

TIM ALTHOFF

CURRICULUM VITAE

Department of Computer Science
Stanford University
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Research areas

Data science, data mining, network analysis, natural language processing, digital health, computational social science, machine learning

Education

Stanford University, Stanford, CA, USA 9/2013 – present
Ph.D. Candidate in Computer Science. Anticipated 6/2018. Thesis: *Data Science for Human Well-being*. M.S. in Computer Science (8/2015)
Advisor: Prof. Jure Leskovec
Thesis committee: Jure Leskovec, Eric Horvitz, Dan Jurafsky, Scott Delp, Trevor Hastie

University of Kaiserslautern, Kaiserslautern, Germany 10/2010 – 7/2013
M.S. in Computer Science. Minor in Cognitive Psychology
Thesis: *Analysis and Forecasting of Trending Topics in Online Media* (won university-wide award)
Advisor: Prof. Andreas Dengel

University of Kaiserslautern, Kaiserslautern, Germany 10/2007 – 9/2010
B.S. in Computer Science. Minor in Mathematics
Thesis: *Scalable Clustering for Hierarchical Content-based Browsing of Large-scale Image Collections*
Advisor: Prof. Thomas Breuel

Research experience

Stanford University, Stanford, CA, USA 9/2013 – present
Research Assistant with Jure Leskovec, Dan Jurafsky, Dan McFarland (8 publications)
Conducted research in data science, data mining, network analysis, natural language processing, computational social science; mentored 11 students; co-author of three grant proposals

Microsoft Research, Redmond, WA, USA 6/2016 – 9/2016
Research Intern with Eric Horvitz, Ryan White (3 publications, 1 patent pending)
Harnessed petabyte-scale search log and sensor data to model cognitive performance and sleep

Google Research, Mountain View, CA, USA 6/2014 – 9/2014
Research Intern with Kevin Murphy, Xin Luna Dong, Evgeniy Gabrilovich (1 publication, 1 patent)
Developed submodular optimization algorithm for content summarization w. provable guarantees

Google Research, Mountain View, CA, USA 5/2013 – 8/2013
Research Intern with David Ross (1 patent)
Implemented embedding-based recommendation methods for YouTube Music used in production

Google Research, Mountain View, CA, USA 5/2012 – 8/2012
Research Intern with David Ross, Douglas Eck, Hrishikesh Aradhye (1 patent)
Designed and implemented a system for automatic music video generation for YouTube Music

University of California, Berkeley, Berkeley, CA, USA 8/2011 – 5/2012
Visiting Researcher with Trevor Darrell (2 publications, 1 technical report)
Developed object detection algorithms enabling multiclass detection in real time

German Research Center for Artificial Intelligence, Kaiserslautern, Germany 11/2009 – 5/2011
Research Assistant with Adrian Ulges, Damian Borth, Andreas Dengel (1 publication, 1 thesis)
Leveraged semantic similarity to improve forecasts of trending topic popularity by 45%

German Research Center for Artificial Intelligence, Kaiserslautern, Germany 5/2009 – 10/2009
Research Assistant with Adrian Ulges, Thomas Breuel (1 publication, 1 thesis)
Reduced image clustering runtime by more than 98% through novel, hierarchical approach

Publications **Articles under review**

- [19] Modeling Interdependent and Periodic Real-World Action Sequences
Takeshi Kurashima, **Tim Althoff**, Jure Leskovec
- [18] Modeling Individual Cyclic Variation in Human Behavior
Emma Pierson, **Tim Althoff**, Jure Leskovec
- [17] I'll be back: On the Multiple Lives of Users of a Mobile Activity Tracking Application
Zhiyuan Lin, **Tim Althoff**, Jure Leskovec

Articles in peer-reviewed journals

- [16] Psychomotor Function Measured via Online Activity Predicts Motor Vehicle Fatality Risk
Tim Althoff, Eric Horvitz, Ryen W. White
[NPJ Digital Medicine](#) (accepted) — 2017
- [15] Population-scale Pervasive Health
Tim Althoff
[IEEE Pervasive Computing](#) (accepted) — 2017
- [14] Large-scale Physical Activity Data Reveal Worldwide Activity Inequality
Tim Althoff, Rok Susic, Jennifer L. Hicks, Abby C. King, Scott L. Delp, Jure Leskovec
[Nature](#) — 2017
Featured globally in over 150 articles including [New York Times](#), [CNN](#), [Washington Post](#), [CBS](#), [BBC](#), [Guardian](#), [TIME](#), [WIRED](#), [Huffington Post](#), [USA Today](#), [Telegraph](#), [arsTechnica](#), [Health.com](#), [ABC2 TV](#), [Süddeutsche Zeitung](#), [SPIEGEL](#), [Stanford News](#), [NIH](#), [NIH OBSSR](#), [American Council on Science and Health](#)
Top 0.0002% Attention Score of 8M articles tracked by Altmetric; Top 0.002% among all Nature articles
- [13] Influence of Pokémon Go on Physical Activity: Study and Implications
Tim Althoff, Ryen W. White, Eric Horvitz
[JMIR](#) — *Journal of Medical Internet Research (JMIR)*, 2016
Awarded #1 most tweeted JMIR article 2016; #4 most tweeted JMIR article all time;
Featured globally in over 140 articles including [Wall Street Journal](#), [Science](#), [BBC](#), [CNN](#), [Washington Post](#), [MIT Technology Review](#), [Forbes](#), [Vox](#), [Telegraph](#), [CNBC](#), [CBS New York](#), [Fortune Magazine](#), [Reddit's front page](#), [IGN](#), [ZDNet](#), [CNet](#), [Slashdot](#)
Top 0.001% Attention Score of 8M articles tracked by Altmetric
- [12] Natural Language Processing for Mental Health: Large Scale Discourse Analysis of Counseling Conversations
Tim Althoff*, Kevin Clark*, Jure Leskovec (* equal contribution)
[TACL](#) — *Transactions of the Association for Computational Linguistics (TACL)*, 2016
Awarded [International Medical Informatics Association Best Paper Award](#) for best paper on clinical natural language processing in 2016
Featured in [BBC TV](#) and [Stanford News](#)

Articles in peer-reviewed conference proceedings

- [11] Harnessing the Web for Population-Scale Physiological Sensing: A Case Study of Sleep and Performance
Tim Althoff, Ryen W. White, Eric Horvitz, Jamie Zeitzer
[WWW](#) — *26th International World Wide Web Conference*, 2017
Featured in [Microsoft Research Blog](#), and [Stanford Medicine Scope](#)
- [10] How Gamification Affects Physical Activity: Large-scale Analysis of Walking Challenges in a Mobile Application
Ali Shameli, **Tim Althoff**, Amin Saberi, Jure Leskovec
[WWW](#) — *26th International World Wide Web Conference*, 2017
Featured in [Wall Street Journal](#)

- [9] Online Actions with Offline Impact: How Online Social Networks Influence Online and Offline User Behavior
Tim Althoff, Pranav Jindal, Jure Leskovec
WSDM — *10th International ACM Conference on Web Search and Data Mining*, 2017
Featured in Wall Street Journal, Science Blog, Stanford News, and Stanford Medicine Scope
- [8] Quantifying Dose Response Relationships Between Physical Activity and Health Using Propensity Scores (workshop paper)
Tim Althoff, Rok Susic, Jennifer L. Hicks, Abby C. King, Scott L. Delp, Jure Leskovec
NIPS ML4H — *Neural Information Processing Systems Workshop on Machine Learning for Health (NIPS ML4H)*, 2016
- [7] TimeMachine: Timeline Generation for Knowledge-Base Entities
Tim Althoff, Xin Luna Dong, Kevin Murphy, Safa Alai, Van Dang, Wei Zhang
KDD — *21st International ACM Conference on Knowledge Discovery and Data Mining*, 2015
- [6] Donor Retention in Online Crowdfunding Communities: A Case Study of DonorsChoose.org
Tim Althoff, Jure Leskovec
WWW — *24th International World Wide Web Conference*, 2015
Featured in Crowdfund Champion, Phys.org, and Stanford News
- [5] How to Ask for a Favor: A Case Study on the Success of Altruistic Requests
Tim Althoff, Cristian Danescu-Niculescu-Mizil, Dan Jurafsky
ICWSM — *8th International AAAI Conference on Weblogs and Social Media*, 2014
Featured globally in over 110 articles including The Economist, The Guardian, The Huffington Post, ABC News, MIT Technology Review, Slate, Gizmodo, International Business Times, Lifehacker, Business Insider, Fast Company, Süddeutsche Zeitung, Scientias.nl
- [4] Analysis and Forecasting of Trending Topics in Online Media Streams
Tim Althoff, Damian Borth, Jörn Hees, Andreas Dengel
MM — *21st ACM International Conference on Multimedia*, 2013
Featured in Technology.org
- [3] Detection Bank: An Object Detection Based Video Representation for Multimedia Event Recognition
Tim Althoff, Hyun Oh Song, Trevor Darrell
MM — *20th ACM International Conference on Multimedia*, 2012
- [2] Sparselet Models for Efficient Multiclass Object Detection
 Hyun Oh Song, Stefan Zickler, **Tim Althoff**, Ross Girshick, Mario Fritz, Christopher Geyer, Pedro Felzenszwalb, Trevor Darrell
ECCV — *12th European Conference on Computer Vision*, 2012
- [1] Balanced Clustering for Content-based Image Browsing
Tim Althoff, Adrian Ulges, Andreas Dengel
GI — *Gesellschaft für Informatik, Proceedings of Informatiktage 2011, Lecture Notes in Informatics - Seminars, Volume S10*, 2011

Patents

- [4] Population-Scale Monitoring of Sleep and Performance via Everyday Interactions
Tim Althoff, Eric Horvitz, Ryan White
Patent US 15/623,101 (pending), 2016
- [3] Providing User-Interactive Graphical Timelines
Tim Althoff, Xin Luna Dong, Kevin Murphy, Safa Alai, Van Dang, Wei Zhang, Evgeniy Gabrilovich
Patent US 20160313876 A1, 2014
- [2] Adaptive Music and Video Recommendations
Tim Althoff, David Ross, Huazhong Ning, Mohamad Tarifi, Wes Cheng
Patent US 20150220525 A1, 2013

- [1] Automatic Music Video Generation Based on Structured Information
Tim Althoff, David Ross, Douglas Eck, Hrishikesh Aradhya
 Patent GP-17534-00-US / GGLEP383US, 2012

Awards	Best Paper Award – Clinical Natural Language Processing 2016 8/2017 For <i>Natural Language Processing for Mental Health: Large Scale Discourse Analysis of Counseling Conversations</i> by International Medical Informatics Association One of five selected among all research papers published in 2016
	#1 most tweeted JMIR article 2016 (within only three weeks) 1/2017 #4 most tweeted JMIR article all time For <i>Influence of Pokémon Go on Physical Activity: Study and Implications</i> by Journal of Medical Internet Research (JMIR)
	Fellow Digital Ecologies Research Partnership 5/2014
	Outstanding Master’s Thesis Award (one of five awarded university-wide) 4/2014 Kreissparkassen Foundation Germany
	Top of class, M.S. degree in Computer Science program 7/2013 Computer Science Department, University of Kaiserslautern
	Dean’s award for the best B.S. degree in Computer Science program (top of class) 12/2010 Computer Science Department, University of Kaiserslautern
Fellowships	Facebook Graduate Fellowship Finalist (global; US\$500) 2/2016
	Stanford Graduate Fellowship, SAP Fellow (tuition + US\$41,700 p.a.) 9/2015 – 8/2018 (awarded to top 3% of Stanford Ph.D. students)
	Facebook Graduate Fellowship Finalist (global; US\$500) 2/2015
	Stanford School of Engineering Fellowship (tuition + US\$39,400 p.a.) 9/2013 – 6/2014
	UC San Diego Jacobs Fellowship (US\$55,463 p.a.; declined) 3/2013
	Fulbright scholarship (US\$21,500; declined) 8/2011 – 5/2012
	UC Berkeley scholarship from German Academic Exchange Service (€26,775) 8/2011 – 5/2012
	German National Merit Foundation Scholarship 7/2009 – 7/2013 (awarded to top-ranked 0.25% of students nationwide; i.a. €3,600 p.a.)
Grant proposal writing	NIH P30 RFA-AG-18-007 Claude D. Pepper Older Americans Independence Centers. 10/2017 Submitted. Conducted and described preliminary data analyses for Co-PI Jure Leskovec
	NIH P41 PAR-17-083 Biomedical Technology Resource Center. 9/2017 Submitted. Co-author and external consultant to Co-PI Jure Leskovec
	NIH U01 RFA-OD-17-004 Leveraging New Technologies to Understand Health Behaviors. 8/2017 Submitted. Co-author and external consultant to Co-PI Jure Leskovec
Advising & mentoring	Hamed Nilforoshan, B.S. student, Columbia University (undergraduate intern) 6/2017 – present
	Mitchell Gordon, Ph.D. student, Stanford University (rotation project) 3/2017 – present
	Emma Pierson, Ph.D. student, Stanford University (rotation project) 11/2016 – present
	Boris Ivanovic, M.S. student, Stanford University (research assistant) 9/2016 – present
	Zhiyan Jerry Lin, Ph.D. student, Stanford University (rotation project) 1/2017 – 10/2017
	Reid Pryzant, Ph.D. student, Stanford University (rotation project) 3/2017 – 10/2017
	Chaitanya Asawa, B.S. student, Stanford University (senior project) 9/2016 – 4/2017
	Takeshi Kurashima, Stanford University (visiting researcher from NTT, Japan) 6/2016 – 4/2017
	Ali Shameli, Ph.D. student, Stanford University (rotation project) 6/2016 – 10/2016
	Pranav Jindal, M.S. student, Stanford University (research assistant) 9/2015 – 6/2016
Kevin Clark, Ph.D. student, Stanford University (rotation project) 3/2015 – 5/2016	

Teaching experience	Guest lecture, Stanford: <i>From Languages to Information (CS124)</i>	3/2017
	Invited lecture, Recruit Holdings of Japan at Stanford	3/2017
	Guest lecture, Friedrich-Alexander-Universität Erlangen-Nürnberg	12/2016
	Guest lecture, Stanford: <i>From Languages to Information (CS124)</i>	3/2016
	Guest lecture, Stanford: <i>Mining Massive Datasets (CS246)</i>	3/2016
	<i>Requested teaching consultation; Positively evaluated and offered teaching consultant position</i>	
	Head teaching assistant, Stanford: <i>Mining Massive Data Sets (CS246; ~300 students)</i>	Winter 2015
	<i>Managed team of 12 TAs; in charge of all course assignments, grading, and logistics</i>	
	Teaching assistant, Stanford: <i>Social & Inform. Network Analysis (CS224W; ~250 students)</i>	Fall 2015
	<i>Developed assignments, supervised 12 project teams, organized poster session, office hours</i>	
Invited talks	e-WEAR Student Society Annual Symposium, Stanford University, CA, USA	9/2017
	Hack-a-thought summit, Harvard Club of NYC, NY, USA	7/2017
	Center for the Study of Language and Information (CSLI), Stanford University, CA, USA	6/2017
	Manber Lab, Psychiatry Department, Stanford University, CA, USA	5/2017
	Mobilize Center Seminar, Stanford University, CA, USA	1/2017
	Max Planck Institute for Software Systems, Saarbrücken, Germany	12/2016
	DFKI Deep Learning Competence Center, Kaiserslautern, Germany	12/2016
	Adidas, Herzogenaurach, Germany	12/2016
	Microsoft Health Intelligence Group, Redmond, WA, USA	6/2016
	Workshop on Wearable Devices & the 24-hour Activity Cycle, Stanford University, CA	4/2016
	Mobilize Center Seminar, Stanford University, CA, USA	10/2015
	Intelligent Systems Lab, University of Amsterdam, Netherlands	1/2013
	Multimedia Computing Group, Delft University of Technology, Netherlands	1/2013
GI Informatiktage 2011, Bonn, Germany	3/2011	
Academic community service	Outstanding Reviewer Award — <i>ACM Int'l Conference on Web-Search and Data Mining</i> , 2016	
	Co-organizer:	
	Workshop on Machine Learning for Health , held at the <i>Conference on Neural Information Processing Systems (NIPS)</i> , 2017	
	Workshop on Observational Studies Through Social Media , held at the <i>International AAAI Conference on Web and Social Media (ICWSM)</i> , 2017	
	Stanford Sports Analytics Club , organized guest speaker event, 2016	
	Program committee member:	
	WWW — <i>International World Wide Web Conference</i> , 2015, 2016; <i>Computational Health Session Chair</i> , 2017; 2018	
	WSDM — <i>ACM International Conference on Web Search and Data Mining</i> , 2016, 2017, 2018	
	KDD — <i>ACM SIGKDD Conference on Knowledge Discovery and Data Mining</i> , 2015, 2016, 2017	
	ICWSM — <i>International AAAI Conference on Web and Social Media</i> , 2016, 2017	
	EMNLP — <i>International ACL Conference on Empirical Methods in Natural Language Processing</i> , 2017	
	MM — <i>ACM International Conference on Multimedia</i> , 2014, 2015	
	NIPS ML4Health — <i>International Workshop on Machine Learning for Health</i> , 2016	
	SocialNLP — <i>International Workshop on Natural Language Processing for Social Media</i> , 2016, 2017	
	HealthRecSys — <i>International Workshop on Health Recommender Systems at ACM RecSys</i> , 2017	
	EuroSymposium — <i>European Symposium Series on Societal Challenges in Computational Social Science</i> , 2017	
	HICSS — <i>Hawaii International Conference on System Sciences</i> , 2017	
Journal reviewer:		
JMIR — <i>Journal of Medical Internet Research</i> , 2016, 2017		
JMIR Mental Health — <i>Journal of Medical Internet Research Mental Health</i> , 2017		
JMIR Serious Games — <i>Journal of Medical Internet Research Serious Games</i> , 2017		
IJHG — <i>International Journal of Health Geographics</i> , 2017		
G4H — <i>Games for Health</i> , 2017		
TIST — <i>ACM Transactions on Intelligent Systems and Technology</i> , 2016		

TKDE — *IEEE Transactions on Knowledge and Data Engineering*, 2016
 CYB — *IEEE Transactions on Cybernetics*, 2014
 IJPRAI — *International Journal of Pattern Recognition and Artificial Intelligence*, 2014

Languages English (fluent), German (native)

Science outreach & selected media coverage (of 400+) *Articles in media:*

The Guardian on *'Paying to stay safe': why women don't walk as much as men* 10/2017
New York Times on *Jakarta, the City Where Nobody Wants to Walk* 8/2017
NIH Office of Behavioral and Social Sciences Research on *Research Spotlights* 8/2017
American Council on Science and Health on *Activity Inequality: What Does That Mean?* 8/2017
CNN on *Why are these countries the most obese? Walking is just one reason* 7/2017
The Washington Post on *Americans take fewer steps than people in China and the U.K., new study reveals* 7/2017
CBS on *Daily step counts: Which countries are most active - and which are least?* 7/2017
BBC on *Do you live in the world's laziest country?* 7/2017
TIME on *How Step Count Data Can Predict Obesity* 7/2017
WIRED on *The problem with fitness studies based on activity apps* 7/2017
Huffington Post on *How Smartphone Data Can Make Healthcare Smarter* 7/2017
Microsoft Research Blog on *Sleep deprived? New study says your performance will suffer* 1/2017
Wall Street Journal on *Want to Exercise More? Try Screen Time* 12/2016
Forbes on *Study Finds Pokémon GO Does Get People Moving, But Whether They'll Keep Moving Remains To Be Seen* 12/2016
Science on *Pokémon Go could add extra years to your life* 10/2016
BBC on *Could playing Pokemon Go could make you live longer?* 10/2016
CNN on *Pokemon Go could add 2.83 million years to users' lives* 10/2016
The Washington Post on *The new (scientifically proven!) way to get fit: Pokémon Go, if you stick with it* 10/2016
MIT Technology Review on *Pokemon Go Increased U.S. Activity Levels by 144 Billion Steps in Just 30 Days* 10/2016
CNBC on *Pokémon Go could add 2.825 million years to US life expectancy* 10/2016
Fortune Magazine on *Playing 'Pokémon Go' Makes You Live Longer, Says Microsoft Study* 10/2016
Reddit's front page on *Scientific Study estimates "Pokémon Go has added a total of 144 billion steps to US physical activity"* 10/2016
The Economist on *We'll see you, anon: Can big databases be kept both anonymous and useful?* 8/2015
The Economist on *Science on the web: Social net, working* 9/2014
The Guardian on *Reddit, Imgur and Twitch team up as 'Derp' for social data research* 8/2014
Huffington Post on *Here's The Secret Formula For Getting Free Pizza, According To Science* 6/2014
ABC News on *How to Ask Strangers for a Free Pizza* 5/2014
MIT Technology Review on *Data Mining Reddit Posts Reveals How to Ask For a Favor, and Get It* 5/2014
Interviews in TV & radio:
Deutschlandfunk Germany (radio) on *Bewegung im Alltag - Da geht noch was!* 8/2017
ABC News Australia (radio) on *Large-scale Physical Activity Data Reveal Worldwide Activity Inequality* 7/2017
610CKTB Bell Media Canada (radio) on *The Larry Fedoruk Show — The problems with fitness studies based on fitness apps* 7/2017
KABC Los Angeles (radio) on *Dr. Drew Midday Live with Mike Catherwood* 7/2017
SiriusXM USA (radio) on *Stand Up with Pete Dominick* 7/2017
BBC (TV) on *Click (covering our research on NLP for crisis counseling and mental health)* 3/2017