



# Tom Effland

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## Contact

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## Research Interests

Natural language processing, machine learning, semi-supervised and active learning, grounded knowledge discovery, intelligent assistance, decision support systems.

## Education

**Columbia University**, New York, New York USA

Ph.D., Computer Science, Expected May, 2020

M.S., Computer Science, December, 2016

Research Area: Information Extraction, Natural Language Processing, Machine Learning

Advisers: Prof. Michael Collins and Prof. Daniel Hsu

**University at Buffalo, The State University of New York**, Buffalo, New York USA

B.S., Applied Mathematics, Honors, May, 2015

Minors in Computer Science and Statistics, (*GPA: 3.99/4.0*)

## Research Experience

**Columbia University**, New York, New York USA

*Graduate Research Assistant*

**September, 2017 - Present**

Department of Computer Science

- Researching semi-supervised learning of broad-coverage grounded semantic parsing using variational bayesian methods, with a focus on leveraging existing structured knowledge.
- *Project Advisers:* Prof. Michael Collins and Prof. David Blei

*Graduate Research Assistant*

**August, 2015 - July, 2017**

Department of Computer Science

- Researched principled methods and strategies for extraction of actionable information from rare events on social media
- Collaborated with NYC Department of Health to identify foodborne illness outbreaks from Yelp and Twitter to facilitate targeted investigation of restaurants
- *Project Advisers:* Prof. Luis Gravano and Prof. Daniel Hsu

**TextIQ Inc.**, New York, New York USA

*Research Intern*

**June, 2016 - August, 2016**

- Researched novel techniques for natural language interfaces, semantic parsing, and question answering over structured knowledge sources
- Implemented a system for automatically building question answering chatbots from scratch for new structured data sources

**University of Illinois at Urbana-Champaign**, Urbana, Illinois USA

*Research Assistant*

**June, 2014 - August, 2014**

Passionate on Parallel NSF-Supported REU, Parallel Computing Institute

- Researched techniques for using Hadoop to automatically parallelize scientific codes
- Parallelized atmospheric science pollution simulation research software with MPI
- *Project Advisers:* Prof. Nicole Riemer, Prof. Matthew West

**University at Buffalo, The State University of New York**, Buffalo, New York USA

*Independent Honors Research*

**August, 2014 - April, 2015**

Department of Computer Science

- Won 1st place in ACM SIGCSE Undergraduate Student Research Competition Grand Finals

- Researched and developed context-focused web crawling framework for extracting similar content from heterogeneous seed domains.
- Specific application was retrieval of university course descriptions given only domain names.
- *Project Adviser:* Prof. Bina Ramamurthy

*NASA Europa Challenge Team Member, iGlobe project*

**March, 2014 - May, 2014**

Department of Computer Science

- Won 2nd place University Project in international software competition
- Researched and coordinated implementation of weather API interface layer into iGlobe
- *Project Adviser:* Prof. Varun Chandola

*Research Assistant*

**January, 2013 - May, 2014**

Department of Computer Science, Department of Mathematics

URGE to Compute NSF-Supported REU

- Developed scalable, accurate, and secure matching algorithms for fingerprints
- Researched machine learning and error correcting code applications to secure fingerprint matching
- *Project Advisers:* Prof. Atri Rudra, Prof. John Ringland

## Journal Publications

**T. Effland**, Anna Lawson, Sharon Balter, Katelynn Devinney, Vasuhda Reddy, Luis Gravano, Daniel Hsu. Discovering Foodborne Illness in Online Restaurant Reviews. *Journal of the American Medical Informatics Association*, Volume 25, Issue 12, 1 December 2018, Pages 1586 - 1592, <https://doi.org/10.1093/jamia/ocx093>

## Conference Publications

**T. Effland**. 2015. Focused Retrieval of University Course Descriptions from Highly Variable Sources. In *ACM Student Research Competition Undergraduate Grand Finals*. **First Place Award**.

J. Hartloff, M. Morse, B. Zhang, **T. Effland**, J. Cordaro, J. Schuler, S. Tulyakov, A. Rudra, V. Govindaraju. 2015. A Multiple Server Scheme for Fingerprint Fuzzy Vaults. In *Computer Vision and Pattern Recognition Workshops (CVPRW), 2015 IEEE Conference on*.

M. Morse, J. Hartloff, **T. Effland**, J. Schuler, J. Cordaro, S. Tulyakov, A. Rudra, V. Govindaraju. 2014. Secure Fingerprint Matching With Generic Local Structures. In *Computer Vision and Pattern Recognition Workshops (CVPRW), 2014 IEEE Conference on*. pages 84-89.

**T. Effland**, M. Schneggenburger, J. Schuler, B. Zhang, J. Hartloff, J. Dobler, S. Tulyakov, A. Rudra, V. Govindaraju. 2014. Secure fingerprint hashes using subsets of local structures. In *Proc. SPIE 9075-12, Biometric and Surveillance Technology for Human and Activity Identification XI, 90750D*.

## Conference Presentations

**T. Effland**. Focused Retrieval of University Course Descriptions from Highly Variable Sources. ACM SIGCSE Student Research Competition, Kansas City, Missouri, March, 2015.

**T. Effland**, M. Schneggenburger, J. Schuler, B. Zhang, J. Hartloff, J. Dobler, S. Tulyakov, A. Rudra, V. Govindaraju. Secure fingerprint hashes using subsets of local structures. SPIE Defense, Sensing, Security Biometrics Workshop, Baltimore, Maryland, May, 2014.

**T. Effland**, M. Schneggenburger, J. Schuler. Fingerprints as Passwords. National Conference for Undergraduate Research (NCUR), Lexington, Kentucky, April, 2014.

## Poster Presentations

Drashko Nakikj, **T. Effland**. The Posts Recommendation Algorithm for dExplorer. Columbia University Data Visualization and Exploration Poster Event, New York, New York, May, 2017.

**T. Effland**. Identifying Foodborne Illness from Social Media. Columbia University Data Science Day, New York, New York, April, 2016.

**T. Effland.** Focused Retrieval of University Course Descriptions from Highly Variable Sources. University at Buffalo Celebration of Excellence, Buffalo, New York, April, 2015.

**T. Effland.** Focused Retrieval of University Course Descriptions from Highly Variable Sources. ACM SIGCSE Student Research Competition, Kansas City, Missouri, March, 2015.

## Professional Experience

**Instabeat, Inc.,** San Francisco, California, USA

*Technical Consultant*

**June, 2018 - September 2018**

- Developed and deployed machine learning pipeline for supporting application technology.

**NYC Department of Health and Mental Hygiene,** New York, New York, USA

*Technical Consultant*

**January, 2016 - Present**

- Development and integration of social media analysis software for automatically detecting possible foodborne illness outbreaks

**Schussmeisters Ski Club, Inc.,** Buffalo, New York, USA

*Technical Consultant*

**May, 2013 - April, 2015**

- Synthesized business needs and developed integrated data management application to provide business organization and analytics for informing data-driven decisions by board members
- Developed and implemented club website servicing over 1,200 members

*Marketing Director*

**May, 2012 - May, 2013**

- Utilized communication and planning skills to supervise approximately 20 volunteers daily
- Successfully increased annual membership totals from approximately 1,100 members to 1,250 by effective promotion and innovative advertising methods

## Technical Skills

**Languages:** Python , Javascript

**Libraries & Frameworks:** PyTorch, Tensorflow, Pandas, SpaCy, Jupyter, Scikit-Learn

**Web & Visualization:** HTML, CSS, jQuery, d3, React, Matplotlib, Jupyter

**Data:** JSON, XML, SQL, MongoDB, PostgreSQL, Neo4J, ElasticSearch

## Honors and Awards

**Columbia University:**

- Northeast Big Data Hub Young Innovators Award
- NSF Graduate Research Fellowship
- NSF IGERT "From Data to Solutions" Fellowship

**June, 2016**  
**April, 2016**  
**August, 2015**

**University at Buffalo:**

- 1st Place - ACM Student Research Competition Grand Finals
- Outstanding Senior Award, Mathematics Department
- NSF Data-Intensive Computing Fellowship (NSF-DUE-CCLI-0920335)
- 2nd Place - NASA Europa International Software Competition
- Harriet F. Montague Award
- Phi Beta Kappa
- Grace Capen Academic Award
- Provost Scholarship
- Deans List

**May, 2015**  
**May, 2015**  
**August, 2014**  
**June, 2014**  
**May, 2014**  
**February, 2014**  
**May, 2013**  
**Fall 2011 - Spring 2015**  
**Fall 2011 - Spring 2015**