

Abdul Wasay

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Research Interests. My research is at the intersection of systems and machine learning. I identify co-design opportunities to develop techniques that enable better data exploration, model design, training, and deployment.

EDUCATION

Harvard University

Doctor of Philosophy in Computer Science (GPA:3.8/4)

- Thesis: Computation-Cautious Machine Learning Systems (Advisor: Prof. Stratos Idreos)

Cambridge, MA

August 2014 – May 2021

Harvard University

Masters of Science in Computer Science (GPA:3.75/4)

Cambridge, MA

August 2014 – May 2016

Lahore University of Management Sciences

Bachelors of Science in Computer Science (GPA:3.9/4)

Lahore, Pakistan

August 2010 – May 2014

RESEARCH EXPERIENCE

Harvard University: Graduate Researcher

August 2014 – Present

- Designed and implemented four different systems to accelerate machine learning pipelines advancing the state-of-the-art in data exploration, deep learning model design, training, and deployment (*8 publications, 2 patents*)
- Collaborated with researchers to automate the design of data systems through reinforcement learning techniques
- Mentored nine undergraduate researchers from Harvard, CMU, and Peking University (*3 publications, 1 award*)
- Presented research in various database systems, data science, and machine learning research conferences as well as industry research labs and start-ups

Hewlett Packard Enterprise: Researcher

Summer 2017

- Designed a technique to reduce the overhead of storing and querying network traffic data by 10× (*1 patent*)
- Collaborated with the engineering team to incorporate this research into their product, Arcsight

École Polytechnique Fédérale de Lausanne (EPFL): Undergraduate Researcher

Summer 2013

- Developed and evaluated an algorithm to incorporate community structure for social graph de-anonymization

NOTABLE LEADERSHIP & TEAMWORK EXPERIENCE

Harvard University: Instructor at Harvard Summer School

Summer 2019

- Designed and taught Harvard's first hybrid course on data systems and machine learning (*course rating: 4.8/5*)
- Supervised a course staff of two Ph.D. students to run the course

Ashesi University: Visiting Faculty (Archer-Cornfield Fellowship)

August 2019 – June 2020

- Designed and taught three undergraduate courses on data systems and machine learning (*100 students total*)
- Mentored four undergraduate students on their senior-year research projects
- Lead the curriculum redesign committee to refresh the coursework for the data science and machine learning track

Harvard College: Resident Tutor at Quincy House

August 2015 – May 2019

- Advised 7 Harvard College sophomores on academic matters and managed an entryway of 30 students per year
- Lead the LGBTQ+ Committee (2 tutors, 10 students)
- Co-founded the InQlusivity initiative to improve inclusion and diversity within the residential house community

NOTABLE AWARDS

- Harvard SEAS Computer Science Outstanding Ph.D. Dissertation Award (Honorable Mention) 2021
- Archer-Cornfield Fellowship 2019 – 2020
- Second place at ACM SIGMOD Research Competition (student award) 2020
- Most Reproducible Paper Award at SIGMOD 2017
- Dean's Honor List at LUMS + NOP Scholarship 2010 – 2014

PUBLICATIONS & PATENTS

Publications in top-tier deep learning, machine learning, and data systems venues: **ICLR, MLSys, SIGMOD, SIGCOMM, Data Engineering, and BigData.**

Deep Learning: Systems and Responsibility.

Abdul Wasay, Subarna Chatterjee, and Stratos Idreos.

ACM International Conference on Management of Data *SIGMOD*, 2021.

More or Less: When and How to Build Convolutional Neural Network Ensembles.

Abdul Wasay and Stratos Idreos.

International Conference on Learning Representation *ICLR* 2021.

MotherNets: Rapid Deep Ensemble Learning.

Abdul Wasay, Brian Hentschel, Yuze Liao, Sanyuan Chen, and Stratos Idreos.

Conference on Machine Learning and Systems *MLSys* 2020.

Learning Data Structure Alchemy.

Stratos Idreos, Kostas Zoumpatianos, Subarna Chatterjee, Wilson Qin, **Abdul Wasay**, Brian Hentschel, Mike Kester, Niv Dayan, Demi Guo, Minseo Kang, and Yiyu Sun

Bulletin of the IEEE Computer Society Technical Committee on *Data Engineering*, 2019.

The Periodic Table of Data Structures.

Stratos Idreos, Konstantinos Zoumpatianos, Manos Athanassoulis, Niv Dayan, Brian Hentschel, Michael S. Kester, Demi Guo, Lukas Maas, Wilson Qin, **Abdul Wasay**, Yiyu Sun.

Bulletin of the IEEE Computer Society Technical Committee on *Data Engineering*, 2018.

Data Canopy: Accelerating Exploratory Statistical Analysis.

Abdul Wasay, Xinding Wei, Niv Dayan, and Stratos Idreos.

ACM International Conference on Management of Data *SIGMOD*, 2017.

Queriosity: Automatic Data Exploration.

Abdul Wasay, Manos Athanassoulis, and Stratos Idreos.

IEEE International Congress on *BigData*, 2015.

Rethinking Buffer Management In Data Center Networks.

Aisha Mushtaq, Asad K. Ismail, **Abdul Wasay**, Bilal Mahmood, Ihsan A. Qazi, and Zartash A. Uzmi.

ACM International Conference on Data Communications *SIGCOMM*, 2014.

Network Traffic Data Summarization

Abdul Wasay, Alkiviadis Simitsis, Martin Arlitt.

U.S. Patent 10,432,539. Issued on October 1, 2019.

INVITED TALKS

Intel Labs, Morgan Stanley ML Labs, UCSD, Microsoft Research NYC, Boston University	2021
LUMS, Tableau	2020
Google Research Accra, Ashesi University	2019
Vertica, NetApp	2018

TECHNICAL SKILLS

Selected Languages: C/C++, Python, Java, SQL.

Deep Learning Infrastructure: PyTorch, TensorFlow, Caffe, NumPy, Pandas, Plotly, AWS, GCP, Azure, SLURM.

Selected Skills: Computer architecture, machine learning, reinforcement learning, deep learning, data systems implementation, algorithms, data visualization, statistics, empirical research, technical writing, educational psychology, university teaching, public speaking.