

Iain Carmichael

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EDUCATION

The University of North Carolina at Chapel Hill, Chapel Hill, NC (expected) May 2019
Ph.D. Statistics
Department of Statistics and Operations Research
Thesis: *Topics in the analysis of non-standard data including networks, text and images*
Advisors: Shankar Bhamidi, J.S. Marron

Cornell University, Ithaca, NY May 2014
B.A. Mathematics (Cum Laude), Physics (Cum Laude)

Budapest Semesters in Mathematics, Budapest, Hungary Spring 2013
Semester abroad

PUBLICATIONS

IN PREPARATION

1. Banerjee, S., Bhamidi, S., **Carmichael, I.** (2018). Nonparametric change point detection in growing networks.
2. **Carmichael, I.**, Couture, H., Niethammer M., Perou C., Marron J.S. (2018). Joint analysis of H&E stained images and genetic covariates using deep learning and JIVE.
3. **Carmichael, I.**, Jung, M., Marron, J.S. (2018). Python, R and Matlab packages for angle-based joint and individual variation explained.

UNDER REVIEW

4. **Carmichael, I.**, Marron, J.S. (2017). Geometric insights into support vector machine behavior using the KKT conditions. *Submitted to JMLR*.

PUBLISHED

5. **Carmichael, I.**, Williams, JP. (2018). An exposition of the false confidence theorem. *To appear in Stat.*
6. **Carmichael, I.**, Marron J.S. (2018). Data science vs. statistics: two cultures?. *Japanese Journal of Statistics and Data Science*.
7. **Carmichael, I.**, Wudel, J., Kim, M., Jushchuk, J. (2017). Examining the evolution of legal precedent through citation network analysis. *North Carolina Law Review*.

PRESENTATIONS

“Angle-based joint and individual variation explained,” *Joint PI Meeting: NSF BIGDATA and Big Data Hubs & Spokes*, Alexandria, VA, June, 2018. (poster) https://idc9.github.io/assets/ajive_carmichael_nsf_bigdata2018_poster.pdf

“Word embeddings for computational humanities,” *UNC Digital Innovation Lab*, Chapel Hill, NC, October 2017. https://github.com/idc9/word_embed_tutorial

“Data science and the undergraduate curriculum,” *UNC STOR Department Colloquium*, Chapel Hill, NC, September 2017. https://idc9.github.io/assets/data_science_stor_colloquium.pdf

“Open data, networks and the law,” *PyData Carolinas*, Raleigh, NC, October, 2016.

PROFESSIONAL EXPERIENCE

Consultant , Reese News Lab, <i>Chapel Hill, NC</i>	Spring - Fall 2017
Research Scientist , Gamalon Machine Intelligence, <i>Cambridge, MA</i>	May - August 2016
Research Internship , RIPS program at IPAM in collaboration with the Aerospace Corporation, <i>UCLA, Los Angeles, CA</i>	June - August 2012

TEACHING

Instructor , STOR-BIOS Linear Algebra Summer Boot Camp, <i>UNC, Chapel Hill, NC</i>	Summer 2017
Instructor , STOR 390: Introduction to Data Science, <i>UNC, Chapel Hill, NC</i>	Spring 2017
· Developed and taught the first data science course for UNC’s undergraduate statistics major. https://idc9.github.io/stor390/	
Graduate Research Consultant , JOMC 390: Data Driven Journalism, <i>UNC, Chapel Hill, NC</i>	Spring 2016
Teaching Assistant , <i>UNC, Chapel Hill, NC</i>	
· STOR 634: Measure Theory	Fall 2015
· STOR 113: Decision Models for Business and Economics	Fall 2014 - Spring 2015

AWARDS

Dean’s Graduate Fellow in the College of Arts and Sciences, <i>UNC, Chapel Hill, NC</i>	2018-2019
Grant from Data@Carolina (with Shankar Bhamidi), <i>UNC, Chapel Hill, NC</i>	Fall 2016
Regional Datathon winner (team of 4 winning \$20,000 data science competition sponsored by Citadel), <i>Duke University, Durham, NC</i>	April 2017
5th place in international Data Open Championship sponsored by Citadel, <i>Manhattan, NY</i>	November 2017

PROFESSIONAL SERVICE

Referee for IEEE Transactions on Neural Networks and Learning Systems	
UNC middle/high school science exposition, <i>UNC, Chapel Hill, NC</i> https://github.com/idc9/UNC_science_expo_2018	Spring 2018
Tutorials on R, Python, data science, optimization and natural language processing can be found on my github page (github.com/idc9)	2015 - present
Member of Evidence, Analysis, Interpretation, and Critique task force for UNC’s Curriculum Development Committee, <i>UNC, Chapel Hill, NC</i>	Spring 2017

Supervised undergraduate theses/independent research along with Shankar Bhamidi (Ethan Koch, James Jushchuk, Kate Cho, Scott Garcia, and Michael Kim), *UNC, Chapel Hill, NC* 2015 - 2018

Coach of UNC's undergraduate team competing in DataFest, *Duke University, Durham, NC* 2016 - 2017

SOFTWARE

PACKAGES

PYJIVE: A python package implementing Angle-based Joint and Individual Variation Explained (AJIVE) for feature extraction with multiple data sets. <https://github.com/idc9/pyjive/>

RJIVE: An R package implementing AJIVE. https://github.com/idc9/r_jive/

Skills: R, Python, Matlab \LaTeX , Bash, Github