JEFF CRALEY

https://jcraley.github.io/

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EDUCATION

Johns Hopkins University, Baltimore   August 2015–Present
PhD Candidate in Electrical and Computer Engineering
Research Advisor: Archana Venkataraman
Expected Graduation: May 2021

Boston University, Boston   January 2014–August 2015
M.S. Electrical Engineering
Thesis Title: Image Regulatrization in the Helium Ion Microscope Under Neyman Type A Statistics
Research Advisor: Vivek Goyal
Overall GPA: 3.83/4.0

Virginia Tech, Blacksburg   August 2005–May 2011
B.S. Aerospace Engineering
B.A. English Literature
Overall GPA: 3.33

RESEARCH AND PROFESSIONAL EXPERIENCE

JHU Neural Systems Analysis Lab, Baltimore   2017–Present
Research Advisor: Archana Venkataraman

· *Integrating Convolutional Neural Networks and Probabilistic Graphical Modeling for Epileptic Seizure Detection in Multichannel EEG.*
· *A Spatio-Temporal Model of Seizure Propagation in Focal Epilepsy.*
· *Defining Patient Specific Functional Parcellations in Lesional Cohorts via Markov Random Fields.*
· *A Novel Method for Epileptic Seizure Detection Using Coupled Hidden Markov Models.*
· *Robust Seizure Detection Using Coupled Hidden Markov Models.*

JHU Andreou Lab, Baltimore   2015–2017
Research Advisor: Andreas Andreou

· *Action recognition using micro-Doppler signatures and a recurrent neural network.*

JSALT Workshop, Baltimore   Summer 2016
· Research Team: Detecting Risk and Protective Factors of Mental Health using Social Media Linked with Electronic Health Records

BU Signal Transformation and Information Representation Group, Boston   2014–2015
Research Advisor: Vivek Goyal

· Master's Thesis: *Low ion dose imaging in the Helium Ion Microscope under Neyman Type A statistics.*

GKY and Associates, Northern Virginia   2006–2008
One year Civil Engineering internship and subsequent summers in stormwater management

· Inspecting stormwater facilities and generating maintenance reports
· Digitizing archival plans

TEACHING EXPERIENCE

Head Course Assistant, Information Theory (JHU)   Fall 2019
· Held office hours; helped write and grade exams and quizzes; graded HW

Teaching Assistant, Random Signals (JHU)   Fall 2017
· Taught recitation sections; held office hours; helped write exams; graded HW; prepared course materials

Private Tutor   2011–2015
· Tutored high school and college age students in math and physics

PUBLICATIONS

J. Craley, E. Johnson, C. Jouny, A. Venkataraman. *Automated Inter-Patient Seizure Detection Using Multichannel Convolutional and Recurrent Neural Networks.* Biomedical Signal Processing and Control, Under Review.

J. Craley, E. Johnson, A. Venkataraman. *A Spatio-Temporal Model of Seizure Propagation in Focal Epilepsy.* IEEE Transactions on Medical Imaging, 39(5), 1404-1418, 2019.

J. Craley, C. Jouny, E. Johnson and A. Venkataraman. *Automated Noninvasive Seizure Detection and Localization Using Switching Markov Models and Convolutional Neural Networks.* In Proc. MICCAI: International Conference on Medical Image Computing and Computer Assisted Intervention, LNCS 11767:253-262, 2019.

J. Craley, E. Johnson, A. Venkataraman. *Integrating Convolutional Neural Networks and Probabilistic Graphical Modeling for Epileptic Seizure Detection in Multichannel EEG.* In Proc. IPMI: Information Processing in Medical Imaging, LNCS 11492:291–303, 2019.

N. Nandakumar, N.S. D'Souza, **J. Craley,** K. Manzoor, J. Pillai, S. Gujar, H. Sair, A. Venkataraman. *Defining Patient Specific Functional Parcellations in Lesional Cohorts via Markov Random Fields.* In Proc. CNI: Connectomics in Neuroimaging, LNCS 11083:88-98, 2018.

J. Craley, E. Johnson, A. Venkataraman. *A Novel Method for Epileptic Seizure Detection Using Coupled Hidden Markov Models.* In Proc. MICCAI: International Conference on Medical Image Computing and Computer Assisted Intervention, LNCS 11072:482-489, 2018.

J. Craley E. Johnson, A. Venkataraman. *Robust Seizure Detection Using Coupled Hidden Markov Models.* In Proc. ISBI: International Symposium on Biomedical Imaging, 2018.

J. Craley, T. Murray, D. Mendat, A. Andreou. *Action recognition using micro-Doppler signatures and a recurrent neural network.* In 2017 51st Annual Conference on Information Sciences and Systems (CISS) (pp. 1-5). IEEE, (2017).

J. Craley *Low ion dose imaging in the Helium Ion Microscope under Neyman Type A statistics.* Master's dissertation, Boston University, 2015.

M. Motylinski, S. Krishnan, M. Perez, A. Jones, **J. Craley**. *Determination of Nitric Oxide Concentration in Upper Atmosphere Using RockSat.* In 49th AIAA Aerospace Sciences Meeting including the New Horizons Forum and Aerospace Exposition (p. 839), (2011).

TECHNICAL PRESENTATIONS

Oral Presentations
· Information Processing in Medical Imaging (June 2019). *Integrating Convolutional Neural Networks and Probabilistic Graphical Modeling for Epileptic Seizure Detection in Multichannel EEG.*

- 2017 51st Annual Conference on Information Sciences and Systems (2017). *Action recognition using micro-Doppler signatures and a recurrent neural network.*

Poster Presentations

- International Conference on Medical Image Computing and Computer Assisted Intervention (2019). *Automated Noninvasive Seizure Detection and Localization Using Switching Markov Models and Convolutional Neural Networks.*
- Johns Hopkins Department of Medicine & Whiting School of Engineering Research Retreat, (2019). *Selected as Whiting School of Engineering Research Trainee Award Finalist.*
- International Conference on Medical Image Computing and Computer Assisted Intervention, 2018. *A Novel Method for Epileptic Seizure Detection Using Coupled Hidden Markov Models.*
- International Symposium on Biomedical Imaging, 2018. *Robust Seizure Detection Using Coupled Hidden Markov Models.*

PROFESSIONAL ACTIVITIES

Reviewer for the International Conference on Medical Image Computing and Computer Assisted Intervention (2019, 2020), Medical Imaging with Deep Learning (2020)

IEEE Student Member (2018 – Present)

NON-PROFESSIONAL ACTIVITIES AND LEADERSHIP ROLES

Copy Editor, *Engineers Forum* (Virginia Tech) 2010–2011
- Edited articles related to current news in Virginia Tech engineering

FM Program Director, WUVT (Virginia Tech) 2010–2011
- Oversaw DJ training and day to day operations
- Created weekly programming schedules

Music Director, WUVT (Virginia Tech) 2009–2010
- Screened new music for radio play
- Maintained relationships with promotion and distribution companies

Editor in Chief, *The Woove* (Virginia Tech) 2008–2009
- Oversaw reestablishment of *The Woove* as an online music and culture magazine
- Oversaw a staff of writers
- Copy edited articles

College Radio DJ, WUVT (Virginia Tech) 2008–2011
- Hosted a weekly radio show

OTHER EMPLOYMENT AND NON-DEGREE EDUCATION

Dynamics of Web Applications, Harvard Extension School Fall 2013
- Professional development course in web design and PHP

Temporary Help Desk, Valore Books Fall 2013
- Email help desk work for online booksales

Introduction to Electronics, Boston University   Summer 2013

· Summer course in electrical engineering to prepare for graduate school applications

Temporary Office Work, The RIDE, MBTA   Spring 2013

· General administrative work and telephone customer service

Canvasser, WGBH   Spring 2013

· Fundraising for WGBH public radio and televsion

Coursera   Fall 2012–Spring 2013

· Inquiry into electrical engineering as a potential future career path
· Attended courses such as Fundamentals of Electrical Engineering, Signals and Systems, Introduction to DSP, etc.

Sales Clerk, Music and Arts, Inc.   Fall 2011

· Retail work in instrument sales and rentals

HONORS AND AWARDS

Whiting School of Engineering Research Trainee Award Finalist, Spring 2019

American Institute of Aeronautics Conference, First Place Team Division, April 2010

Dean's List, Fall 2010, Spring 2011

3rd Best Band in Blacksburg, "Electro-Stephen" 2010

SKILLS

Operating Systems: Linux, Mac, Windows

Software: Python, MATLAB, LaTeX

HOBBIES AND INTERESTS

Guitar · Piano · Synthesizers · Running · Chess · Succulents