Abdul Wasay

PhD Candidate, Harvard School of Engineering and Applied Sciences

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Research Interests

Designing high performance machine learning systems
Demystifying deep learning pipelines

Education

Harvard University — Cambridge, MA
Doctor of Philosophy in Computer Science — August 2014 – June 2021 (expected)
– Thesis: Accelerating Machine Learning [WIP]
– Advisor: Prof. Stratos Idreos

Harvard University — Cambridge, MA
Masters of Science in Computer Science — August 2014 – May 2016

Lahore University of Management Sciences — Lahore, Pakistan
Bachelors of Science in Computer Science — August 2010 – May 2014
– Thesis: Rethinking Buffer Management in Data Center Networks
– Advisor: Prof. Ihsan A. Qazi and Prof. Zartash A. Uzmi

Honors & Awards

Second place at SIGMOD Research Competition (student award)	2020
Archer-Cornfield Fellowship	2019 – 2020
Most Reproducible Paper Award at SIGMOD	2017
Heidelberg Laureate Forum (selection and travel grant)	2015
Summer@EPFL Research fellowship	2013
UGRAD Exchange Scholarship awarded by the U.S. Dept. of States	2013
LUMS National Outreach Program (NOP) full scholarship for undergraduate study	2010 – 2014
LUMS School of Science and Engineering Dean's Honor List	2010 – 2014

Professional Experiences

Harvard University — Cambridge, MA
Researcher at Data Systems Laboratory — August 2014 – Present
Advisors: Prof. Stratos Idreos
– Designing techniques to accelerate machine learning and data science pipelines
– Designing data systems tailored for data exploration

Ashesi University — Berekuso, Ghana
Visiting Faculty (Archer-Cornfield Fellowship) — August 2019 – June 2020
– Designed and taught three undergraduate courses on data systems and machine learning
– Mentored five undergraduate students on their senior year research projects
– Served on the campus-wide curriculum redesign committee

Harvard University — Cambridge, MA
Instructor at Harvard Summer School — May 2019 – August 2019
– Designed and taught Harvard's first summer hybrid course on data systems and machine learning

Harvard University — Cambridge, MA
Resident Tutor at Harvard College — August 2015 – May 2019
– Provided academic advising to seven Harvard sophomores per year
– Mentored and supported a group of 30 diverse students per academic year
– Fostered a sense of community at Quincy House, one of Harvard's 12 residential houses

Hewlett Packard Enterprise   Sunnyvale, CA
Summer research intern at Arcsight   June 2017 – August 2017
Advisors: Alkis Simitsis and Martin Arlitt
– Designed and evaluated a strategy to summarize network traffic data (*patent granted*)

École Polytechnique Fédérale de Lausanne (EPFL)   Lausanne, Switzerland
Summer research intern   June 2013 – June 2013
Advisors: Prof. Matthais Grossglauser and Ehsan Kazemi
– Incorporated community structure for social graph de-anonymization

Publications

MotherNets: Rapid Deep Ensemble Learning.
Abdul Wasay, Brian Hentschel, Yuze Liao, Sanyuan Chen, and Stratos Idreos.
In Proceedings of the 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 Yiyou 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**, Yiyou Sun.
IEEE *Data Engineering*, 2018.

Data Canopy: Accelerating Exploratory Statistical Analysis.
Abdul Wasay, Xinding Wei, Niv Dayan, and Stratos Idreos.
In Proceedings of ACM *SIGMOD*, 2017.

Queriosity: Automatic Data Exploration.
Abdul Wasay, Manos Athanassoulis, and Stratos Idreos.
In Proceedings of 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.
In Proceedings of the ACM *SIGCOMM*, 2014.

Teaching

Harvard University   Cambridge MA
Course Instructor at CSCI S-165: Data Systems and Machine Learning   Summer 2019

Ashesi University   Berekuso, Ghana
Course Instructor at CS402: The Scientist and the Machine   Spring 2020
Course Instructor at CS313: Intermediate Programming   Spring 2020
Course Instructor at CS460: Data Systems and Machine Learning   Fall 2019

Harvard University   Cambridge MA
Teaching Fellow at CS165: Data Systems   Fall 2015, 2016, 2018
Teaching Fellow at CS265: Big Data Systems   Spring 2016, 2018
Teaching Fellow at ac297r: Capstone Projects   Spring 2017

Patent

Network Traffic Data Summarization
Abdul Wasay, Alkiviadis Simitsis, Martin Arlitt.
U.S. Patent 10,432,539. Issued on October 1, 2019.

Advising   **Harvard Data Systems Laboratory** (advising research interns)

Neil Band (Harvard College) – *Next: Rhodes Scholar at Oxford University*
    – **Publication**: MemFlow: Memory-Aware Distributed Deep Learning

Yuze Liao (Carnegie Mellon University) and Sanyuan Chen (Harbin Institute of Technology)
    – **Publication**: MotherNets: Rapid Deep Ensemble Learning

Xingding Wei (Tsinghua University) – *Next: Google*
    – **Publication**: Data Canopy: Accelerating Exploratory Statistical Data Analysis

Zichen Zhu (Tsinghua University) – *Next: PhD student at Boston University*
    – Project: Reinforcement learning to visualize data

Dhruv Gupta (Thomas Jefferson High School) – *Next: undergraduate at Harvard College*
    – Project: Interactive data exploration front ends

Nithin Tumma (Harvard College, AB '16) – *Next: co-founder at Side*
    – Project: Sketching techniques for data exploration

Ashesi University (advising seniors on their research theses)

Naa Lamle Boye
    – Project: Using Geospatial Analytics for Water Harvesting in Northern Ghana

Mustapha Tidoo Yussif
    – Project: Fall Armyworm Detection using Deep Learning

Gbetondji Jean-Sebastien Dovonon
    – Project: Scalable Automated Machine Learning in Resource-Constrained Environments

Juliet Fatima Abdul-Aziz
    – Project: Adaptive Credit Card Fraud Prediction using Neural Networks