Emily R. Lindemer
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EDUCATION

Harvard Medical School - Massachusetts Institute of Technology
PhD, Medical Engineering and Medical Physics
Division of Health Sciences and Technology
Cambridge, MA
2013 -2017
Technical Concentration: Computer Science
Research Focus: Computational neuroimaging of aging and neurodegenerative diseases

McGill University
BSc, Computational Neuroscience
Montreal, QC
2007 - 2011
Minor: Computer Science

WORK EXPERIENCE

Staff Scientist June 2017 - Present
CorticoMetrics, Cambridge, MA

- Lead scientific direction of projects centered around development of novel neuroimaging tools for the analysis of clinical MRI data.
- Collaborate with principal investigators at outside research organizations on the fulfillment of research grants.
- Contribute to product software development.
- Collaborate with diverse team to obtain FDA 510(k) clearance for neuroimaging analysis software for human brain MRI.

Co-Founder and President May 2016 - Present
Hey,Charlie, Cambridge, MA

- Founded a behavioral modification platform geared towards helping individuals in recovery for opioid dependency.
- Conduct end-user research for product development based in behavioral science.
- Collaborate with a diverse group of outside institutions on pilot projects.

RESEARCH EXPERIENCE

Graduate Student Researcher January 2014 - May 2017
Laboratory for Computational Neuroimaging, Athinoula A. Martinos Center for Biomedical Engineering, Massachusetts General Hospital, Charlestown, MA
Principal Investigator: Dr. Bruce Fischl

- Developed novel techniques that implement machine learning and computer vision for the segmentation of white matter lesions in MRI scans of the human brain.
- Applied image segmentation techniques to Alzheimer's disease patient population data.
- Related white matter integrity to the clinical progression of Alzheimer's disease.
- Worked on novel algorithm development for FreeSurfer open source neuroimaging software package.

Visiting Scientist January 2016 - August 2016
Collaboration with Centro Alzheimer Fundacion Reina Sofia, Madrid, SPAIN
Principal Investigator: Dr. Bryan Strange

- Performed analysis of multimodal structural neuroimaging data from patients with AD
- Associated imaging findings with post-mortem histological data collected at autopsy.
- Worked with neuropathologists and imaging engineers to develop processing pipelines for optimal data collection.

Research Assistant May 2011 - July 2013
Neuroimaging Center of Boston VA Healthcare System, Jamaica Plain, MA
Principal Investigator: Dr. David Salat

- Developed novel exploratory methods for quantifying PTSD and TBI in relation to brain structure
- Worked with FreeSurfer and FSL software packages
- Developed algorithms for MRI data analysis used by multi-laboratory imaging center
- Collected multimodal MRI data for large-scale longitudinal study of brain changes using Siemens 3T scanner
- Coordinated IRB for neuroimaging component of large-scale study

Research Assistant May 2010 - October 2010
Motor Control Lab, McGill University Department of Psychology, Montreal, QC
Principal Investigator: Dr. David Ostry

- Wrote original MatLab functions for analysis of human motor control data
- Used MatLab to analyze vocal formant shifts in altered auditory perception study
- Scheduled and tested human subjects in motor learning studies with EEG

Research Assistant May 2009 - April 2010
Vision Lab, McGill University Department of Physiology, Montreal, QC
Principal Investigator: Dr. Erik Cook

- Wrote original MatLab functions to generate experimental stimuli in human psychophysics experiments
- Collected and analyzed data from human subjects using MatLab Psych Toolbox
- Collaborated with other undergraduates to create original experiments to study human visual perception

TEACHING EXPERIENCE

Instructor September 2015 - May 2016
Girls Who Code, Brookline MA

- Taught group of 20 middle and high school-aged girls how to code for two hours once per week
- Prepared coding activities, graded assignments, performed individual and group-based teaching
- Languages taught included Python and Javascript

Instructor October 2014 - Present
FreeSurfer Course

- Give lectures and assist with tutorials on how to use FreeSurfer software
- Teach lessons on general linear modeling and foundational statistics
- Teach at local courses in Charlestown MA as well as international locations

Teaching Assistant August 2010 - April 2011
McGill University Department of Computer Science
"Introduction to Programming"

- Taught Java programming language to undergraduates in a course averaging 200 students per semester
- Created and conducted tutorials spanning in topic from method structure to threading
- Held weekly office hours, graded assignments and exams, helped organize course homepage and contributed to online tutorial material

Instructor March 2010 - March 2011
Brain Awareness Montreal

- Taught lessons on the brain and sensory perception as well as brain and substance abuse to primary and secondary school students
- Prepared hour-long interactive lessons and demonstrations
- Attended monthly meetings in preparation for annual Brain Awareness Week

LEADERSHIP EXPERIENCE

Executive Co-Chair February 2016 - May 2017
Graduate Women at MIT, Cambridge, MA

- Worked with executive board to run the association for Graduate Women at MIT
- Held weekly meetings, worked with other on-campus and off-campus groups to organize frequent events
- Organized and held annual Spring Empowerment Conference and Fall Leadership Conference
- Worked with deans of several schools within MIT to secure funding and provide advocacy for women in STEM fields

ACADEMIC AWARDS AND FELLOWSHIPS

Training grant from the NIH Blueprint for Neuroimaging Research
Grant # T90DA022759/R90DA023427
September 2015 - August 2016

MIT IDEA$\hat{2}$ Awardee
Program for kickstarting scientific ideas and integrating
them into the commercial and industrial communities
May 2014

Graduate Support from the NIH Neuroimaging Training Program
Grant # T32 EB001680 from the National Institute
of Biomedical Imaging and Bioengineering (NIBIB)
September 2013 - September 2015

Graduate Support from the Martinos Scholar Fund
Massachusetts General Hospital
Athinoula A. Martinos Center for Biomedical Imaging

September 2013 - September 2014

Graduate Support from HST Fellowship
September 2013

Montreal Visions Research Network
Summer Student Scholarship
May 2009 - August 2009

OTHER AWARDS

Boston's 40 Under 40 for Healthcare Innovation
Awarded by Boston MedTech
May 2017

MIT IDEAS Global Innovation Challenge Grand Prize
May 2017

MIT Graduate Woman of Excellence
April 2017

PUBLICATIONS

Lindemer, ER, Greve, DN, Fischl, B, Salat, DH, Gomez-Isla, T, "White Matter Abnormalities and Cognitive Decline in Individuals with Conflicting Diagnoses and CSF Profiles," *Under Review at Neurology,* September 2017.

Lindemer, ER, Greve, DN, Fischl, BR, Augustinack, JC, Salat, DH, "Regional Staging of White Matter Signal Abnormalities in Aging and Alzheimer's Disease." *NeuroImage: Clinical* 14 (2017): 156-165.

Lindemer, ER, Greve, DN, Fischl, BR, Augustinack, JC, Salat, DH, "Differential Regional Distribution of Juxtacortical White Matter Signal Abnormalities in Aging and Alzheimer's Disease." *Journal of Alzheimer's Disease* 57.1 (2017): 293-303.

Coutinho, AM, Coutu, J, **Lindemer, ER,** Rosas, DH, Rosen, BR, Salat, DH, "Differential Associations Between Systemic Markers of Disease and Cortical Thickness in Healthy Middle-Aged and Older Adults." *NeuroImage* 146.1 (2017): 19-27.

Coutu, J, **Lindemer, ER,** Konukoglu, E, Salat, DH, "Two distinct classes of degenerative change are independently linked to clinical progression in mild cognitive impairment." *Neurobiology of Aging* 54 (2017): 1-9.

Lindemer, ER, Salat, DH, Smith, EE, Nguyen, K, Fischl, B, Greve, DN, "White matter signal abnormality quality differentiates mild cognitive impairment that converts to Alzheimer's disease from nonconverters." *Neurobiology of Aging* 36.9 (2015): 2447-57

Robinson, ME, **Lindemer, ER,** Fonda, JR, Milberg, WP, McGlinchey, RE, Salat, DH, "Close-Range Blast Exposure is Associated with Altered Functional Connectivity in Veterans even without mild TBI Symptoms at Exposure." *Human Brain Mapping* 36.3 (2015): 911:22.

Fortier, CB, Leritz, EC, Salat, DH, **Lindemer, ER,** Shepel, J, Williams, V, Venne, JR, Maksimovskiy, AL, Milberg, WP, McGlinchey, RE, "Widespread effects of alcohol

on white matter microstructure." *Alcoholism: Clinical and Experimental Research* 38.12 (2014): 2925-33.

Lindemer, ER, Salat, DH, Leritz, EC, Milberg, WP, McGlinchey, RE, "Reduced Cortical Thickness with Cumulative Lifetime Burden of Posttraumatic Stress Disorder and Implications of Comorbid Mild Traumatic Brain Injury in the OEF/OIF Veteran Cohort." *NeuroImage: Clinical* 2.1 (2013): 601-611.

SELECTED PRESENTATIONS

Poster Presentation, "Anatomically-specific associations between connectivity nodes of the default mode network and a novel metric for structural white matter integrity in cognitively healthy older individuals," *Fifth Biennial Conference on Resting State Brain Connectivity,* Vienna, Austria, September 2016.

Poster Presentation, "Regional Staging of Age-Associated White Matter Disease", *Annual Meeting of the Organization for Human Brain Mapping,* Geneva, Switzerland, July 2016.

Poster Presentation, "Regional White Matter Quality Changes in Alzheimer's Disease," *Alzheimer's Association International Conference,* Toronto, ON, July 2016.

Poster Presentation, "White Matter Integrity Changes Preceding Alzheimer's Disease in Mild Cognitive Impairment, *Annual Meeting of the Organization for Human Brain Mapping,* Honolulu, HI, June 2015.

Poster Presentation, "Interaction Between Age, PTSD, and Blast-TBI on Regional Brain Volumes: A TRACTS Preliminary Study," *Society for Neuroscience Annual Meeting,* New Orleans, LA, October 2012.

COMPUTER SKILLS

Languages & Software: C, Java, Javascript, Python, HTML/CSS, Bash, MatLab, R, git
Operating Systems: Linux, Windows, OS X.