Cody Austun Coleman

Gates Computer Science Building – 353 Serra Mall – Stanford, CA 94305

+1 (617) 564 0648 • cody.coleman@cs.stanford.edu • Last Updated: 2020/06/10

Education

Stanford University — **Stanford, CA**
Doctor of Philosophy in Computer Science, 4.0/4.0 — *September 2016–Present*
Supervisor: Matei Zaharia and Peter Bailis

Massachusetts Institute of Technology (MIT) — **Cambridge, MA**
Master of Engineering in Electrical Engineering and Computer Science, 5.0/5.0 — *September 2013–February 2015*
Supervisor: Isaac Chuang

Massachusetts Institute of Technology (MIT) — **Cambridge, MA**
Bachelor of Science in Electrical Engineering and Computer Science, 4.9/5.0 — *September 2009–June 2013*

Experience

Research

Facebook, Facebook AI Applied Research — **Menlo Park, CA**
Research Intern — *February 2020–Present*
- Developed novel algorithm for large-scale active learning that scales to billions of unlabeled examples

Stanford, DAWN Project — **Stanford, CA**
PhD Student Researcher — *June 2017–Present*
- Improved the computational efficiency of data selection techniques (e.g., active learning and core-set selection) by up to $41.9\times$
- Founded MLPerf with researchers and engineers from Google, Harvard, and Baidu and gained the support of over 50 organizations
- Led DAWNBench, an end-to-end deep learning benchmark and competition, to an over a $1000\times$ improvement in ImageNet training time with outside submissions from teams including Google, fast.ai, Intel, and Alibaba

MIT, Office of Digital Learning and MITx — **Cambridge, MA**
Master's Student Researcher — *February 2013–February 2015*
- Investigated teacher enrollment in HarvardX and MITx courses in order to redefine the target audience of MOOCs
- Distilled tracking log information from the edX platform into informative features about student behavior and performance
- Adapted Latent Dirichlet Allocation (LDA) from natural language processing to uncover behavioral patterns in Massive Open Online Courses (MOOCs) and accurately predict student drop out

Harvard University, HarvardX — **Cambridge, MA**
Master's Student Researcher — *November 2013–May 2014*
- Explored the impact of spaced study sessions (inspired by spaced practice phenomenon) in HarvardX courses

Professional

Jump Trading, Vendor Data Group — **Chicago, IL**
Junior Data Scientist — *June 2015–August 2016*
- Constructed frameworks and pipelines to analyze data from a variety of vendors to automatically create and update security master, corporate actions, pricing and entity master data
- Communicated internally and externally to understand needs, identify opportunities, diagnose problems, and maintain reliability

Davidson College, DavidsonX and DavidsonNext — **Davidson, NC**
Educational Technology Consultant — *March 2015–June 2015*
- Automated data processing for 5 DavidsonX Massive Open Online Courses (MOOCs) and 64 DavidsonNext blended AP courses

Google, Associate Product Manager (APM) Internship — **Zurich, Switzerland**
YouTube Analytics Intern — *June 2012–August 2012*
- Managed a team of 12 to launch estimated time watched and metric comparisons across the world
- Designed initial draft of playlist analytics for YouTube's curators
- Collaborated with numerous teams in YouTube to deal with issues concerning publicity, privacy, accessibility, and discovery

Google, Building Opportunity in Leader Development (BOLD) Internship **Mountain View, CA**
Local Search Quality Intern *June 2011–August 2011*
- Programmed tools for large-scale data manipulation and analysis to expedite and improve spam detection in Google Places
- Created and administered training documents, videos, exercises, and workshops globally for both R and Google BigQuery

MISTI Mexico, Iniciativa OCW **Mexico City, Mexico**
Web Developer & Team Representative at el Tecnológico de Monterrey *June 2010–August 2010*
- Provided extra resources for students at Mexican universities by building a website to map MIT's online material to their courses

Teaching

MIT, EECS Department **Cambridge, MA**
6.933 Founder's Journey Teaching Assistant *January 2013–May 2014*
- Founded and directed an initiative to help students offset early expenses in evaluating their ideas by awarding monetary grants
- Mentored students and provided feedback on their ideas in order to hone their entrepreneurial skills

MIT, Global Startup Labs formerly known as AITI **Bangalore, India**
Technical Assistant *June 2013–August 2013*
- Taught 32 India university students Ruby on Rails and the fundamentals of web development
- Guided 10 teams as they developed prototypes and pitched to local venture capitalists and accelerators

MIT, Physics Department & Experimental Study Group (ESG) **Cambridge, MA**
8.01 Classical Mechanics Teaching Assistant *September 2010–December 2010*
- Assisted students during class and office hours by working through problems and answering questions
- Taught math review sessions that went over many difficult math concepts in physics to help students who were struggling

Leadership

MLPerf, Research Working Group **Stanford, CA**
Co-Chair *March 2019–March 2020*
- Led a cross-organizational team with over 40 members to successful tutorials at ASPLOS'19 and ISCA'19, birds of feather sessions at SC'19, and a talk at Hot Chips 2019

Stanford, CS Department Diversity Committee **Stanford, CA**
PhD Student Representative *November 2018–Present*
- Spearheaded a student survey on harassment and cultural issues in the CS department that led to several new initiatives to create a more inclusive environment

MIT, Eta Kapp Nu (HKN) Honor Society for EECS **Cambridge, MA**
President *May 2012–May 2014*
- Managed MIT's top academic EECS students to host several large events and services including tutoring and course reviews

Honors

Fellowships & Scholarships

- Open Phil AI Fellow 2020
- Accel Innovation Scholar 2018
- NSF Graduate Research Fellow 2015
- Stanford Enhancing Diversity in Graduate Education (EDGE) Doctoral Fellow 2015
- MITx Fellow 2013
- Quest Scholar 2010
- MIT Club of Northern New Jersey Scholar 2010

Awards

- Facebook Hardware & Software Systems Research Award 2018
- Stanford School of Engineering Diversity Recruitment Award 2016
- Second Place Graduate Poster Award at ACM Richard Tapia Celebration of Diversity in Computing Conferece 2015

- MIT Industrial Advisory Council for the Office of Minority Education (IACME) Student Prize 2015
- MIT EECS Paul Penfield Student Service Award 2014
- Google Patent Award 2012

Professional Memberships

- MIT Gordon Engineering Leadership (GEL) Program GEL1 2013
- Tau Beta Pi (TBP) National Engineering Honor Society 2013
- IEEE Eta Kappa Nu (HKN) Honor Society 2012

Publications

Coleman, **Cody**, Christopher Yeh, Stephen Mussmann, Baharan Mirzasoleiman, Peter Bailis, Percy Liang, Jure Leskovec, and Matei Zaharia. "Selection via Proxy: Efficient Data Selection for Deep Learning". In: *International Conference on Learning Representations*. 2020. URL: https://openreview.net/forum?id=HJg2b0VYDr.

Mattson, P., V. J. Reddi, C. Cheng, **C. Coleman**, G. Diamos, D. Kanter, P. Micikevicius, D. Patterson, G. Schmuelling, H. Tang, G. Wei, and C. Wu. "MLPerf: An Industry Standard Benchmark Suite for Machine Learning Performance". In: *IEEE Micro* 40.2 (2020), pp. 8–16.

Coleman*, **Cody**, Daniel Kang*, Deepak Narayanan*, Luigi Nardi, Tian Zhao, Jian Zhang, Peter Bailis, Kunle Olukotun, Chris Ré, and Matei Zaharia. "Analysis of DAWNBench, a Time-to-Accuracy Machine Learning Performance Benchmark". In: *SIGOPS Oper. Syst. Rev.* 53.1 (July 2019), pp. 14–25. ISSN: 0163-5980. DOI: 10.1145/3352020.3352024. URL: http://doi.acm.org/10.1145/3352020.3352024.

Mattson, Peter, Christine Cheng, **Cody Coleman**, Greg Diamos, Paulius Micikevicius, David Patterson, Hanlin Tang, Gu-Yeon Wei, Peter Bailis, Victor Bittorf, David Brooks, Dehao Chen, Debojyoti Dutta, Udit Gupta, Kim Hazelwood, Andrew Hock, Xinyuan Huang, Bill Jia, Daniel Kang, David Kanter, Naveen Kumar, Jeffery Liao, Deepak Narayanan, Tayo Oguntebi, Gennady Pekhimenko, Lillian Pentecost, Vijay Janapa Reddi, Taylor Robie, Tom St. John, Carole-Jean Wu, Lingjie Xu, Cliff Young, and Matei Zaharia. "MLPerf Training Benchmark". In: (Oct. 2019). arXiv: 1910.01500 [cs.LG].

Reddi, Vijay Janapa, Christine Cheng, David Kanter, Peter Mattson, Guenther Schmuelling, Carole-Jean Wu, Brian Anderson, Maximilien Breughe, Mark Charlebois, William Chou, Ramesh Chukka, **Cody Coleman**, Sam Davis, Pan Deng, Greg Diamos, Jared Duke, Dave Fick, J. Scott Gardner, Itay Hubara, Sachin Idgunji, Thomas B. Jablin, Jeff Jiao, Tom St. John, Pankaj Kanwar, David Lee, Jeffery Liao, Anton Lokhmotov, Francisco Massa, Peng Meng, Paulius Micikevicius, Colin Osborne, Gennady Pekhimenko, Arun Tejusve Raghunath Rajan, Dilip Sequeira, Ashish Sirasao, Fei Sun, Hanlin Tang, Michael Thomson, Frank Wei, Ephrem Wu, Lingjie Xu, Koichi Yamada, Bing Yu, George Yuan, Aaron Zhong, Peizhao Zhang, and Yuchen Zhou. "MLPerf Inference Benchmark". In: (Nov. 2019). arXiv: 1911.02549 [cs.LG].

Coleman, **Cody**, Deepak Narayanan, Daniel Kang, Tian Zhao, Jian Zhang, Luigi Nardi, Peter Bailis, Kunle Olukotun, Chris Ré, and Matei Zaharia. "DAWNBench: An End-to-End Deep Learning Benchmark and Competition". In: *ML System Workshops at NIPS*. https://dawn.cs.stanford.edu/benchmark/papers/nips17-dawnbench.pdf. 2017.

Coleman, **Cody A.** "Identifying and Characterizing Subpopulations in Massive Open Online Courses". MA thesis. 77 Massachusetts Ave, Cambridge, MA 02139: Massachusetts Institute of Technology, 2015.

Coleman, **Cody A.**, Daniel T. Seaton, and Isaac Chuang. "Probabilistic Use Cases: Discovering Behavioral Patterns for Predicting Certification". In: *Proceedings of the Second ACM conference on Learning@Scale conference*. ACM. Vancouver, Apr. 2015.

Ho, Andrew D., Isaac Chuang, Justin Reich, **Cody A. Coleman**, Jacob Whitehill, Curtis G. Northcutt, Joseph J. Williams, John D. Hansen, Glenn Lopez, and Rebecca Petersen. "HarvardX and MITx: Two Years of Open Online Courses Fall 2012-Summer 2014". In: *Social Science Research Network* (Mar. 2015). http://ssrn.com/abstract=2586847.

Miyamoto, Yohsuke, **Cody A. Coleman**, Joseph Williams, Jacob Whitehill, Sergiy Nesterko, and Justin Reich. "Beyond Time-on-Task: The Relationship Between Spaced Study and Certification in MOOCs". In: *Journal of Learning Analytics* 2.2 (2015), pp. 47–69. ISSN: 1929-7750. URL: http://epress.lib.uts.edu.au/journals/index.php/JLA/article/view/4256.

Seaton, Daniel T., **Cody A. Coleman**, Jon P. Daries, and Isaac Chuang. "Enrollment in MITx MOOCs: Are We Educating Educators". In: *Educause Review (February 2015)* (2015). http://er.educause.edu/articles/2015/2/enrollment-in-mitx-moocs-are-we-educating-educators.

Whitehill, Jacob, Joseph J. Williams, Glenn Lopez, **Cody A. Coleman**, and Justin Reich. "Beyond Prediction: First Steps Toward Automatic Intervention in MOOC Student Stopout". In: *Proceedings of the 8th International Conference on Educational Data Mining*. International Educational Data Mining Society. Madrid, 2015.

Presentations

Research

Coleman, Cody. *MLPerf.* Ant Financial, Jan. 2020.

Coleman, Cody. *MLPerf: An Academic Perspective*. Supercomputing Birds of a Feather - MLPerf: A Benchmark for Machine Learning, Nov. 2019.

Coleman, Cody. *MLPerf: A benchmark suite for machine learning from an academic-industry cooperative*. SPEC Research Big Data Group, May 2018.

Coleman, Cody and Daniel Kang. *Software 2.0 in Overdrive: Efficient Querying and Curation of AD Data at Scale*. Intel Autonomous Driving Community of Practice (AD CoP) Workshop, Oct. 2018.

Coleman, Cody, Deepak Narayanan, Daniel Kang, Tian Zhao, Jian Zhang, Luigi Nardi, Peter Bailis, Kunle Olukotun, Chris Ré, and Matei Zaharia. *DAWNBench: An End-to-End Deep Learning Benchmark and Competition*. NetApp, June 2018.

Coleman, Cody, Deepak Narayanan, Daniel Kang, Tian Zhao, Jian Zhang, Luigi Nardi, Peter Bailis, Kunle Olukotun, Chris Ré, and Matei Zaharia. *DAWNBench: An End-to-End Deep Learning Benchmark and Competition*. Cerebras, Feb. 2018.

Coleman, Cody, Deepak Narayanan, Daniel Kang, Tian Zhao, Jian Zhang, Luigi Nardi, Peter Bailis, Kunle Olukotun, Chris Ré, and Matei Zaharia. *DAWNBench: An End-to-End Deep Learning Benchmark and Competition*. ML System Workshops at NIPS, Dec. 2017.

Coleman, Cody. *Stories from Digital Learning Students Panel*. MIT's Learning International Networks Consortium (LINC), May 2016.

Coleman, Cody. *Probabilistic Use Cases: Discovering Behavioral Patterns for Predicting Certification*. ACM Learning@Scale, Mar. 2015.

Coleman, Cody. *Technology-Enabled Learning at MIT: The Students' Perspective*. http://techtv.mit.edu/collections/linc2013/videos/24901-the-student-s-perspective-motives-and-experience-with-mitx. MIT's Learning International Networks Consortium (LINC), June 2013.

Motivational

Coleman, Cody. *Living with Grit*. QuestBridge Scholar Summit, July 2019.

Coleman, Cody. *Digging Deeper: How a Few Extra Moments Can Change Lives*. https://www.youtube.com/watch?v=stxJMsxxxtA. TEDxStanford, May 2017.

Coleman, Cody. *Digging Deeper: How a Few Extra Moments Can Change Lives*. Thrivals 10.0, Sept. 2017.

Coleman, Cody. *2016 WInslow Township High School Graduation Speech*. https://www.youtube.com/watch?v=N0e8yDbuozc. Winslow Township High School, June 2016.

Coleman, Cody. *Honors Convocation*. Cristo Rey Philadelphia High School, Feb. 2015.

Coleman, Cody. *Keynote Speech for College Awareness Day*. Winslow Township High School, June 2014.