, Marom Bikson. *The "quasi-uniform" assumptions in animal and computational models of non-invasive electrical stimulation*. Comment in Neural Engineering. Submitted.
- Antoni Valero-Cabre, Asif Rahman, Davide Reato, Marom Bikson. *Effects of electric and magnetic fields: study in animal models and in slice*. A Reference Book for Transcranial Stimulation. Invited Review.

PROCEEDINGS

- Asif Rahman, Davide Reato, Thomas Radman, Lucas Parra, Marom Bikson. *How DC Electric Currents Affect Neuronal Excitability Is Synaptic Pathway Dependent*. Society for Neuroscience 2011. Washington DC, USA, November 2011.
- Asif Rahman, Christoph Hahn, Luiz C. Oliveira, Marom Bikson. *A Current-Limited Low-Voltage Design For Transcranial Direct Current Stimulation*. Biomedical Engineering Society 2011. Hartford, USA, October 2011.
- Asif Rahman, Davide Reato, Lucas Parra, Marom Bikson. *Synaptic Pathway-Dependent Effects of DC Electric-Fields In Rat Cortical Brain Slices*. Biomedical Engineering Society 2011. Hartford, USA, October 2011.
- Asif Rahman, Davide Reato, Thomas Radman, Marc Gleichmann, Marom Bikson. *Effects of weak direct current stimulation on synaptic plasticity in rat motor cortex in vitro; electrophysiological and molecular analysis of mechanisms*. Society for Neuroscience 2010. San Diego, USA, October 2010.
- Asif Rahman, Thomas Radman, Abhishek Datta, Davide Reato, Marom Bikson. *Effects of short and long-duration DC electric fields on synaptic efficacy in rat motor cortex slices*. II International Symposium in Neuromodulation. Sao Paulo, Brazil, March 2010.
- Thomas Radman, Asif Rahman, Abhishek Datta, Davide Reato, Marom Bikson. *Low-amplitude DC electric fields induce long-term potentiation in rat motor cortex in vitro*. Society for Neuroscience 2009. Chicago, USA, October 2009.

Ad hoc reviewer: Design of Medical Devices Conference

PATENTS

- United States Patent Application: *Medical Surgical Simulator*. MSKCC/RF-CUNY
- United States Patent Application: *Non-invasive Neurocranial Stimulator*. Soterix Medical Inc.
- United States Patent Application: *Current-Limited Low-Voltage Brain Stimulator*. Soterix Medical Inc.

EXTRACURRICULAR

Scholared.org. New York, NY.

3/2010 – Present

Software Engineering Startup, *Founder & Lead Developer*

- Launched Scholared.org (a low-noise reference manager) to organize and analyze bibliographic research documents based on a neural network learning algorithm to extract relationships across peer-reviewed literature.