

# Svitlana Volkova, PhD

---

**CONTACT INFORMATION** Pacific Northwest National Laboratory Voice: 443 668 0013  
Data Sciences and Analytics E-mail: [svitlana.volkova@pnnl.gov](mailto:svitlana.volkova@pnnl.gov)  
Computational and Statistical Analytics <http://www.cs.jhu.edu/~svitlana/>  
National Security Directorate <https://www.linkedin.com/in/svitlanavolkova>  
Address: 902 Battelle Blvd, Richland, WA USA 99354

---

**RESEARCH INTERESTS** Natural language processing; machine learning; computational social science; social media analytics; deep learning for NLP applications: forecasting social media dynamics – real-word events, opinions and emotions, disease outbreaks, language change, entity and event-driven connotations; deception detection and tracking, information biases and factuality assessment in news and social media; multilingual social media analysis.

---

**EDUCATION**

**Johns Hopkins University, Center for Language and Speech Processing**  
**Ph.D.**, Computer Science 09/2010 – 10/2015  
Dissertation: Predicting Demographics and Affect in Social Networks  
Advisor: Benjamin Van Durme  
Dissertation Committee: David Yarowsky, Philip Resnik

**Kansas State University**, Manhattan, KS USA  
**M.S.**, Computer Science 08/2008 – 08/2010  
Thesis: Entity Extraction, Animal Disease-Related Event Recognition from Web. Advisors: William H. Hsu, Doina Caragea. GPA: 3.7

**Petro Mohyla Black Sea State University**, Mykolayiv Ukraine  
**M.S. cum Laude, B.S. cum Laude**, Computer Science 09/2000 – 03/2006  
Thesis: Building a System for Testing Knowledge of Students in Engineering. Advisor: Yuriy Kondratenko. GPA: 4.0

---

**PROFESSIONAL EXPERIENCE**

**Pacific Northwest National Laboratory**, Richland, US  
Senior Research Scientist, Data Sciences and Analytics  
National Security Division 10/2015 – now  
PI on projects: (1) deception detection and tracking in social and news media, and (2) streaming query user interfaces. Co-PI on projects: (1) deep learning of multilingual distributed representations from large streaming data, and (2) forecasting the future using diverse social media sources.  
Contributed to projects on forecasting influenza dynamics using deep learning and social media, multilingual connotation dynamics, concept drift and meaning shift over time, account deletion prediction in social media.

**Microsoft Research**, Cambridge, UK  
Research Intern, Machine Learning and Perception Group  
*Mentor: Yoram Bachrach* 06/2014 – 09/2014  
Developed a demo system (presented at AAI'15) for automatically inferring psycho-demographics profiles, emotions and sentiments from texts in social media. Studied the correlations between predicted online identities

---

and projected emotions and opinions in online social networks (ACL'16).

**Microsoft Research**, Redmond, WA USA

Research Intern, Natural Language Processing Group

*Mentors: Bill Dolan and Luke Zettlemoyer* 05/2012 – 08/2012

Developed an approach (presented at ACL'13) for learning dialog systems with light supervision; implemented a system that extracts task knowledge from instructional text and learns a dialog manager over this knowledge.

*Mentor: Bill Dolan* 05/2011 – 08/2011

Worked on modeling human-computer interactions in an Xbox domain (presented at ACL'12); managed crowdsourcing of grounded multilingual subjective descriptions of the Xbox avatars (presented at NAACL'13).

---

**TECHNICAL  
SKILLS AND  
LANGUAGES**

**Expert knowledge:** Social Media Predictive Analytics, Natural Language Processing, Text Analytics, Machine Learning, Deep Learning, Social Networks, Data Mining, Probability and Statistics, Information Retrieval, Information Extraction, Artificial Intelligence, Graphs and Optimization

**Programming languages:** Python, Java, C# **Databases:** SQL, MongoDB

**ML tools:** scikit-learn, keras, tensorflow, R, matplotlib

**Languages:** English (fluent), Russian and Ukrainian (native).

---

**PUBLICATIONS**

Papers, presentations, posters, demos, code and data:

<http://www.cs.jhu.edu/~svitlana/>

*Contrasting Public Opinion Dynamics and Emotional Response during Crisis.* **S. Volkova**, I. Chetviorkin, D. Arendt, and B. Van Durme. SocInfo16.

*Using Social Media to Measure Student Wellbeing: A Large-Scale Study of Emotional Response in Academic Discourse.* **S. Volkova**, K. Han, and C. Corley. SocInfo 2016.

*Account Deletion Prediction on RuNet: A Case Study of Suspicious Twitter Accounts Active During the Russian-Ukrainian Crisis.* **S. Volkova** and E. Bell. NAACL Workshop on Computational Approaches to Deception Detection.

*Understanding Roles of Social Media in Academic Engagement and Satisfaction for Graduate Students.* K. Han, **S. Volkova**, and C. Corley. CHI 2016.

*Inferring Perceived Demographics from User Emotional Tone and User-Environment Emotional Contrast.* **S. Volkova** and Y. Bachrach. ACL 2016.

*Mining User Interests to Predict Perceived Psycho-Demographic Traits on Twitter.* **S. Volkova**, Yoram Bachrach and B. Van Durme. IEEE BigData 2016.

*On Predicting Socio-Demographic Traits and Emotions in Social Networks and Implications to Online Self-Disclosure.* **S. Volkova** and Y. Bachrach. Cyberpsychology, Behavior, and Social Networking, 2015.

*Studying User Income through Language, Behaviour and Affect in Social Media.* D. Preotiuc-Pietro, **S. Volkova**, V. Lampos, Y. Bachrach and N. Aletras. PLoS ONE 10(9), 2015.

*Using Emotions to Predict User Interest Areas in Online Social Networks.* Y.

---

Lewenberg, Y. Bachrach and **S. Volkova**. IEEE DSAA 2015.

*Online Bayesian Models for Personal Analytics in Social Media*. **S. Volkova**, B. Van Durme. AAI 2015.

*Inferring Latent User Properties from Texts Published in Social Media (Demo)*. **S. Volkova** and Y. Bachrach. AAI 2015.

*Improving Gender Prediction of Social Media Users via Weighted Annotator Rationales*. **S. Volkova** and D. Yarowsky. NIPS Workshop on Personalization: Methods and Applications 2014.

*Inferring User Political Preferences from Streaming Communications*. **S. Volkova**, G. Coppersmith, and B. Van Durme. ACL 2014.

*Exploring Demographic Language Variations to Improve Multilingual Sentiment Analysis in Social Media*. **S. Volkova**, T. Wilson, and D. Yarowsky. EMNLP 2013.

*Lightly Supervised Learning of Procedural Dialog Systems*. **S. Volkova**, P. Choudhury, C. Quirk. B. Dolan and L. Zettlemoyer. ACL 2013.

*Exploring Sentiment in Social Media: Bootstrapping Subjectivity Clues from Multilingual Twitter Streams*. **S. Volkova**, T. Wilson, and D. Yarowsky. ACL 2013.

*Learning to Relate Literal and Sentimental Descriptions of Visual Properties*. M. Yatskar, **S. Volkova**, A. Celikyilmaz, B. Dolan and L. Zettlemoyer. NAACL-HLT 2013.

*CLex: A Lexicon for Exploring Color, Concept and Emotion Associations in Language*. **S. Volkova**, B. Dolan, T. Wilson. EACL 2012.

*Boosting Biomedical Entity Extraction by using Syntactic Patterns for Semantic Relation Discovery*. **S. Volkova** et al. IEEE/ACM WI & IAT 2010.

*Computational Knowledge and Information Management in Veterinary Epidemiology*. **S. Volkova**, D. Caragea et al. IEEE ISIC 2010.

*Animal Disease Event Recognition and Classification*. **S. Volkova** et al. WWW Workshop on Web Science and Information Exchange in Medical Web, 2010.

**10 long papers** published in journals of the Ukrainian National Academy of Science and **15 short papers** published in conference proceedings:  
<http://svolkova.weebly.com/publications.html>

---

**PATENTS**

*Methods to Determine Likelihood of Social Media Account Deletion*. E. Bell and S. Volkova.

*Crowdsourced, Grounded Language for Intent Modeling in Conversational Interfaces*. C. Brockett, P. Choudhury, B. Dolan, Y. C. Ju, P. Pantel, N. Mallory, and S. Volkova.

---

**AWARDS AND DIPLOMAS**

2016	<b>Author of the Year, National Security Directorate</b>
2016	<b>Grace Hopper Invited Speaker, Artificial Intelligence Track</b>
2010	<b>Google Anita Borg Memorial Scholarship Award</b>
2008	<b>Fulbright Graduate Student Scholarship Award</b>

---

**PROFESSIONAL SERVICE** Social Media Area Chair at ACL 2017  
Co-organizer of the Workshop on NLP and Computational Social Science at WebSci 2016, EMNLP 2016 and ACL 2017  
Co-organizer of the Women in Machine Learning Workshop in 2015  
Co-chair of a Joint Workshop on Social Dynamics and Latent Attribute Prediction in Social Media at ACL 2014  
Co-chair of the ACL Student Research Workshop 2014  
I serve on a Program Committee for top-tier conferences: ACL, TACL, EACL, NAACL, EMNLP, AAAI, WWW, IEEE journals, ACL workshops, and Grace Hopper Conference

---

**TEACHING EXPERIENCE** **Johns Hopkins University** Baltimore, MD USA  
*Teaching Assistant, Computer Science Department* 09/2010 – 12/2010  
Machine Learning, Prof. Mark Dredze  
**Petro Mohyla Black Sea State University**, Mykolayiv Ukraine  
*Assistant, Computer Science Department* 07/2004 – 03/2006  
Taught graduate and undergraduate courses: algorithms and programming languages, operation analysis, web-design, and physics.

---

**INVITED TALKS TUTORIALS** 10/21/16 Invited Speaker at the Grace Hopper Conference, AI Track  
05/13/16 Invited Seminar at the University of Maryland Baltimore County, MD  
02/25/16 Invited CS Seminar at the University of Washington, Seattle WA  
02/25/16 Invited Seminar at Northwestern University, Seattle WA  
05/31/15 NAACL Tutorial on Social Media Predictive Analytics, Denver  
04/15/15 Microsoft Research, Natural Language Processing Group, WA  
04/13/15 Pacific Northwest National Laboratory, WA  
03/17/15 Microsoft Research, Machine Learning Group, Cambridge UK  
03/16/15 Psychometrics Center, University of Cambridge, Cambridge UK  
02/18/15 CLIP Seminar and Guest Lecture, University of Maryland, MD  
01/30/15 People Pattern, Austin TX  
11/13/14 Penn Positive Psychology Center, World Well-Being Project, PA  
11/12/14 Penn Computational Linguistics Group, Philadelphia  
11/07/14 Amazon Fall 2014 Graduate Research Symposium, Seattle  
09/12/14 University of Cambridge, Computer Laboratory, Cambridge UK

---

**MEMBERSHIPS** Fulbright Alumni Association, Association for Computational Linguistics (ACL), Women in Machine Learning (WiML), IEEE and IEEE Women in Engineering, ACM and ACM Women in Computing.

---