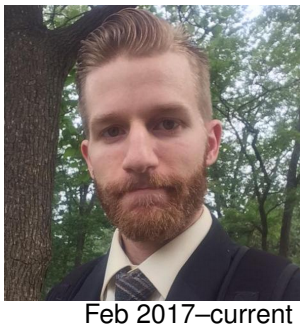
ANDREW JAMES REAGAN



Amherst, MA
me@andyreagan.com
andyreagan.github.io

POSITIONS

MassMutual: Senior Data Scientist Feb 2017–current
Lead data science projects focused on Sales and Marketing by building state-of-the-art predictive models for customer acquisition and experience. These have included logistic regression, random forest, and neural network models. Serve as a mentor to members of the Junior Data Science program.

University of California Berkeley: Lecturer Jan 2016–current
Teach, grade, and administer two 15-seat sections of W209: Data Visualization and Communication, a core course in the Master's Program in Data Science (MIDS). Re-developed course content for Fall 2017, including recorded lectures and software tutorials.

University of Vermont: Graduate Lecturer Aug 2015–Dec 2015
Prepare, teach, grade, and administer two 35-seat sections of non-major calculus (Math 019).

NASA EPSCoR Vermont Graduate Research Assistant Jan 2012–July 2015
Research in University of Vermont Computational Story Lab.
Utilize the Vermont Advanced Computing Core to perform analyses of large structured data sets (e.g. Twitter gardenhose feed).

Research Experience for Undergraduates in Modeling and Simulation of Biological Systems Jun 2011
Virginia Bioinformatics Institute, Blacksburg VA

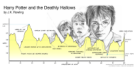
EDUCATION

University of Vermont, Burlington VT May 2017
Doctorate of Philosophy, Applied Mathematics
Advisors: Dr. Chris Danforth, Dr. Peter Dodds, Dr. Yves Dubief
Concentration: Complex Systems
Dissertations: Towards a Science of Human Stories

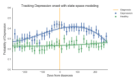
University of Vermont, Burlington VT Dec 2013
Master of Science, Applied Mathematics
Thesis: Predicting Flow Reversals in a Computational Fluid Dynamics Simulated Thermosyphon using Data Assimilation
GPA: 3.85

Virginia Polytechnic Institute and State University, Blacksburg VA Dec 2011
Bachelor of Science, Mathematics
GPA: 3.64, Summa Cum Laude

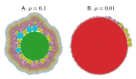
PUBLICATIONS



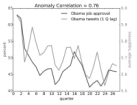
16. The emotional arcs of stories are dominated by six basic shapes 2016
Andy Reagan, Lewis Mitchell, Dilan Kiley, Chris Danforth, Peter Sheridan Dodds



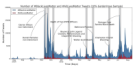
15. Forecasting the onset and course of mental illness with Twitter data 2016
Andrew G. Reece, Andy Reagan, Katharina L. M. Lix, Peter Sheridan Dodds, Chris Danforth, et. al.



14. Simon's fundamental rich-gets-richer model entails a dominant first-mover advantage 2016
Peter Sheridan Dodds, David Dewhurst, Fletcher F. Hazlehurst, Colin van Oort, Lewis Mitchell, et. al.

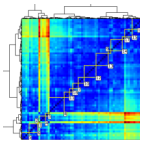


13. Public opinion polling with Twitter 2016
Emily Cody, Andy Reagan, Peter Sheridan Dodds, Chris Danforth

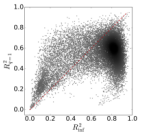


12. Divergent Discourse Between Protests and Counter-Protests: #BlackLivesMatter and #AllLivesMatter 2016
Ryan Gallagher, Andy Reagan, Chris Danforth, Peter Sheridan Dodds

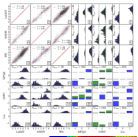
11. Tracking the Teletherms: The spatiotemporal dynamics of the hottest and coldest days of the year 2016
Peter Sheridan Dodds, Lewis Mitchell, Andy Reagan, Chris Danforth



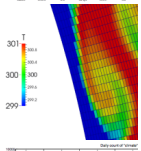
10. Game story space of professional sports: Australian Rules Football 2016
Dilan Kiley, Andy Reagan, Lewis Mitchell, Chris Danforth, Peter Sheridan Dodds



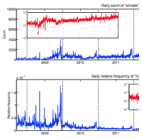
9. Selection models of language production support informed text partitioning: an intuitive and practical bag-of-phrases framework for text analysis 2016
Jake Williams, James Bagrow, Andy Reagan, Sharon Alajajian, Chris Danforth, et. al.



8. Benchmarking sentiment analysis methods for large-scale texts: A case for using continuum-scored words and word shift graphs 2015
Andy Reagan, Brian Tivnan, Jake Williams, Chris Danforth, Peter Sheridan Dodds

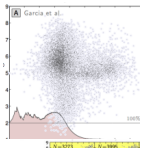


7. Predicting Flow Reversals in a Computational Fluid Dynamics Simulated Thermosyphon using Data Assimilation 2015
Andy Reagan, Yves Dubief, Peter Sheridan Dodds, Chris Danforth

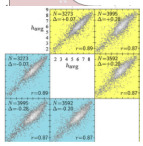


6. Climate change sentiment on Twitter: An unsolicited public opinion poll 2015
Emily Cody, Andy Reagan, Lewis Mitchell, Peter Sheridan Dodds, Chris Danforth

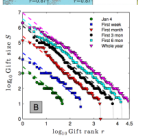
5. The Lexicocalorimeter: Gauging public health through caloric input and output on social media 2015
Sharon Alajajian, Jake Williams, Andy Reagan, Stephen C. Alajajian, Morgan Frank, et. al.



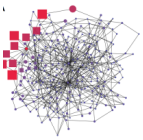
4. Reply to Garcia et al.: Common mistakes in measuring frequency dependent word characteristics 2015
Peter Sheridan Dodds, Eric Clark, Suma Desu, Morgan Frank, Andy Reagan, et. al.



3. Human language reveals a universal positivity bias 2015
Peter Sheridan Dodds, Eric Clark, Suma Desu, Morgan Frank, Andy Reagan, et. al.



2. Collective Philanthropy: Describing and Modeling the Ecology of Giving 2014
William L. Gottesman, Andy Reagan, Peter Sheridan Dodds



1. Shadow networks: Discovering hidden nodes with models of information flow 2013
James Bagrow, Suma Desu, Morgan Frank, Narine Manukyan, Lewis Mitchell, et. al.

SELECTED PRESENTATIONS

The emotional impact of words: comparison, critique, and benchmark of major data sets
Computer Science Research Days, UVM, Burlington VT — Sep 2015

Thermosyphon flow prediction: predicting flow reversals in a computational fluid dynamics simulated thermosyphon using data assimilation
SIAM Dynamical Systems, Snowbird UT — Jun 2015

Shapes of stories: characterizing the emotional trajectories of stories into a hierarchy of basic shapes
UVM Student Research Conference, Burlington VT — April 2015

d3.js: javascripting and data visualization
VT Coders Meetup, Winooski VT (60+ attendees) — Nov 2014

Climate Parameter Estimation with DA and Genetic Algorithms
UVM Computational Storylab Group, Burlington VT — Feb 2014

Making Beautiful Web Graphics with D3 + MATLAB
UVM Student Complexity (and Pizza) Seminar, Burlington VT — Jan 2014

Thermosyphon Flow Prediction
Master's Thesis Oral Defense, Burlington VT — Dec 2013

An Introduction to LaTeX
UVM Grad College Professional Development Seminar, Burlington VT — Jan 2013

Understanding the Natural Structure of Human Logic
Student Complexity Research and Pizza Seminar, Burlington VT — Oct 2012

Uncertainty of Rogue Wave Formation in the Nonlinear Schrödinger Equation
UVM Compuational Storylab Group, Burlington VT — Oct 2012

A Computational Approach to Iron Metabolism in Breast Epithelial Cells
Joint Mathematics Meeting, Boston MA — January 2013

Mathematically Informed Hypothesis Generation for Cancer Proliferation
Modeling and Simulation in Systems Biology REU Symposium, Blacksburg VA — August 2011

PRESS

Researchers have quantified what makes us love Harry Potter
Washington Post, November 25, 2016

Narrative Machines
Story Grid, August 25, 2016

Story Core: UVM Researchers Use Data Mining To Identify Emotional Story Arcs
Vermont Public Radio, July 21, 2016

The Six Main Arcs in Storytelling, as Identified by an A.I.
The Atlantic, July 12, 2016

Data Mining Novels Reveals the Six Basic Emotional Arcs of Storytelling
MIT Technology Review, July 6, 2016

When the stories add up: the six narrative arcs in fiction
Aeon, November 18, 2016

When computers read the canon
Boston Globe, July 22, 2016

Three, six or 36: how many basic plots are there in all stories ever written?
The Guardian, July 13, 2016

6 Story Arcs Define Western Literature, Data-Mining Study Reveals
Discover Magazine, July 6, 2016

Twitter can tell which states love jogging & which are eating hot dogs
Washington Post, July 29, 2015

How the New Science of Game Stories Could Change the Future of Sports
MIT Technology Review, July 27, 2015

According to the Words, the News Is Actually Good
New York Times, February 23, 2015

Spanish is the happiest language
Science Magazine, February 9, 2015

The Math of Charity
Wired Magazine, July 17, 2013

HONORS AND AWARDS

SIAM Student Travel Award for Conference on Applications of Dynamical Systems	2015
University of Vermont Featured Graduate Student	2014
Virginia Tech Dean's List, Every Semester attended	2008-2011
Earned Pratt Engineering Scholarship	2010
Earned Virginia Tech Scholars Scholarship	2008-2009
Earned P&C Foods Scholarship	2008
Sam Walton Community Scholar	2008
National Merit Scholar	2007
OCMTA Mathematics Contest Winner	2007

TEACHING

Course	Section	Duties	Offered	Overall Rating	Difficulty Rating
UCB W209	1	Teach & Grade	Summer 2016 7PM	(Will make available)	
UCB W209	3	Teach & Grade	Summer 2016 7PM	(Will make available)	
UCB W209	1	Teach & Grade	Spring 2016 7PM	5.70 / 7	-
UCB W209	3	Teach & Grade	Spring 2016 7PM	5.89 / 7	-
UVM Math 19	E	All	Fall 2015 10:15AM	4.26 / 5	3.39 / 5
UVM Math 19	F	All	Fall 2015 8:00AM	3.50 / 5	3.05 / 5
UVM CSYS 300	-	DoT (Grading)	Fall 2014	-	-
UVM Math 266	-	Grading & Sub	Spring 2014	-	-
UVM CSYS 300	-	DoT (Grading)	Fall 2013	-	-

SERVICE

Advisor for undergraduate students in Math 52 final projects	2015–current
Vermont Advanced Computing Core documentation and tutorials	2015–current
Complex Systems website database design, construction, administrator, and front end	2014–current
UVM Mathematics Department Graduate Committee	2013-2014
Student Complexity Research [and Pizza] Seminar (SCRaPS) Organizer	2013–2014
Volunteer at Bike Recycle Vermont	2013
Cycled across the USA with Bike and Build, benefiting Habitat for Humanity	2010

- My trip alone donated close to $90,000 to affordable housing and spent 10 days building with Habitat affiliates