

<b>Summary</b>	Leader and researcher in machine learning and applied statistics, helping companies and individuals clearly formulate questions and answer them with data. Domain experience in information security, natural language processing, and neuroimaging.	
<b>Employment</b>	<b>Duo Security (Cisco Systems)</b> <i>Pittsburgh, PA</i>	<b>Data Science Manager</b> Oct 2019 - present Leadership of Duo's Data Science team, with a focus on improving the empirical and data maturity of the organization as a whole. Team strategy, hiring, mentorship and professional development, project management, tooling and process improvements, and maintenance of collaborations across Duo. Duo Security was acquired by Cisco in 2018.
		<b>Senior Data Scientist</b> May 2018 - Oct 2019 Research including anomaly detection, user behavior modeling, and ML model evaluation.
	<b>Turnitin</b> <i>Pittsburgh, PA</i>	<b>Principal Research Scientist</b> Senior 2015 - 2016; Principal 2017 - 2018 Principal member of the Machine Intelligence team. Built models for automated essay scoring, formative writing feedback, and contract cheating detection.
	<b>CERT <math>\subset</math> Software Engineering Institute <math>\subset</math> CMU</b> <i>Pittsburgh, PA</i>	<b>Research Statistician</b> 2013-2015 Research statistician in the Science of Cybersecurity group at CERT, with a focus on evaluating and improving the interaction of human users with security systems.
<b>Technical Skills</b>	<b>Technical specialties:</b> Reproducible data analysis, machine learning, experimental design, machine learning evaluation and validation, exploratory data analysis and visualization, statistical inference <b>Programming &amp; scripting languages:</b> R, (scientific) Python, C (most recently as R backend), SQL <b>Tools:</b> L <sup>A</sup> T <sub>E</sub> X, R Shiny/markdown/knitR, Jupyter, git, Mac OS, Unix	
<b>Education</b>	<b>Carnegie Mellon University</b>	2008-2013 <b>Ph.D. <i>Statistics and Neural Computation</i>; M.S. <i>Statistics</i></b> Dissertation focused on the statistical processing of neuroimaging data.
	<b>Swarthmore College</b>	2003-2007 <b>B.A. <i>Computer Science and Linguistics with Highest Honors</i></b> Honors linguistics thesis addressed computational modeling of the evolution of language.
	<b>Edinburgh University</b> ; visiting student, Spring 2006 <b>Fjölbrautaskóli Sudurlands</b> in Selfoss, Iceland; foreign exchange student, 2001-2002	

**Selected  
Publications**

[Expanding search in the space of empirical ML.](#) **B. Woods**. NeurIPS workshop on critiquing and correcting trends in machine learning. 2018.

Beyond Automated Essay Scoring: Forecasting and Improving Outcomes in Middle and High School Writing. E. Mayfield, D. Adamson, **B. Woods**, S. Miel, S. Butler and J. Crivelli. Learning Analytics and Knowledge. 2018.

[Formative essay feedback using predictive scoring models.](#) **B. Woods**, D. Adamson, S. Miel, E. Mayfield. KDD, 2017. doi:10.1145/3097983.3098160

[This malware looks familiar: Laymen identify malware run-time similarity with Chernoff faces and stick figures.](#) N. VanHoudnos, W. Casey, D. French, B. Lindauer, E. Kanal, E. Wright, **B. Woods**, S. Moon, P. Jansen. BICT, 2017. doi:10.4108/eai.22-3-2017.152417

[Data mining for efficient collaborative information discovery.](#) **B. Woods**, S. Perl, B. Lindauer. WISCS workshop at ACM 2015.

Effect of network infrastructure factors on information system risk judgment. J. Cowley, F. Greitzer and **B. Woods**. Computers and Security, 2015. doi:10.1016/j.cose.2015.04.011

Factors influencing network risk judgments: a conceptual inquiry and exploratory analysis. J. Cowley, F. Greitzer and **B. Woods**. Security Informatics, 2015. doi:10.1186/s13388-015-0016-x

Toward a processing pipeline for two-photon calcium imaging of neural populations. **B. Woods**. PhD Dissertation, CMU Department of Statistics, and the Program in Neural Computation. 2013.

[Multi-scale automated cell segmentation in two-photon calcium imaging.](#) **B. Woods**, A. Vazquez, S.-G. Kim, W. Eddy. Proceedings of the NIPS workshop on Machine Learning and Interpretation in Neuroimaging, 2012.

Articulatory feature-based methods for acoustic and audio-visual speech recognition: Summary from the 2006 JHU summer workshop. K. Livescu et. al. ICASSP 2007.

**Conference  
Presentations**

Point process modeling of temporal patterns in user authentication behavior. CAMLIS 2018. [Presentation]

Discovering Patterns of Activity in Unstructured Incident Reports at Large Scale. 27th Annual FIRST Conference. Berlin, Germany. June 19, 2015. [Presentation]

The Science of Cybersecurity: Estimation and prediction with human actors and adversaries. Joint Statistical Meetings. Boston, MA. August 4, 2014. [Poster]