Todd Bodnar

CONTACT INFORMATION	*E-mail:* ToddBodnar@gmail.com
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INTERESTS

Data Science, Social Networks, Machine Learning, Big Data

DEGREES

Pennsylvania State University, State College, Pennsylvania USA

PhD, Biology, 2015 (Expected)
Advisor: Marcel Salathé

Pennsylvania State University

B.S., Computer Science, May, 2012
Junior/Senior GPA 3.90
Minor in Mathematics

RESEARCH EXPERIENCE

Research Assistant at the Salathé Group (2012 - Present)
Datamined large datasets including Twitter ($\approx$ 3 Billion Tweets) and Open Street Map
Text classification and Sentiment analysis involving Weka and hand-built tools
Rapid analysis of novel data source involving cellphone-based movement.

Consultant at Human Longevity (Spring 2015)
Social media analytics for trend analysis.

Contractor at Wright Patterson Air Force Base (May - July 2014)
Developed large-scale, unsupervised event detection system using social network data.

Complex Systems Summer School (CSSS) at Santa Fe Institute. (June 2013)
Surveys of the fields of: complexity, nonlinear dynamics, network structure and dynamics, computation theory and adaptive computation techniques, and machine learning.

Teaching Experience: (2012-2015)
JavaScript for modeling for non-programmers (Spring 2015, TA)
Social media analytics (Fall 2014, Guest Lecturer)
Undergraduate microbiology lab (Fall 2013)
Introduction to the Theory of Computation (Spring 2012, Grader)

COMPUTER SKILLS

- Cluster Computing / Hadoop
- Web based psychological game development through Amazon Mechanical Turk
- Machine Learning, Data Mining, Database Management
- Java, Python, BASH, R, Hive, LaTeX
- Basic familiarity with C, JavaScript and PHP

SELECT SOFTWARE DEVELOPED	**Weka Hadoop** https://github.com/ToddBodnar/weka-hadoop Map-Reduce port of Weka's experiment platform **Moocdemic** https://www.moocdemic.com Mobile game simulating outbreaks ($\approx$10,000 users) Developed press release tools using Amazon Turk and A/B testing Created visualizations of game play elements (samples available here) **Crowdbreaks** www.crowdbreaks.com Online disease surveillance system using social media. Worked on back end, developed system for fast processing of large geospatial data sets.

PEER REVIEWED PUBLICATIONS

7. Cosme Adrover, **Todd Bodnar**, Zhuojie Huang, Amalio Asensio Telenti, Marcel Salathé. *Identifying Adverse Effects of HIV Drug Treatment and Associated Sentiments Using Twitter* Journal of Medical Internet Research 2015 Link

6. **Todd Bodnar**, Conrad Tucker, Kenneth Hopkinson, and Sven G. Bilén. *Increasing the Veracity of Event Detection on Social Media Networks Through User Trust Modeling* IEEE BigData 2014 Link

5. **Todd Bodnar**, Victoria Barclay, Nilam Ram, Conrad Tucker and Marcel Salathé. *On the Ground Validation of Online Diagnosis with Twitter and Medical Records* WWW 2014 Link

4. Zhuojie Huang, Udayan Kumar, **Todd Bodnar** and Marcel Salathé. *Understanding Population Displacements on Location-Based Call Records Using Road Data* SIGSPATIAL 2013, Link

3. **Todd Bodnar** & Marcel Salathé. *Validating Models for Disease Detection Using Twitter* WWW 2013 Companion, May 13-17, 2013, Rio de Janeiro, Brazil. Link

2. Marcel Salathé, Linus Bengtsson, **Todd J. Bodnar**, Devon D. Brewer, John S. Brownstein, Caroline Buckee, Ellsworth M. Campbell, Ciro Cattuto, Shashank Khandelwal, Patricia L. Mabry, Alessandro Vespignani. *Digital Epidemiology* Plos Computational Biology, 2012 Link

1. **Todd Bodnar** & Marcel Salathé. *Governing the Global Commons with Local Institutions.* PloS One, 2012 Link

NON-PEER REVIEWED PUBLICATIONS

- Cheryl Abundo, **Todd Bodnar**, John Driscoll, Ian Hatton, and Jody Wright *City population dynamics and fractal transport networks* (Proceedings of Santa Fe Institute Complex Systems Summer School) Link
- **Todd Bodnar** & Marcel Salathé. *The Social Maintance of Cooperation Through Hypocrisy* (arXiv prepub) Link

SELECT PRESENTATIONS

- Todd Bodnar. *How 14 Million Twitter Users Can Inform Us About Disease Transmission* Digital Disease Detection 3 / WWW2015, May 2015
- Todd Bodnar. *Moocdemic.* Game On, March 2014
- Todd Bodnar. *Processing Big-Data for Cheap through Amazon's Elastic Map Reduce.* Hacking Science Seminar, Feburary 2013
- Todd Bodnar, Orhan Kislal, Ying Sun, Hui Yang, Marcel Salathé, Conrad Tucker. *Webs, Clouds and Tweets: Using Social Media to Study the Spatial Dynamics of Influenza.* Center for Integrated Healthcare Delivery Systems, May 2012

OUTREACH	• Session chair at WWW2014 title *Systems for Surveillance and Outbreaks*
	• Ran local meet up for Machine Learning coursera course
	• TA for Coursera course on epidemiology
	• Communicated with 655 journalists as part of a launch of a Massively Multiplayer Online game
MISCELLANEOUS	• Erdős number: 3 (Todd Bodnar $\rightarrow$ Alessandro Vespignani $\rightarrow$ Fan Chung $\rightarrow$ Paul Erdös)
	• American citizenship
	• Links to software and publications available on ToddBodnar.com