Austin J. Brockmeier

Evans Hall 139 The Green		ajbrock@udel.edu		
University of D Newark, DE 19	_	udel.edu/~ajbrock		
EDUCATION				
Ph.D., Electrical and Computer Engineering, University of Florida, Gainesville, FL $^{5/2014}$ "Learning and exploiting recurrent patterns in neural data", Advisor: Jose C. Principe				
	., Computer Engineering, University of Nebraska–Lincoln, Omaha, NE Highest Distinction, 2^{nd} Major: Mathematics, Minor: Computer Science	5/2009		
Experience				
Ele	sistant Professor University of Delaware, Newark, Delaware ctrical and Computer Engineering; Computer and Information Sciences ta Science Institute (Resident Faculty)	12/2018-Present		
	search Fellow University of Manchester, United Kingdom	3/2017-10/2018		
	cool of Computer Science	3/2017-10/2018		
	search Associate University of Liverpool, United Kingdom tool of Electrical Engineering, Electronics and Computer Science	6/2014-2/2017		
	aduate Research Assistant University of Florida partment of Electrical and Computer Engineering	5/2010-5/2014		
Research Assistant University of Nebraska–Lincoln (Omaha Campus) Summer 2008/2009 Department of Computer and Electronics Engineering				
Electronics Engineer Cenatmed, LLC, Omaha, NE 4/2008-7/2009				
IT Operations Intern Union Pacific Railroad, Omaha, NE 8/2006-8/2008				
Honors and Awards	International and National Top 5 List, Neural Engineering Community Award, IEEE EMBS N. Top 200 Reviewer, Neural Information Processing Systems (NeurIP Finalist, IEEE EMBS Conference Student Paper Competition NSF East Asia and Pacific Summer Institutes Fellowship "Signal processing techniques to separate and analyze brainwaves" In Andrzej Cichocki, RIKEN Brain Science Institute, Japan Honorable Mention, NSF Graduate Research Fellowship University of Florida Honorable Mention, Outstanding Service, Graduate Student Councils Graduate School Fellowship University of Nebraska Dean's Award, College of Engineering Outstanding Senior, Computer and Electronics Engineering Undergraduate Major Honoree, Computer and Electronics Engineer 1st Place Senior Thesis Design Team, Computer and Electronics Engineer James Earl Mathematics Scholarship, Math. Dept., U. Nebraska On Tau Beta Pi Distinguished Freshman Award Walter Scott Jr. Scholarship, Peter Kiewit Institute	S) 2018 2013 2012 hosted by 2009, 2010, 2011 il 2014 2009–2013 2009 2009 2009 ring 2009 ring 2009 ring 2009 agineering 2009 maha 2008–2009 2006 2005–2009		
RESEARCH SUPPORT	 University of Nebraska Regents Scholarship National Science Foundation "Detecting and studying light echoes in the era of Rubin and artific Role: Co-PI (PI: Federica Bianco, University of Delaware) 	2005–2009 8/2021–7/2024 cial intelligence",		

University of Delaware Research Foundation—Strategic Initiatives 2020–10/2021
 "Advancing machine learning for neuroimaging through topology-aware signal processing" Role: PI, Senior Mentor: Gonzalo Arce, University of Delaware

Unidel Foundation, University of Delaware's Data Science Institute 2019–2020
 "Learning to predict systematic errors in machine learning models and alert an expert for improved synergistic performance"

TEACHING University of Delaware, Newark, Delaware, USA

Instructor, Signals and Systems (ELEG 305)
 Spring 2020, Spring 2021
 Instructor, Large Scale Machine Learning (ELEG/FSAN 817)
 Fall 2019, Fall 2020, Fall 2021
 University of Liverpool, Liverpool, UK

Instructor (5 weeks), Eng. Skills (ELEC 171/172) Matlab module Spring 2016, Fall 2016 Guest lecturer (8 weeks), Neural Networks (ELEC 320) Spring 2015

University of Florida, Gainesville, Florida, USA

Teaching Assistant, Digital Design and Interfacing (CEEN 3110)

Guest lecturer, Brain Machine Interfaces (EEL 6935)

Fall 2011, Fall 2013

Teaching Assistant, Microprocessor Applications (EEL 4744)

Fall 2009, Spring 2010

University of Nebraska-Lincoln (Omaha Campus), Omaha, Nebraska, USA Teaching Assistant, Microprocessor System Design (CEEN 4330) Spring 2009

PRIMARY Hassan Baker, Electrical and Computer Engineering Spring 2020-present
PH.D.
ADVISOR

Bilal Riaz, Electrical and Computer Engineering Fall 2019-present
Yüksel Karahan, Electrical and Computer Engineering Spring 2019-present

Carlos Mendoza-Cardenas, Electrical and Computer Engineering Winter 2019–present

M.S. Thesis Advisor

Hau Phan, Electrical and Computer Engineering Winter 2021—present
C. Cesar Claros, Electrical and Computer Engineering M.S., Summer 2020

VISITING SCHOLARS

Andres Nicolas Lopez, MSc., National University of Colombia Summer 2021 Edwin Salcedo, M.Sc., M.B.A., Bolivian Catholic University, La Paz Summer 2019

COMMITTEE MEMBER: THESIS OR PH.D.

Sergio Sepúlveda, Electrical and Computer Engineering Ph.D. proposal 8/2021 Xinjie "Ethan" Lan, Electrical and Computer Engineering Ph.D. proposal 8/2021 Rebecca Clements, Biomedical Engineering Senior Thesis 2nd reader, 5/2021 Zahra Vahdat, Electrical and Computer Engineering Ph.D. proposal 12/2020 Zhenzhu Zheng, Computer and Information Sciences Ph.D. proposal 11/2020 Kevin Corder, Computer and Information Sciences Ph.D. proposal 3/2020 Kuang Lu, Electrical and Computer Engineering Ph.D., 11/2020 Micahel J. De Lucia, Electrical and Computer Engineering Ph.D., 3/2020 Ph.D., 7/2019 Alejandro Parada-Mayorga, Electrical and Computer Engineering

Fall 2008

Training in	- Culturally Aware Mentoring, Workshop and Introduction	
Pedagogy and	CIMER, University of Wisconsin-Madison and University of Delaware	,
Mentoring	- Inclusive Teaching Professional Development Workshop Series, Univer	
	College of Engineering Diversity Working Group	Spring/Fall 2019
	- Course Design Institute, University of Delaware	6/2019
	- Associate Fellow of The Higher Education Academy	3/2016
	awarded following "Teaching for Researchers" modules at University of	of Liverpool
OUTREACH	- Project Judge, "UD GSG Hackathon on Misinformation and Cybersec	curity" 4/25/2021
ACTIVITIES	- Presenter, "Engineering Your Tomorrow", Sussex County (DE) STEM	. ,
110111111111111111111111111111111111111	- Presenter, Serviam Girls Academy, "Measuring Electric Waves in the	
	- Project Judge, FIRST LEGO League SE Pennsylvania Regional Char	,
	- Volunteer, Engineering Discovery Day, University of Delaware, $A\Omega E$	10/2018
	- Volunteer, "Meet the Scientists", at Liverpool's World History Museu	•
	- Science Fair Judge (6-8th graders), Alachua County, Florida	2009–2013
	- Science Quest (10th graders), University of Florida (UF)	7/2011
	- Guest Lecture, Student Science Training Program (10 – 12th graders)	
	- Guest Lecture, Student Science Training Program (10 – 12th graders)) OF 2010
University	- Neuroscience Planning Committee (Chairs: John Jeka/Anna Klintsov	a) 8/2010 3/2021
SERVICE	- Neuroscience Flamming Committee (Chairs: John Jeka/Alma Kimisov	a) 8/2019-3/2021
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ECE	- IEEE Student Chapter Branch Counselor	5/2019-present
DEPARTMENT	- Undergraduate Academic Advisor	8/2020-present
SERVICE	– Member, ECE Strategic Planning Committee (Chair: Jamie Phillips)	, ,
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	- · · · · · · · · · · · · · · · · · · ·	$2019, 2 \times \text{ in } 2020$
	– Member, ECE Areas Ad-hoc Committee (Chair: Kenneth Barner)	Fall 2019
	– Representative, Alumni Weekend: "Mastering Makerspaces!"	June 2019
CIS	– Faculty Search Committee, Computer & Information Sciences	2019-2020
CIS Department	 Faculty Search Committee, Computer & Information Sciences (Chair: Chien-Chung Shen; search resulted in 2 tenure-track faculty h 	
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Department Service	(Chair: Chien-Chung Shen; search resulted in 2 tenure-track faculty h	nires.) $1/2020$ -present
DEPARTMENT SERVICE DATA SCIENCE	 (Chair: Chien-Chung Shen; search resulted in 2 tenure-track faculty h Masters of Science in Data Science (academic advisor) Data Science Community Hour (faculty advisor) 	nires.) $1/2020-present$ $1/2021-present$
DEPARTMENT SERVICE DATA SCIENCE INSTITUTE	 (Chair: Chien-Chung Shen; search resulted in 2 tenure-track faculty h Masters of Science in Data Science (academic advisor) Data Science Community Hour (faculty advisor) Technology & Data Analytics Career Meetup (DSI Representative) 	1/2020-present $1/2021$ -present $3/4/2020$
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DEPARTMENT SERVICE DATA SCIENCE INSTITUTE	 (Chair: Chien-Chung Shen; search resulted in 2 tenure-track faculty h Masters of Science in Data Science (academic advisor) Data Science Community Hour (faculty advisor) Technology & Data Analytics Career Meetup (DSI Representative) Data Science Symposium Planning Committee (Chairs: Greg Dobler & Zachary Collier) 	1/2020-present 1/2021-present 3/4/2020 4/2019-11/2019
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DEPARTMENT SERVICE DATA SCIENCE INSTITUTE SERVICE PREVIOUS	 (Chair: Chien-Chung Shen; search resulted in 2 tenure-track faculty h Masters of Science in Data Science (academic advisor) Data Science Community Hour (faculty advisor) Technology & Data Analytics Career Meetup (DSI Representative) Data Science Symposium Planning Committee (Chairs: Greg Dobler & Zachary Collier) Mastering Data Science and Statistical Analysis Information Session Mastering Data Science and Statistical Analysis Information Session Student Senator, University of Florida 	1/2020-present 1/2021-present 3/4/2020 4/2019-11/2019 11/19/2019 3/26/2019
DEPARTMENT SERVICE DATA SCIENCE INSTITUTE SERVICE PREVIOUS LEADERSHIP	 (Chair: Chien-Chung Shen; search resulted in 2 tenure-track faculty h Masters of Science in Data Science (academic advisor) Data Science Community Hour (faculty advisor) Technology & Data Analytics Career Meetup (DSI Representative) Data Science Symposium Planning Committee (Chairs: Greg Dobler & Zachary Collier) Mastering Data Science and Statistical Analysis Information Session Mastering Data Science and Statistical Analysis Information Session Student Senator, University of Florida Volunteer, Engineering Recruitment Weekend, University of Florida 	1/2020-present 1/2021-present 3/4/2020 4/2019-11/2019 11/19/2019 3/26/2019 2011-2012 2010-2014
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DEPARTMENT SERVICE DATA SCIENCE INSTITUTE SERVICE PREVIOUS LEADERSHIP AND SERVICE ROLES PROFESSIONAL	 (Chair: Chien-Chung Shen; search resulted in 2 tenure-track faculty h Masters of Science in Data Science (academic advisor) Data Science Community Hour (faculty advisor) Technology & Data Analytics Career Meetup (DSI Representative) Data Science Symposium Planning Committee (Chairs: Greg Dobler & Zachary Collier) Mastering Data Science and Statistical Analysis Information Session Mastering Data Science and Statistical Analysis Information Session Student Senator, University of Florida Volunteer, Engineering Recruitment Weekend, University of Florida President, Omaha Student Chapter Delegate, Peter Kiewit Institute, University of Nebraska Mentor, Scott Scholars (undergraduate) Volunteer, Nebraska Academic Decathlon (9-12th graders) Member, Nebraska Coalition for Juvenile Justice IEEE (Institute for Electrical and Electronics Engineers) 	1/2020-present 1/2021-present 3/4/2020 4/2019-11/2019 11/19/2019 3/26/2019 2011-2012 2010-2014 5/2008-5/2009 2006-2009 2006-2009 2006-2008 2003-2007
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DEPARTMENT SERVICE DATA SCIENCE INSTITUTE SERVICE PREVIOUS LEADERSHIP AND SERVICE ROLES PROFESSIONAL INVOLVEMENT	 (Chair: Chien-Chung Shen; search resulted in 2 tenure-track faculty has been described as the content of the content	1/2020-present 1/2021-present 3/4/2020 4/2019-11/2019 11/19/2019 3/26/2019 2011-2012 2010-2014 5/2008-5/2009 2006-2009 2006-2009 2006-2008 2003-2007 2006-Present 2013-Present 2010-Present 5/2019-Present
DEPARTMENT SERVICE DATA SCIENCE INSTITUTE SERVICE PREVIOUS LEADERSHIP AND SERVICE ROLES PROFESSIONAL INVOLVEMENT	 (Chair: Chien-Chung Shen; search resulted in 2 tenure-track faculty has been described as the content of the content	1/2020-present 1/2021-present 3/4/2020 4/2019-11/2019 11/19/2019 3/26/2019 2011-2012 2010-2014 5/2008-5/2009 2006-2009 2006-2009 2006-2008 2003-2007 2006-Present 2013-Present 2010-Present 5/2019-Present

Journals:

- IEEE Transactions on Automatic Control	2021
 IEEE Transactions on Neural Networks and Learning Systems 	2015-
- IEEE Transactions on Knowledge Data Engineering	2017-
- IEEE Transactions on Signal Processing	2019, 2020
- IEEE Access	2019
- IEEE Transactions on Biomedical Engineering	2014, 2018
Conferences:	
- $AAAI$	2018,2020-2022
EMNLD	2010

 $\begin{array}{lll} - AAAI & 2018,2020-2022 \\ - EMNLP & 2018 \\ - ICASSP & 2009,2018-2021 \\ - ICLR & 2021 \\ - ICML & 2019,2021 \\ - MLSP & 2018-2021 \\ - NeurIPS & 2018-2021 \\ - IEEE EMBS NER & 2013,2017,2019,2021 \end{array}$

BOOK Chapter A. J. Brockmeier and J. C. Príncipe, "Decoding algorithms for brain machine interfaces," in *Neural Engineering*, Bin He, Ed. Springer, 2013, pp. 223–257.

PATENTS

U.S. Patent 10,531,806. J. Principe and A. J. Brockmeier, "Brain state advisory system and methods using calibrated metrics and optimal time-series decomposition," 1/14/2020.

JOURNAL ARTICLES

- 17. E. N. Hamulyák, A. J. Brockmeier, J. D. Killas, S. Ananiadou, S. Middeldorp, and A. M. Leroi, "Women's health in *The BMJ*: a data science history," *BMJ Open*, 10:e039759, 2020.
- 16. X. Evangelopoulos, A. J. Brockmeier, T. Mu, J. Y. Goulermas, "Circular object arrangement using spherical embeddings," *Pattern Recognition*, 103(107192), 2020.
- 15. A. J. Brockmeier, M. Ju, P. Przybyła, and S. Ananiadou, "Improving reference prioritisation with PICO recognition," *BMC Medical Informatics and Decision Making*, 19(256), 2019.
- 14. P. Przybyła, A. J. Brockmeier, and S. Ananiadou, "Quantifying risk factors in medical reports with a context-aware linear model," *Journal of the American Medical Informatics Association*, 26(6):537–546, 2019.
- 13. X. Evangelopoulos, A. J. Brockmeier, T. Mu, J. Y. Goulermas, "Continuation methods for approximate large scale object sequencing," *Machine Learning*, 108(4):595–626, 2019.
- 12. P. Przybyła, A. J. Brockmeier, G. Kontonatsios, M.-A. Le Pogam, J. McNaught, E. von Elm, K. Nolan, and S. Ananiadou, "Prioritising references for systematic reviews with Robot-Analyst: A user study," *Research Synthesis Methods*, 9(3):470–488, 2018.
- 11. A. J. Brockmeier, T. Mu, S. Ananiadou, and J. Y. Goulermas, "Self-tuned descriptive document clustering using a predictive network," *IEEE Transactions on Knowledge and Data Engineering*, 30(10):1929–1942, 2018.
- A. J. Brockmeier, T. Mu, S. Ananiadou, and J. Y. Goulermas, "Quantifying the informativeness of similarity measurements," *Journal of Machine Learning Research*, 18(76):1–61, 2017.
- G. Kontonatsios, A. J. Brockmeier, P. Przybyła, J. McNaught, T. Mu, J. Y. Goulermas, and S. Ananiadou, "A semi-supervised approach using label propagation to support citation screening," *Journal of Biomedical Informatics*, 72:67–76, 2017.
- 8. J. S. Choi, A. J. Brockmeier, D. McNiel, L. von Kraus, J. C. Principe, and J. T. Francis, "Eliciting naturalistic cortical responses with a sensory prosthesis via optimized microstimulation," *Journal of Neural Engineering*, 13(5):056007, 2016.
- 7. A. J. Brockmeier and J. C. Principe, "Learning recurrent waveforms within EEGs," *IEEE Transactions on Biomedical Engineering*, 63(1):43–54, 2016.

- M. S. Emigh, E. G. Kriminger, A. J. Brockmeier, J. C. Príncipe, and P. M. Pardalos, "Reinforcement learning in video games using nearest neighbor interpolation and metric learning," *IEEE Transactions on Computational Intelligence and AI in Games*, 8(1):56–66, 2016.
- J. C. Principe and A. J. Brockmeier, "Representing and decomposing neural potential signals," Current Opinion in Neurobiology, 31:13-17, 2015.
- 4. A. J. Brockmeier, J. S. Choi, E. G. Kriminger, J. T. Francis, and J. C. Principe, "Neural decoding with kernel-based metric learning," *Neural Computation*, 26(6):1080–1107, 2014.
- L. Li, A. J. Brockmeier, J. S. Choi, J. T. Francis, J. C. Sanchez, and J. C. Príncipe, "A tensor-product-kernel framework for multiscale neural activity decoding and control," Computational Intelligence and Neuroscience, Article ID 87016, 2014.
- 2. L. Li, I. M. Park, A. Brockmeier, B. Chen, S. Seth, J. T. Francis, J. C. Sanchez, and J. C. Principe, "Adaptive inverse control of neural spatiotemporal spike patterns with a reproducing kernel Hilbert space (RKHS) framework," *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 21(4):532–543, 2013.
- J. S. Choi, M. M. DiStasio, A. J. Brockmeier, and J. T. Francis, "An electric field model for prediction of somatosensory (S1) cortical field potentials induced by ventral posterior lateral (VPL) thalamic microstimulation," *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, 20(2):161–169, 2012.

PEER-REVIEWED CONFERENCE PAPERS (* INDICATES ADVISEE)

- 24. C. H. Mendoza-Cardenas* and A. J. Brockmeier, "Shift-invariant waveform learning on epileptic ECoG", *IEEE Engineering in Medicine and Biology Society (EMBC)*, 2021.
- 23. C. H. Mendoza-Cardenas* and A. J. Brockmeier, "Searching for waveforms on spatially-filtered epileptic ECoG", *Int. IEEE/EMBS Conf. Neural Engineering (NER)*, 2021.
- 22. H. Baker* and A. J. Brockmeier, "Local and sparse linear causal models for fMRI resting-state signals", Int. IEEE/EMBS Conf. Neural Engineering (NER), 2021.
- 21. X. Evangelopoulos, A. J. Brockmeier, T. Mu, and J. Y. Goulermas, "A graduated non-convexity relaxation for large scale seriation," in *SIAM Int. Conf. Data Mining (SDM)*, 2017.
- 20. M. Sato, A. J. Brockmeier, G. Kontonatsios, T. Mu, J. Y. Goulermas, J. Tsujii, and S. Ananiadou, "Distributed document and phrase co-embeddings for descriptive clustering," in European Chapter of the Association for Computational Linguistics (EACL), 2017.
- 19. A. J. Brockmeier and J. C. Principe, "Explicit versus implicit source estimation for blind multiple input single output system identification," in *IEEE Int. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, 2015.
- 18. E. Santana, A. J. Brockmeier, and J. C. Principe, "Joint optimization of algorithmic suites for EEG analysis," in *IEEE Engineering in Medicine and Biology Society (EMBC)*, 2014.
- 17. A. J. Brockmeier, E. Santanna, L. Sanchez Giraldo, and J. Principe, "Projentropy: Using entropy to optimize spatial projections," in *IEEE Int. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, 2014.
- 16. A. J. Brockmeier, L. G. Giraldo, J. S. Choi, J. T. Francis, and J. C. Principe, "Learning multiscale neural metrics via entropy minimization," in *Int. IEEE/EMBS Conf. Neural Engineering (NER)*, 2013.
- 15. A. J. Brockmeier, L. G. Sanchez Giraldo, M. S. Emigh, J. Bae, J. S. Choi, J. T. Francis, and J. C. Principe, "Information-theoretic metric learning: 2–D linear projections of neural data for visualization," in *IEEE Engineering in Medicine and Biology Society (EMBC)*, 2013.
- 14. A. J. Brockmeier, J. C. Principe, A. H. Phan, and A. Cichocki, "A greedy algorithm for model selection of tensor decompositions," in *IEEE Int. Conf. Acoustics, Speech and Signal Processing (ICASSP)*, 2013.

- 13. A.-H. Phan, A. Cichocki, P. Tichavsky, G. Luta, and A. Brockmeier, "Tensor completion through multiple Kronecker product decomposition," in *IEEE Int. Conf. Acoustics*, Speech and Signal Processing (ICASSP), 2013.
- 12. A. J. Brockmeier, M. K. Hazrati, W. J. Freeman, and J. C. Principe, "Locating spatial patterns of waveforms during sensory perception in scalp EEG," in *IEEE Engineering in Medicine and Biology Society (EMBC)*, 2012.
- 11. A. J. Brockmeier, J. S. Choi, M. M. Emigh, J. T. Francis, and J. C. Principe, "Subspace matching thalamic microstimulation to tactile evoked potentials in rat somatosensory cortex," in *IEEE Engineering in Medicine and Biology Society (EMBC)*, 2012.
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