Michael W. Dusenberry

Google AI Resident   dusenberrymw@google.com
Google Brain   https://github.com/dusenberrymw
Mountain View, CA   https://linkedin.com/in/mikedusenberry

Education

B.S. Computer Science (Minor, Chemistry)   Aug 2008 – May 2012
Appalachian State University, Boone, NC

Summa cum laude (4.0 major, 3.98 cumulative)
Outstanding Senior in Computer Science Award

M.D. Candidate   Aug 2012–(May 2014)
The Brody School of Medicine at East Carolina University, Greenville, NC

Completed the first two years of the M.D. degree before withdrawing.

Experience

Google AI Resident   June 2018–
Google Brain, Mountain View, CA

AI Resident focused on research in deep learning and medicine.

Committer & PMC Member, Apache SystemML   Nov 2015–
The Apache Software Foundation

Committer & PMC member for the open-source project, Apache SystemML.

Machine Learning Advisory Software Engineer   July 2017 – June 2018
Machine Learning Software Engineer   May 2015 – July 2017
IBM Center for Open-source Data & AI Technologies, San Francisco, CA

Machine learning engineer focused on deep learning research in medicine, and research in distributed systems for machine learning 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. In July 2017, my responsibilities expanded to include an advisory role for other machine learning projects within the center, as well as the leadership of small teams.

Researcher, Department of Emergency Medicine   May 2013 – Feb 2017
The Brody School of Medicine at East Carolina University, Greenville, NC

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).

Researcher, Department of Computer Science   Aug 2011 – Aug 2012
Appalachian State University, Boone, NC

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.

Preprints

1. Jeremy Nixon, **Michael W. Dusenberry**, Linchuan Zhang, Ghassen Jerfel, and Dustin Tran. Measuring calibration in deep learning. *arXiv:1904.01685*, 2019.

2. Niketan Pansare, **Michael W. Dusenberry**, Nakul Jindal, Matthias Boehm, Berthold Reinwald, and Prithviraj Sen. Deep learning with Apache SystemML. *arXiv:1802.04647*, 2018.

3. **Michael W. Dusenberry** and Fei Hu. Deep learning for breast cancer mitosis detection. 2018.

Journals & Conferences

1. **Michael W. Dusenberry**, Dustin Tran, Edward Choi, Jonas Kemp, Jeremy Nixon, Ghassen Jerfel, Katherine Heller, and Andrew M. Dai. Analyzing the role of model uncertainty for electronic health records. In *Proc. of ACM Conference on Health, Inference, and Learning (ACM CHIL)*, 2020.

2. Edward Choi, Zhen Xu, Yujia Li, **Michael W. Dusenberry**, Gerardo Flores, Yuan Xue, and Andrew M. Dai. Graph convolutional transformer: Learning the graphical structure of electronic health records. In *Proc. of Association for the Advancement of Artificial Intelligence (AAAI)*, 2020.

3. Dustin Tran, **Michael W. Dusenberry**, Mark van der Wilk, and Danijar Hafner. Bayesian Layers: A module for neural network uncertainty. In *Proc. of Neural Information Processing Systems (NeurIPS)*, 2019.

4. **Michael W. Dusenberry**, Charles K Brown, and Kori 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*, 2017.

5. Matthias Boehm, **Michael W. Dusenberry**, Deron Eriksson, Alexandre V Evfimievski, Faraz Makari Manshadi, Niketan Pansare, Berthold Reinwald, Frederick R Reiss, Prithviraj Sen, Arvind C Surve, and Shirish Tatikonda. SystemML: Declarative machine learning on Spark. In *Proc. of the VLDB Endowment*, 2016.

Software

1. Bayesian Layers: A module for neural network uncertainty   2018
   Dustin Tran, **Michael W. Dusenberry**, Mark van der Wilk, Danijar Hafner.

2. SystemML-NN: A deep learning library for Apache SystemML   2016
   Michael W. Dusenberry

3. SystemML: Declarative machine learning on Spark   2015
   Matthias Boehm, **Michael W. Dusenberry**, Deron Eriksson, Alexandre V Evfimievski, Faraz Makari Manshadi, Niketan Pansare, Berthold Reinwald, Frederick R Reiss, Prithviraj Sen, Arvind C Surve, and Shirish 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, CS3548: General Purpose GPU Programming   July 2011 – Aug 2011
Appalachian State University, Boone, NC

Academic Services

Reviewer, International Conference on Machine Learning (ICML)   2020–

Reviewer, ACM Conference on Health, Inference, and Learning (ACM CHIL)   2020–

Reviewer, Machine Learning for Healthcare (ML4H) workshop at NeurIPS   2019–

Blog Posts

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

Skills

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