Jette Henderson

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Education

2015–2018   **PhD, Computational Sciences, Engineering, and Mathematics**, *The University of Texas at Austin*, Austin, TX.

Dissertation title: Learning and Validating Clinically Meaningful Phenotypes from Electronic Health Data, **AMIA Doctoral Dissertation Award, Honorable Mention.**

Doctoral work summary: I developed unsupervised, semisupervised, and supervised tensor factorization methods to extract sparse and diverse computational phenotypes from patient-level data contained in electronic health records. Additionally, I built tools that leverage publicly available medical articles to generate evidence sets for candidate phenotypes extracted in a high-throughput manner.

Advisor: Joydeep Ghosh

2011–2014   **MS, Computational Sciences, Engineering, and Mathematics**, *The University of Texas at Austin*, Austin, TX.

Advisor: Dewayne Perry

GPA: 3.86/4.0

2008–2009   **Post-Baccalaureate Certificate, Mathematics**, *Smith College*, Northampton, MA.

GPA: 3.96/4.0

2004–2008   **BA, Mathematics**, *The Colorado College*, Colorado Springs, CO.

GPA: 3.94/4.0

Honors: Magna Cum Laude, Distinction in Mathematics

Selected Publications & Proceedings

Mónica Ribero, Jette Henderson, Sinead Williamson, and Haris Vikalo. Federating Recommendations Using Differentially Private Prototypes. *Pattern Recognition*, 2020 (under review).

Jette Henderson, Shubham Sharma, Alan Gee, Valeri Alexiev, Steve Draper, Carlos Marin, Yessel Hinojosa, Christine Draper, Michael Perng, Luis Aguirre, Michael Li, Sara Rouhani, Shorya Consul, Susan Michalski, Akarsh Prasad, Mayank Chutani, Aditya Kumar, Shahzad Alam, Prajna Kandarpa, Binnu Jesudasan, Colton Lee, Michael Criscolo, Sinead Williamson, Matt Sanchez, Joydeep Ghosh. Certifai: A Toolkit for Building Trust in AI Systems. *International Joint Conferences on Artificial Intelligence Organization (IJCAI-PRICAI)*, 2020.

Shubham Sharma, Jette Henderson, and Joydeep Ghosh. CERTIFAI: A Common Framework to Provide Explanations and Analyse the Fairness and Robustness of Black-box Models. *AAAI/ACM Conference on AI, Ethics, and Society (AIES)*, 2020.

Jette Henderson, Joyce C. Ho, Abel N. Kho, Joshua C. Denny, Bradley A. Malin, Jimeng Sun, and Joydeep Ghosh. CP Tensor Decomposition with Cannot-Link Intermode Constraints. *SIAM International Conference on Data Mining*, 2019.

Huan He, Jette Henderson, and Joyce C. Ho. SGranite: Distributed Tensor Decomposition for Large Scale Health Analytics. *The Web Conference 2019 (WWW)*, 2019.

Jette Henderson, Joyce C. Ho, Bradley A. Malin, and Joydeep Ghosh. PIVETed-Granite: Computational phenotypes through constrained tensor factorization. *KDD Workshop on Machine Learning for Medicine and Healthcare*, 2018. **Winner of Best Student Paper.**

Jette Henderson, Huan He, Bradley A. Malin, Joshua C. Denny, Abel N. Kho, Joydeep Ghosh, and Joyce C. Ho. Phenotyping through Semi-Supervised Tensor Factorization (PSST). *AMIA Annual Symposium*, 2018.

Jette Henderson, Junyuan Ke, Joyce C. Ho, Byron C. Wallace, and Joydeep Ghosh. PIVET: A Scaled Phenotype Evidence Generation Framework using Online Medical Literature. *Journal of Medical Internet Research (JMIR)*, 2018.

Jette Henderson, Ryan Bridges, Joyce C. Ho, Byron C. Wallace, and Joydeep Ghosh. PheKnow-Cloud: A Tool for Evaluating High-Throughput Phenotype Candidates using Online Medical Literature. In Proceedings of *American Medical Informatics Association (AMIA) Joint Summits on Translational Sciences*, 2017. **Recipient of the 2017 Distinguished Clinical Research Informatics Paper Award.**

Professional Experience

1/20–Present **Senior Machine Learning Research Scientist**, *CognitiveScale*, Austin, TX.
Perform research in fairness, accountability, and responsibility in machine learning.
Coordinate research efforts in responsible machine learning practices with the aim of improving Certifai, a product that scans and monitors machine learning models.

10/18–12/19 **Machine Learning Research Scientist**, *CognitiveScale*, Austin, TX.
Developed and published a genetic-algorithm-based method called CERTIFAI that aims to help machine learning developers assess the robustness, fairness, and explainability of their models.
Led and organized team to turn CERTIFAI from a research paper into a commercial product.
Coordinated 2019 machine learning research intern program and mentored five graduate students.
Mentored graduate student working on federated, differentially private recommendation systems.

Summer 2018 **Machine Learning Intern**, *CognitiveScale*, Austin, TX.
Designed and implemented methods to analyze the fairness and bias of decisions made via machine learning processes.
Developed causal models for evaluating counterfactual fairness and implemented solutions in python.

Summer 2016 **Data Science Intern**, *Accordion Health*, Austin, TX.
Extracted and aligned patient medication records to analyze fill patterns and prevent lapses in medication adherence.
Built models to predict which patients will fill medications in a set amount of time.

6/14–8/15 **Data Mining Expert**, *Applied Research Laboratories*, Austin, TX.
Developed, implemented, and tested data mining algorithms in Python and Java with applications in network security.
Created approach to jointly model topics and social networks.

Summer 2013 **Fellow**, *Data Science for Social Good Fellowship at the University of Chicago*, Chicago, IL.
Engaged with non-technical stakeholders to understand the technical problems they face and to propose solutions.
Performed exploratory statistical analysis, data visualization, and data cleaning on large education and transportation data sets.

Awards & Honors

Awards Recipient of Honorable Mention for the AMIA Doctoral Dissertation Award (2019)

Winner of Best Student Paper at the KDD Workshop on Machine Learning for Medicine and Healthcare (2018)

Recipient of Distinguished Clinical Research Informatics Paper Award at the AMIA Joint Summits on Translational Sciences (2017)

NIMS Fellowship, four-year fellowship supporting doctoral research, UT Austin (2011–2015)

NSF Post-Baccalaureate Women in Mathematics Fellowship, Smith College (2008–2009)

Dean's List, The Colorado College (2004–2008)

Distinction in Mathematics, The Colorado College (2008)

Champion Award for Achievement in Organic Chemistry, The Colorado College (2005)

Winner of First Year Experience Essay Contest, The Colorado College (2004)

Honors Phi Beta Kappa