

# VLAD A. EIDELMAN

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## EDUCATION

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- University of Maryland**, College Park, MD 2008-2013  
Ph.D. in Computer Science  
M.S. in Computer Science | GPA: 3.80 2008-2010  
Dissertation: *Improved Online Learning and Modeling for Feature-Rich Discriminative Machine Translation*  
Advisor: Philip Resnik
- Columbia University**, New York, NY 2004-2008  
B.S. in Computer Science | Minor: Philosophy | GPA: 3.84 | *Magna Cum Laude*  
Advisor: Kathleen R. McKeown

## RESEARCH INTERESTS

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Natural Language Processing, Machine Learning, Large-Scale Data Analysis, Statistical Machine Translation, Computational Social Science, Explainable Machine Learning, Artificial Intelligence

## HONORS AND AWARDS

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- National Defense Science and Engineering Graduate Fellowship (NDSEG)** 2010  
▪ 200 awarded from 2,600 applicants to individuals who have demonstrated the ability and special aptitude for advanced training in science and engineering
- National Science Foundation Graduate Research Fellowship (NSF GRFP)** 2010  
▪ 2,000 awarded from 12,000 applicants to individuals selected early in their graduate careers based on their demonstrated potential for significant achievements in STEM
- John D. Gannon Research Award** – Computer Science, University of Maryland 2009  
▪ 3 awarded to 1<sup>st</sup> year Ph.D. students
- Block Grant Fellowship** – Computer Science, University of Maryland 2008
- Theodore R. Bashkow Award** – Computer Science, Columbia University 2008  
▪ 1 awarded to Computer Science senior who has excelled in independent projects
- Dean's List** – Columbia University 2004-2007
- Comcast Leaders and Achievers Scholarship** 2004
- Maryland Distinguished Scholar Semifinalist** 2004

## PROFESSIONAL EXPERIENCE

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- FiscalNote Inc.**, Washington, DC 12/2013-present  
*Vice President of Research* 09/2014-present  
*Senior Principal Scientist* 12/2013-08/2014
- Lead all stages of research for building data products by envisioning, designing, creating, engineering, implementing and communicating solutions for analyzing, investigating, interpreting, modeling, and extracting knowledge from mostly unstructured external and internal open and proprietary data related to government, policy, law, news, and social media

- Projects include entity extraction, graph analysis, keyphrase extraction, similarity detection, clustering, stance detection, sentiment analysis, predictive analytics, natural language interaction, conversational systems, information retrieval and search
- Methods include binary, multilabel, and multiclass classification, sequence labeling, generalized linear models, deep neural networks, and online and offline systems
- Hire and manage Research and Data Science team consisting of 6 FTE by designing and executing on recruiting, interviewing, onboarding, and a continuous growth and development process
  - Created and implemented process for experimental development to allow research team to maintain autonomy and experimental cadence while creating alignment and transparency with stakeholders.
- Develop and communicate research vision, strategy and performance metrics, including evaluating quality and performance of algorithms and models, to all departments and executives with an understanding of impact on business
- Collaborate closely with Product and Engineering leadership and teams to drive innovation in product development roadmap, identify pain points and research based solutions, and set guidance for product execution
- Support Business Development and Marketing through internal customer facing interaction, marketing through content creation for public consumption, investor relations through technical due diligence from Series A funding round onward, and partnerships through collateral and prototyping
- Lead patenting strategy and drafting of technical descriptions, authored 10 patent applications, resulting in 1 granted and 9 active
- Actively participate in research community through reviewing and publishing papers in top-tier ML/NLP conferences and speaking events. Work featured in media such as Wired, Vice News, Washington Post and Newsweek.

**University of Maryland, College Park, MD** 07/2008-12/2013  
*Graduate Research Assistant, Department of Computer Science and the Laboratory for Computational Linguistics and Information Processing at the Institute for Advanced Computer Studies*

- Conducted research and published papers on a variety of topics in natural language processing and machine learning, including sequence labeling, clustering, topic modeling, and machine translation

**Raytheon BBN Technologies, Cambridge, MA** 10/2012-07/2013  
*Speech, Language & Multimedia Technologies Research Intern*

- Developed semantically oriented and neural translation models

**Johns Hopkins University, Baltimore, MD** 06/2010-08/2010  
*Graduate Research Assistant, Center for Language & Speech Processing, Summer Workshop on Models of Synchronous Grammar Induction for SMT*

- Implemented online large-margin structured learning algorithm for cost-augmented inference

**The Johns Hopkins University Applied Physics Laboratory, Laurel, MD** 06/2008-08/2008  
*Applied Information Sciences Department Intern*

- Contributed to developing a measurement agent for runtime software integrity verification

**Columbia University, New York, NY** 01/2007-01/2008  
*Research Assistant, Natural Language Processing Group*

- Created learning algorithm for temporal resolution exploiting article structure and temporal references in text

**Johns Hopkins University, Baltimore, MD** 05/2007-08/2007

*Research Assistant, Center for Language & Speech Processing, Summer Workshop on Exploiting Lexical and Encyclopedic Resources For Entity Disambiguation*

- Contributed to the development of BART, the Beautiful Anaphora Resolution Toolkit, a machine-learning based toolkit for coreference resolution

**Towson University**, Towson, MD

06/2006-08/2006

*National Science Foundation Undergraduate Research Fellow*

- Explored different statistical models for controlling agent behavior using neural networks

**National Security Agency**, Linthicum, MD

Summer 2003/2004

*NSA Gifted and Talented Program Intern*

- Experimented with a variety of technology related security topics using software in Unix and Windows environments
- Created and implemented an Intrusion Detection System model

**Honeywell TSI**, Columbia, MD

09/2003-01/2004

*Datalynx Programming Intern*

- Developed software for Windows/Unix environments to process and visualize data from satellite transmissions

## TEACHING EXPERIENCE

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**University of Maryland**, College Park, MD

Spring 2011

*Teaching Assistant, Department of Computer Science, Computational Linguistics II*

- Graded homework assignments and exams
- Designed and presented lecture on Maximum Entropy modeling and CRFs

**Technology Instruction Corp.**, Bethesda, MD

06/2005-08/2005

*Computer Programming Instructor*

- Educated students in AI concepts for game programming in MW Logo, VB, and C++
- Guided students in creating final project in chosen technical language

## REFEREED CONFERENCE PUBLICATIONS

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1. **V. Eidelman**, A. Kornilova, and D. Argyle. How Predictable is Your State? Leveraging Lexical and Contextual Information for Predicting Legislative Floor Action at the State Level. In *Proceedings of the 27<sup>th</sup> International Conference on Computational Linguistics (COLING)*, Sante Fe, NM, 20-25 August, 2018
2. Kornilova, D. Argyle, and **V. Eidelman**. Party Matters: Enhancing Legislative Embeddings with Author Attributes for Vote Prediction. In *Proceedings of the 56th Annual Meeting of the Association for Computational Linguistics (ACL)*, Melbourne, Australia, 15-20 July, 2018
3. Y. Hu, K. Zhai, **V. Eidelman**, and J. Boyd-Graber. Polylingual Tree-Based Topic Models for Translation Domain Adaptation. In *Proceedings of the 52nd Annual Meeting of the Association for Computational Linguistics (ACL)*, Baltimore, MD, 22-27 June 2014
4. **V. Eidelman**, K. Wu, F. Ture, P. Resnik, and J. Lin. Mr. MIRA: Open-Source Large-Margin Structured Learning on MapReduce. In *Proceedings of the 51th Annual Meeting of the Association for Computational Linguistics (ACL)*, Sofia, Bulgaria, 4-9 August, 2013
5. **V. Eidelman**, Y. Marton, and P. Resnik. Online Relative Margin Maximization for Statistical Machine Translation. In *Proceedings of the 51th Annual Meeting of the Association for Computational Linguistics (ACL)*, Sofia, Bulgaria, 4-9 August, 2013
6. **V. Eidelman**. Unsupervised Feature-Rich Clustering. In *Proceedings of the 24<sup>th</sup> International Conference on Computational Linguistics (COLING)*, Mumbai, India, 10-14 December, 2012

7. **V. Eidelman**, J. Boyd-Graber, and P. Resnik. Topic Models for Dynamic Translation Model Adaptation. In *Proceedings of the 50th Annual Meeting of the Association for Computational Linguistics (ACL)*, Jeju, Korea, 9-11 July, 2012
8. **V. Eidelman**, Z. Huang, and M. Harper. Lessons Learned in Part-of-Speech Tagging of Conversational Speech. In *Proceedings of the 2010 Conference on Empirical Methods in Natural Language Processing (EMNLP)*, Cambridge, Massachusetts, 9-11 October, 2010
9. C. Dyer, A. Lopez, J. Ganitkevitch, J. Weese, F. Ture, P. Blunsom, H. Setiawan, **V. Eidelman**, and P. Resnik. cdec: A Decoder, Alignment, and Learning Framework for Finite-State and Context-Free Translation Models. In *Proceedings of the Association for Computational Linguistics (ACL)*, Uppsala, Sweden, 11-16 July, 2010
10. Z. Huang, **V. Eidelman**, and M. Harper. Improving A Simple Bigram HMM Part-of-Speech Tagger by Latent Annotation and Self-Training. In *Proceedings of the North American Chapter of the Association for Computational Linguistics - Human Language Technologies (NAACL-HLT)*, Boulder, Colorado, 1-3 June, 2009
11. Y. Versley, S. Ponzetto, M. Poesio, **V. Eidelman**, A. Jern, J. Smith, X. Yang, and A. Moschitti. BART: A Modular Toolkit for Coreference Resolution. In *Proceedings of the 46th Annual Meeting of the Association for Computational Linguistics (ACL)*, Columbus, Ohio, 16-18 June, 2008
12. Y. Versley, S. Ponzetto, M. Poesio, **V. Eidelman**, A. Jern, J. Smith, X. Yang, and A. Moschitti. BART: A Modular Toolkit for Coreference Resolution. In *Proceedings of the 6th International Conference on Language Resources and Evaluation (LREC)*, Marrakech, Morocco, 28-30 May, 2008

## REFEREED WORKSHOP PUBLICATIONS

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1. Y. Hu, K. Zhai, **V. Eidelman**, and J. Boyd-Graber. Topic Models for Translation Model Adaptation. In *Proceedings of the NIPS 2013 workshop on Topic Models: Computation, Application, and Evaluation*. Lake Tahoe, CA, 9-10 December 2013
2. **V. Eidelman**, K. Wu, F. Ture, P. Resnik, and J. Lin. Towards Efficient Large-Scale Feature-Rich Statistical Machine Translation. In *Proceedings of the Eighth Workshop on Statistical Machine Translation (WMT)*, Sofia, Bulgaria, 8-9 August, 2013
3. **V. Eidelman**. Optimization Strategies for Online Large-Margin Learning in Machine Translation. In *Proceedings of the Seventh Workshop on Statistical Machine Translation (WMT)*, Montreal, Canada, 7-8 June, 2012
4. **V. Eidelman**, K. Hollingshead, and P. Resnik. Noisy SMS Machine Translation in Low-Density Languages. In *Proceedings of the Sixth Workshop on Statistical Machine Translation*, Edinburgh (WMT), UK, 30-31 July, 2011
5. C. Hu, P. Resnik, Y. Kronrod, **V. Eidelman**, O. Buzek, and B. Bederson. The Value of Monolingual Crowdsourcing in a Real-World Translation Scenario: Simulation using Haitian Creole Emergency SMS Messages. In *Proceedings of the Sixth Workshop on Statistical Machine Translation (WMT)*, Edinburgh, UK, 30-31 July, 2011
6. **V. Eidelman**, C. Dyer, and P. Resnik. The University of Maryland Statistical Machine Translation System for the Fifth Workshop on Machine Translation. In *Proceedings of the Joint Fifth Workshop on Statistical Machine Translation and Metrics MATR (WMT)*, Uppsala, Sweden, 15-16 July, 2010
7. **V. Eidelman**. Inferring Activity Time in News through Event Modeling. In *Proceedings of the Association for Computational Linguistics (ACL) Student Research Workshop*, Columbus, Ohio, 16-18 June, 2008

## JOURNAL ARTICLES

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1. M. Livermore, B. Grom and **V. Eidelman**. Computationally Assisted Participatory Rulemaking. 93 *Notre Dame Law Review*. 2018

2. G. Trajkovski, G. Stojanov, S. Collins, **V. Eidelman**, C. Harman, and G. Vincenti. Cognitive Robotics and Multiagency in a Fuzzy Modeling Framework. *International Journal of Agent Technologies and Systems*. 1(1):50-73, 2009

## BOOK CHAPTERS

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1. M. Livermore, B. Grom and **V. Eidelman**. “Computationally Assisted Participatory Rulemaking.” *Law as Data: Computation and the Future of Legal Analysis*. Santa Fe: SFI Press, 2018. *Forthcoming*.
2. **V. Eidelman**, A. Kornilova and D. Argyle. “Modeling Effective Lawmaking.” *Law as Data: Computation and the Future of Legal Analysis*. Santa Fe: SFI Press, 2018. *Forthcoming*.

## TECHNICAL REPORTS

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1. D. Argyle, P. Resnik, and **V. Eidelman**. Using Ideal Point Models to Characterize Political Reactions in Non-Political Actors. *Seventh Annual New Directions in Analyzing Text as Data*. 14-15 Oct. 2016
2. **V. Eidelman**. Unsupervised Feature-Rich Clustering. CS-TR-5019, UMIACS-TR-2012-14, University of Maryland, College Park, December 2012
3. P. Blunsom, C. Callison-Burch, T. Cohn, C. Dyer, J. Graehl, A. Lopez, J. Botha, **V. Eidelman**, T. Nguyen, Z. Wang, J. Weese, O. Buzek, D. Chen. *2010 Language Engineering Workshop Models for Synchronous Grammar Induction Final Report. Technical Report for CLSP Workshop*, Johns Hopkins University, 2010
4. M. Poesio, D. Day, R. Arstein, J. Duncan, **V. Eidelman**, C. Giuliano, R. Hall, J. Hitzeman, A. Jern, M. Kabadjov, G. Mann, P. McNamee, A. Moschitti, S. Ponzetto, J. Smith, J. Steinberger, M. Strube, J. Su, Y. Versley, X. Yang, and M. Wick. *ELERFED : Final Report. Technical Report for CLSP Workshop*, Johns Hopkins University, 2007
5. **V. Eidelman** and G. Trajkovski. Extension of an Algebraic Model of Cognition to a Congruent Continuous Model. *Technical Report for NSF REU*, Towson University, 2006

## PATENTS

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1. **V. Eidelman**, B. Grom, D. Argyle, J. Pinto, and J. Zoshak. 2016. Systems and Methods for Altering Issue Outcomes. U.S. Patent Application 15494381, filed April 21, 2017 and issued Sept. 6, 2018.
2. **V. Eidelman**, B. Grom, D. Argyle, and J. Pinto. 2016. Systems and Methods for Predicting Future Event Outcomes Based on Data Analysis. U.S. Patent Application 15494390, filed April 21, 2017. Patent Pending.
3. C. Simpson, D. Hok, J. Zoshak, A. DeStefano, J. Pinto, and **V. Eidelman**. 2016. Systems and Methods for Mapping to Milestones in a Policymaking Process. U.S. Patent Application 15494393, filed April 21, 2017. Patent Pending.
4. **V. Eidelman**, B. Grom, D. Argyle, and J. Pinto. 2016. Systems and Methods for Steering an Agenda Based on User Collaboration. U.S. Patent Application 15494300, filed April 21, 2017. Patent Pending.
5. **V. Eidelman**, B. Grom, D. Argyle, and J. Pinto. 2016. Systems and Methods for Predicting Policymaker Behavior Based on Unrelated Historical Data. U.S. Patent Application 15494310, filed April 21, 2017. Patent Pending.
6. B. Palombi, D. Argyle, **V. Eidelman**, J. Pinto, and B. Grom. 2016. Systems and Methods for Analyzing Policymaker Alignment with Organizational Posture. U.S. Patent Application 15494323, filed April 21, 2017. Patent Pending.
7. B. Grom, D. Argyle, J. Zoshak, **V. Eidelman**, and D. Maglasang. 2016. Systems and Methods for Providing a Virtual Whipboard. U.S. Patent Application 15494346, filed April 21, 2017. Patent Pending.
8. B. Grom, **V. Eidelman**, D. Argyle, J. Pinto, and M. Rios. 2016. Systems and Methods for Correlating Comments and Sentiment to Policy Document Sub-sections. U.S. Patent Application 15494371, filed April 21, 2017. Patent Pending.

9. B. Grom, V. Eidelman, D. Argyle, and J. Pinto. 2016. Systems and Methods for Predicting Policy Adoption. U.S. Patent Application 15494377, filed April 21, 2017. Patent Pending.

## SERVICE

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### Program Committee Member

- Association for Computational Linguistics (ACL) 2014, 2015, 2016, 2017, 2018
- Empirical Methods in Natural Language Processing (EMNLP) 2016, 2018
- European Chapter of the Association for Computational Linguistics (EACL) 2014, 2017, Student Research Workshop 2014
- International Conference on Computational Linguistics (COLING) 2016
- International Conference on Language Resources and Evaluation (LREC) 2010, 2012, 2014, 2016, 2018
- International Joint Conference on Natural Language Processing (IJCNLP) 2015, 2017
- North American Chapter of the Association for Computational Linguistics (NAACL) 2013, 2016, 2018, 2019

### Journal Reviewing

- Journal of the Association for Information Science and Technology (JASIST)
- International Journal of Computer Mathematics (IJCM)
- ACM Transactions on Information Systems (TOIS)
- Computational Linguistics (CL)

### University Service

- Computer Science Graduate Student Executive Council (2008-2013)
- Graduate Student Government Computer Science Program Representative (2010-2011)

### Other

- NSF GRFP Computer Science Review Panelist 2019

## SKILLS

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### Languages

- Native: English, Russian
- Beginner: Spanish, German, Turkish

### Technologies

- Languages: Python, Perl, C/C++, Java
- Storage: PostgreSQL, MongoDB, S3, Redis, Redshift
- Frameworks: AWS, Apache Mesos, Spark, Hadoop, Chronos
- Tools: scikit-learn, pandas, jupyter, nltk, spaCy, pytorch, keras, git, docker