

Matthew J. Hale Rattigan

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Research Interests: *Data science, machine learning, knowledge discovery and data mining, causal inference, social network analysis, workforce analytics, social good*

Education

University of Massachusetts Amherst, Amherst, MA.

Ph.D., Computer Science, 2012

Dissertation: “Leveraging Relational Representations for Causal Discovery”

Wesleyan University, Middletown, CT.

B.A., Computer Science, 1997

Professional and Teaching Experience

2019-pres Senior Lecturer, College of Information and Computer Sciences
University of Massachusetts Amherst, Amherst, MA
Full-time teaching faculty appointment.

2017-pres Technical Director of Community Initiatives, Center for Data Science
University of Massachusetts Amherst, Amherst, MA
Spearheaded public interest research efforts, funding proposals, and development of strategic programs.

2018 Lecturer
University of Massachusetts Amherst, Amherst, MA
Instructor for “Artificial Intelligence” (undergraduate).

2017 Lecturer
Smith College, Northampton, MA
Instructor for “Programming with Data Structures” (undergraduate).

2015 Assistant Vice President, Data Scientist
MassMutual, Amherst, MA
Managed and executed projects related to sales and marketing in the life insurance sector.

- 2013 Co-founder
Edgeflip, Chicago, IL
Founded and led a startup focused on providing technology and analytics for mission-driven organizations.
- 2011 Digital Analyst
Obama For America, Chicago, IL
Designed and built novel analytic systems for digital voter outreach, communications analysis, and decision support.
- 2007 Research Intern
Comcast Interactive Media, Philadelphia, PA
Led research and development projects for an entertainment web portal.
- 2003 Teaching Assistant
University of Massachusetts Amherst, Amherst, MA
Assisted instruction for "Introduction to Knowledge Discovery" (undergraduate/graduate).
- 2001 Graduate Research Assistant (Advisor: David Jensen)
University of Massachusetts Amherst, Amherst, MA
Research focused on using statistical methods to discover causal dependencies in relational data.
- 2000 Senior Reporting Analyst
Upromise, Brookline, MA
Provided executive decision support reporting and analysis for a web startup.
- 1999 Senior Data Analyst
Ask Jeeves / Direct Hit Technologies, Natick, MA
Worked as a data analyst and software engineer for an internet search startup.
- 1997 Decision Support Consultant
Decision Architects / The Monitor Company, Cambridge, MA
Served as the technical lead on case teams in the United States and Europe.

Publications

Refereed Conference Papers

- [1] Object Conditioning for Causal Discovery (2019)
Jensen, D., J. Burroni, and M. Rattigan
Proceedings of the 2019 Conference on Uncertainty in Artificial Intelligence.

- [2] Relational Blocking for Causal Discovery (2011)
Rattigan, M., M. Maier, and D. Jensen
Proceedings of the 25th AAAI Conference on Artificial Intelligence.
- [3] Leveraging D-Separation for Relational Data Sets (2010)
Rattigan, M. and D. Jensen
Proceedings of the 10th IEEE International Conference on Data Mining.
- [4] Graph Clustering with Network Structure Indices (2007)
Rattigan, M., M. Maier, and D. Jensen
Proceedings of the 24th International Conference on Machine Learning.
- [5] Using Structure Indices for Efficient Approximation of Network Properties (2006)
Rattigan, M., M. Maier, and D. Jensen
Proc. of the 12th ACM SIGKDD Int'l Conference on Knowledge Discovery and Data Mining.
- [6] Information Awareness: a Prospective Technical Assessment (2003)
Jensen, D. and M. Rattigan
Proc. of the 9th ACM SIGKDD Int'l Conference on Knowledge Discovery and Data Mining.

Refereed Journal Articles

- [7] Indexing Network Structure with Shortest-Path Trees (2011)
Maier, M., M. Rattigan, and D. Jensen.
ACM Transactions on Knowledge Discovery from Data vol.5, no. 3.
- [8] The Case for Anomalous Link Discovery (2005)
Rattigan, M. and D. Jensen.
ACM SIGKDD Explorations vol. 7 issue 2, December, 2005.

Refereed Workshop Papers

- [9] Reidentification of Artists and Genres in KDD Cup 2011 (2011)
Rattigan, M.
Proceedings of the 2011 Workshop on Information in Networks.
- [10] Relational Blocking for Causal Discovery in Networks (2010)
Rattigan, M., M. Maier, and D. Jensen
Proceedings of the 2010 Workshop on Information in Networks.
- [11] Exploiting Network Structure for Active Inference in Collective Classification (2007)
Rattigan, M., M. Maier, and D. Jensen

Proceedings of the 7th IEEE International Conference on Data Mining Workshops.

- [12] Statistical Relational Learning: Four Claims and a Survey (2003)
Neville, J., M. Rattigan and D. Jensen
Proceedings of the Workshop on Learning Statistical Models from Relational Data, 18th International Joint Conference on Artificial Intelligence.

Edited Proceedings and Organizer Summaries

- [13] Opportunities and Risks for Data Science in Organizations: Banking, Finance, and Policy - Special Session Overview (2018)
Marrara, S., A. Azzini, A. Topalovic, M. Pejic, M. Rattigan
Proceedings of the IEEE Int'l Conference on Data Science and Advanced Analytics 2018.
- [14] Proceedings of the KDD Workshop on Data Science for Social Good (2014)
A. Banerjee, L. Getoor, R. Ghani, C. Montelioni, and M. Rattigan (Eds).
KDD Workshop 2014.

Technical Reports

- [15] Hypothesis Testing Methods For Relational Data (2009)
Rattigan, M. and D. Jensen
University of Massachusetts Amherst Technical Report UM-CS-2009-053
- [16] Discovering Causal Knowledge by Design (2009)
Maier, M., M. Rattigan, D. Jensen
University of Massachusetts Amherst Technical Report UM-CS-2009-047
- [17] Learning Filesystems (2005)
Rattigan, M., D. Jensen, and M. Corner
University of Massachusetts Amherst Technical Report UM-CS-2005-070
- [18] Randomization Tests for Relational Learning (2003)
Jensen, D., J. Neville, and M. Rattigan
University of Massachusetts Amherst Technical Report UM-CS-2003-005

Grants and Awards

- 2020 Co-PI, "The Data Science WAV: Experiential Learning with Local Community Organizations", National Science Foundation \$90,712

Subawardee, "Controversy Detection Signal for Finance", National Science Foundation, \$49,040.

2018 PI, “Skills Extraction for Educational Pathways”
National Laboratory of Education Transformation \$20,000

Co-PI, “Identifying Optimal Skill and Relationship Mixtures for Individual,
Enterprise, and Regional Prosperity”
LinkedIn Economic Graph Research Program (data grant)

Professional Service

2020 Associate Organizer, Five College DataFest
Panelist, National Academies of Sciences Workshop on Improving Defense
Acquisition Workforce Capability in Data Use
Program Committee, AAAI 2020
Program Committee, DSAA 2020
Judge, HackUMass

2019 Associate Organizer, Five College DataFest
Program Committee, D4GX 2019
Program Committee, DSAA 2019
Review Panelist, National Science Foundation (RI ML Fairness, Causality, Misc
in the Information & Intelligent Systems Division)

2018 Special Session Co-organizer, DSAA 2018
Program Committee, DSAA (both industry and research tracks)
Program Committee, AAAI
Associate Organizer/Consultant, Five College DataFest

2017 Workshop Organizer, “Workforce Analytics”, CDS Research Symposium
Program Committee, AAAI
Consultant, Five College DataFest

2016 Program Committee, AAAI
Program Committee, KDD
Judge, Five College DataFest

2015 Program Committee, KDD
Program Committee, ECML

2014 Workshop Organizer, “Data Science for Social Good”, KDD
Program Committee, KDD
Program Committee, IEEE Big Data

2013 Program Committee, IEEE Big Data

- 2011 Reviewer, TKDE
Reviewer, DMKD
- 2008 Reviewer, TKDE
- 2007 Program Committee, KDD
Reviewer, ICDM
- 2006 UMass Computer Science Graduate Student Faculty Representative
- 2004 UMass Computer Science Graduate Student Union Steward
Reviewer, KDD
- 2002 Reviewer, KDD

Invited Talks

- 2020 Improving Defense Acquisition Workforce Capability in Data Use (Panelist)
The National Academies of Sciences, Engineering, and Medicine
- 2018 Invited Speaker - Department of Mathematics and Statistics
Amherst College (Amherst, MA)

Guest Lecturer - "Data Science for Politics"
Hampshire College (Amherst, MA)
- 2016 Guest Lecturer - "Data Science for Politics"
Hampshire College (Amherst, MA)

Invited Speaker - REU Lunch
University of Massachusetts (Amherst, MA)
- 2014 Panelist - "Big Data Forum"
Points of Light Foundation Annual Conference (Atlanta, GA)
- 2013 Guest Lecturer - "Data Analytics in the Obama Campaign"
New York University, Stern School of Business (New York, NY)

Invited Speaker - "Obama Campaign Analytics"
University of Massachusetts (Amherst, MA)
- 2007 Invited Speaker - "Network Structure Indices for Graph Clustering"
Microsoft Research (Bellevue, WA)

Skills, etc.

I've written code in lots of languages: Python, Java, SQL, R, Javascript, HTML, PHP, Perl, C/C++ (in descending order of recency/familiarity).

I like to drink Moxie and I like to run, though usually not at the same time.

Media Coverage

“How Obama for America Made Its Facebook Friends Into Effective Advocates”
TechPresident (2012) <http://bit.ly/2cXFgcP>

“Friended: How the Obama Campaign Connected with Young Voters”
Time (2012) <http://ti.me/1cTrM8q>

“‘Thank You’ Doesn’t Have to Mean ‘Goodbye’ for Your Donors”
Civic Incubator Blog (2014) <http://bit.ly/2dk2SDB>

“It's All About the Social Media Data”
UMass Alumni Newsletter (2015) <http://bit.ly/2fquqsJ>

“Polling Alone”
Harvard Political Review (2015) <http://bit.ly/1PMhQPM>