Todd Bodnar

CONTACT INFORMATION		*E-mail:*	ToddBodnar@gmail.com
		Web:	ToddBodnar.com
		Phone:	(650) 731-2586

RESEARCH INTERESTS

Data Science, Social Networks, Machine Learning, Big Data

DEGREES

Pennsylvania State University, State College, Pennsylvania USA

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

Pennsylvania State University

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

ACADEMIC RELATED EXPERIENCE

Research with the Salathé Group
Datamined large datasets including Twitter (>1 tb) and Open Street Map (400 gb)
Text classification and Sentiment analysis involving Weka, Rapid Miner, and hand-built tools
Rapid analysis of novel data source involving cellphone-based movement. (Less than one day from data acquisition to report.)

Complex Systems Summer School (CSSS) at Santa Fe Institute. (June 3-28, 2013)

Grader for Cmpsc 464 (January 2012 - April 2012)
Graded homework for the senior level class: "Introduction to the Theory of Computation"
Topics covered include automata, Turing machines and complexity.

Undergraduate research with Dr. Eric Charles
Penn State psychology department.
Developed models for modified prisoner's dilemma games (MOTH).
Developed Map-Reduce tool for running NetLogo simulations on multiple computers. Link

PEER REVIEWED PUBLICATIONS

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, in press.

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

IN PREP AND NON-PEER REVIEWED PUBLICATIONS

- **Todd Bodnar** & Marcel Salathé. *Detecting Hidden Information Flow on Twitter* (arXiv prepub) Link
- 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](#)

INVITED TALKS

1. Todd Bodnar. *The next generation of individual-based online surveillance.(working title)* Santa Fe Institute, 2014

SELECT PRESENTATIONS

3. Todd Bodnar, John Driscoll. *Arbortrons.* Santa Fe Institute, 2013

2. Todd Bodnar. *Processing Big-Data for Cheap through Amazon's Elastic Map Reduce.* Hacking Science Seminar, 2013

1. 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, 2012

SOFTWARE

SuperStalker
Long term Twitter social network and user information collection

Crowdbreaks [Link](#)
Online disease surveillance system using social media.
Worked on backend, developed system for fast processing of large geospatial data sets.

ClusterLogo [Link](#)
Map-Reduce-Style addon for Net Logo.

COMPUTER SKILLS

- Cluster Computing / Hadoop
- Web based psychological game development through Amazon Mechanical Turk
- Machine Learning, Data Mining, Database Management
- General software design / programing
- Java, Python, BASH, R, MatLab, LaTeX

OUTREACH

- 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