Michael W. Dusenberry

dusenberrymw@google.com • twitter.com/dusenberrymw • San Francisco Bay Area, CA
mikedusenberry.com • github.com/dusenberrymw • linkedin.com/in/mikedusenberry

EDUCATION

The Brody School of Medicine at East Carolina University, Greenville, NC
M.D. Candidate — Aug 2012 – (May 2014)
- Completed the first two years of the M.D. degree before withdrawing.

Appalachian State University, Boone, NC
B.S. Computer Science — Aug 2008 – May 2012
- Minor, Chemistry
- Summa cum laude (4.0 major, 3.98 cumulative)
- Outstanding Senior in Computer Science Award

EXPERIENCE

Google Brain, Mountain View, CA
Google AI Resident — Jun 2018 – Present
- AI Resident focused on research in deep learning and medicine.

IBM Center for Open-source Data & AI Technologies, San Francisco, CA
Machine Learning Advisory Software Engineer — Jul 2017 – Jun 2018
- In July 2017, my responsibilities expanded to include an advisory role for other ML projects within the center, as well as the leadership of small teams.

Machine Learning Software Engineer — May 2015 – Jul 2017
- Machine learning engineer focused on machine learning (ML) / deep learning (DL) mathematics, ML/DL research in medicine, and distributed systems with Python, Scala, TensorFlow, Apache SystemML, and Apache Spark.
- Joined as part of the initial founding team and helped build the center from the ground up.
- Deep Learning For Mitosis Detection and Tumor Proliferation Score Classification From Whole-Slide Histopathology Images of Breast Tumors (github.com/SparkTC/deep-histopath)
- SystemML-NN: A Deep Learning Library For Apache SystemML (github.com/dusenberrymw/systemml-nn)
- Committer & PMC Member, Apache SystemML (systemml.apache.org)

The Brody School of Medicine at East Carolina University, Greenville, NC
Researcher, Department of Emergency Medicine — May 2013 – Feb 2017
- Student researcher building and evaluating the use of custom neural networks (Python, Octave/MATLAB) as a machine learning approach to predicting outcomes in complex clinical cases in the emergency department, under the guidance of Dr. Kori Brewer, Ph.D. and Dr. Charles Brown, M.D.
- Project started during the M1 summer session as part of the Brody School of Medicine "Summer Scholars Student Research Program".
- Presented posters at the Brody School of Medicine Medical Student Research Day (2013), and the North Carolina Medical Society Scientific Poster Conference (2013).
- Primary author on a paper published in the American Journal of Emergency Medicine (2017).

Appalachian State University, Boone, NC
Researcher, Department of Computer Science — Aug 2011 – Aug 2012
- Recruited from within the CS department, along with two graduate students, to form a research team for building and evaluating the use of online, automatically-grading software systems for use in CS classes.

PUBLICATIONS

1. E. Choi, Z. Xu, Y. Li, **M. W. Dusenberry**, G. Flores, Y. Xue, and A. M. Dai. Graph Convolutional Transformer: Learning the Graphical Structure of Electronic Health Records. *arXiv:1906.04716 [cs, stat]*, June 2019.
2. **M. W. Dusenberry**, D. Tran, E. Choi, J. Kemp, J. Nixon, G. Jerfel, K. Heller, and A. M. Dai. Analyzing the Role of Model Uncertainty for Electronic Health Records. *arXiv:1906.03842 [cs, stat]*, June 2019.
3. J. Nixon, **M. W. Dusenberry**, L. Zhang, G. Jerfel, and D. Tran. Measuring Calibration in Deep Learning. *arXiv:1904.01685 [cs, stat]*, April 2019.
4. D. Tran, **M. W. Dusenberry**, M. van der Wilk, and D. Hafner. Bayesian Layers: A Module for Neural Network Uncertainty. *arXiv:1812.03973 [cs, stat]*, December 2018.
5. N. Pansare, **M. Dusenberry**, N. Jindal, M. Boehm, B. Reinwald, and P. Sen. Deep Learning with Apache SystemML. In *SysML 2018*, February 2018.

6. **M. W. Dusenberry**, C. K. Brown, and K. L. Brewer. Artificial neural networks: Predicting head CT findings in elderly patients presenting with minor head injury after a fall. *The American journal of emergency medicine*, 35(2):260–267, February 2017.
7. M. Boehm, **M. W. Dusenberry**, D. Eriksson, A. V. Evfimievski, F. M. Manshadi, N. Pansare, B. Reinwald, F. R. Reiss, P. Sen, A. C. Surve, and S. Tatikonda. SystemML: Declarative machine learning on spark. *Proceedings of the VLDB Endowment*, 9(13):1425–1436, September 2016.

SOFTWARE

1. Bayesian Layers: A module for neural network uncertainty — 2018
   D. Tran, **M. W. Dusenberry**, M. van der Wilk, D. Hafner.
2. SystemML-NN: A deep learning library for Apache SystemML — 2016
   M. W. Dusenberry
3. SystemML: Declarative machine learning on Spark — 2015
   M. Boehm, **M. W. Dusenberry**, D. Eriksson, A. V. Evfimievski, F. M. Manshadi, N. Pansare, B. Reinwald, F. R. Reiss, P. Sen, A. C. Surve, and S. Tatikonda.

TALKS

1. ICML workshop on Uncertainty & Robustness in DL - Long Beach, CA — June 14, 2019
   Analyzing the Role of Model Uncertainty for Electronic Health Records
2. Practical Big Data Workshop - Ann Arbor, MI — June 7, 2019
   Bayesian Deep Learning for Medicine
3. SF Big Analytics Meetup - Yelp HQ - San Francisco, CA — April 18, 2018
   Deep Learning for Breast Cancer Mitosis Detection
4. OpenTech AI conference at IBM Finland - Helsinki, Finland — March 14, 2018
   AI + Healthcare
5. OpenTech AI conference at IBM Finland - Helsinki, Finland — March 13, 2018
   Deep Learning for Breast Cancer Mitosis Detection
6. SF Big Analytics Meetup - GoPro HQ - San Mateo, CA — Oct 18, 2017
   Deep Learning for Mitosis Detection
7. Strata Hadoop World - San Jose, CA — March 15, 2017
   Deep Learning For Predicting Breast Cancer Proliferation Scores with Apache SystemML
8. UC Berkeley Data Dialogs Conference - Berkeley, CA — Sept. 7, 2016
   Predicting Breast Cancer Proliferation Scores with Apache SystemML
9. UC Berkeley Data Science Web Talks - Berkeley, CA — Aug. 24, 2016
   Deep Learning with Apache SystemML
10. Datapalooza - Denver, CO — May 19, 2016
    Apache SystemML

MENTORING

Fei Hu (IBM ML Engineering Intern) — June 2017 - Dec 2017

Anooj Patel (IBM ML Engineering Intern) — Summer 2017

Madison J. Myers (IBM Data Science Intern) — June 2016 - Feb 2017

TEACHING

Teaching Assistant | Appalachian State University — 2011
CS3548: General Purpose GPU Programming

BLOG POSTS

Mixture Density Networks: mikedusenberry.com/mixture-density-networks

SKILLS

Languages: Python (current), {C, Scala, Java, Octave/MATLAB, Prolog} (previous)
Libraries: TensorFlow, NumPy, PyTorch, Apache SystemML, Apache Spark
Tools: Git, tmux, LaTeX