Hadeel Albahar

Assistant Professor
Department of Computer Engineering
Kuwait University

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hadeelalbahar
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Research Interest

Systems for ML, and ML for Systems, Containers, High Performance Computing. I am currently interested in optimizing the performance of systems for ML.

Education

2018-2023 **Ph.D. in Computer Engineering**, *Virginia Polytechnic Institute and State University (Virginia Tech)*, Blacksburg, Virginia, USA.
Dissertation: Optimizing Systems for Deep Learning Applications.
Advisor: Ali R. Butt.

2014-2015 **M.S. in Computer Engineering**, *Columbia University in the City of New York*, NY, USA.

2007-2011 **B.S. in Computer Engineering**, *Kuwait University*, Khaldiya, Kuwait.
Distinction with Class Honors

Work Experience

2023-present **Assistant Professor**, *Computer Engineering Department, Kuwait University*, Sabah Al-Salem University City, Kuwait.
Committee service:
- CpE Student Affairs - Member (Fall 2023, Spring 2024)
- CpE Programming Fundamentals Teaching Area Group - Member (Fall 2023, Spring 2024)

2012/2016 **Technical Support Engineer**, *Kuwait Foundation for the Advancement of Sciences (KFAS)*, Kuwait City, Kuwait.
Technical support for Kuwait e Award. I organized submissions, facilitated demonstrations, coordinated with the panel of judges, and mentored a new technical support engineer.

2012-2013 **Intern**, *EXP*, Chicago, Illinois, USA.
A six-months internship program at the North American consulting firm 'exp US services Inc.' in Chicago, IL, USA in the Information Systems (IS) department as part of the Kuwait Fund for Arab Economic Development Training Program. Skills obtained: HTML, Active Server Pages (ASP), Microsoft SQL Server, SQL Server Reporting Services (SSRS), SharePoint

Teaching Experience

2023-present **Instructor**, *Department of Computer Engineering*, Kuwait University.
- Fall 2023: CpE 363: Introduction to Embedded Systems
- Fall 2023: CpE 445: Operating System Principles
- Spring 2024: ENGR 310: Engineering Ethics
- Spring 2024: CpE 445: Operating System Principles

Fall 2021 **Graduate Teaching Assistant**, *Department of Electrical and Computer Engineering*, Virginia Tech.
- ECE 3524: Introduction to Unix for ECE — Lecture; Office hours; scripting; grading

Spring 2012 **Teaching Assistant**, *Department of Computer Engineering*, Kuwait University.
- CPE 264: Digital Logic Laboratory — laboratory lectures; office hours; grading
- CPE 456: Computer Networks II — Lectures; office hours; grading

Publications

Journal Articles

TOS'24 Nannan Zhao, Muhui Lin, **Hadeel Albahar**, Arnab K. Paul, Zhijie Huang, Subil Abraham, Keren Chen, Vasily Tarasov, Dimitrios Skourtis, Ali Anwar, and Ali R. Butt. *An End-to-End High-Performance Deduplication Scheme for Docker Registries and Docker Container Storage Systems*. doi.org/10.1145/3643819

TACO'22 Peng Xu, Nannan Zhao, Jiguang Wan, Wei Liu, Shuning Chen, Yuanhui Zhou, **Hadeel Albahar**, Hanyang Liu, Liu Tang, and Zhihu Tan. *Building a fast and efficient LSM-tree store by integrating local storage with cloud storage*. doi.org/10.1145/3527452

TPDS'20 Nannan Zhao, Vasily Tarasov, **Hadeel Albahar**, Ali Anwar, Lukas Rupprecht, Dimitrios Skourtis, Arnab K. Paul, Keren Chen, and Ali R. Butt. *Large-Scale Analysis of Docker Images and Performance Implications for Container Storage Systems*. doi.org/10.1109/TPDS.2020.3034517

DII'18 IA Shehata Elhelf, **H Albahar**, U Shah, A Oto, E Cressman, M Almekkawy. *High intensity focused ultrasound: The fundamentals, clinical applications and research trends*. doi.org/10.1016/j.diii.2018.03.001

Conference Proceedings

CCGrid'22 **Hadeel Albahar**, Shruti Dongare, Yanlin Du, Nannan Zhao, Arnab K. Paul, and Ali R. Butt. SchedTune: A Heterogeneity-Aware GPU Scheduler for Deep Learning. doi.org/10.1109/CCGrid54584.2022.00079

Cluster'21 Peng Xu, Nannan Zhao, Jiguang Wan, Wei Liu, Shuning Chen, Yuanhui Zhou, **Hadeel Albahar**, Hanyang Liu, Liu Tang, Changsheng Xie. Building A Fast and Efficient LSM-tree Store by Integrating Local Storage with Cloud Storage. doi.org/10.1109/Cluster48925.2021.00032

ATC'20 Nannan Zhao, **Hadeel Albahar**, Subil Abraham, Keren Chen, Vasily Tarasov, Dimitrios Skourtis, Lukas Rupprecht, Ali Anwar, and Ali R. Butt. DupHunter: Flexible High-Performance Deduplication for Docker Registries. dl.acm.org/doi/10.5555/3489146.3489199

Cluster'19 Nannan Zhao, Vasily Tarasov, **Hadeel Albahar**, Ali Anwar, Lukas Rupprecht, Dimitrios Skourtis, Amit S. Warke, Mohamed Mohamed, and Ali R. Butt. Large-Scale Analysis of the Docker Hub Dataset. doi.org/10.1109/CLUSTER.2019.8891000

NER'17 Mohamed Almekkawy, James Cunningham, Yi Song, **Hadeel Albahar**, Thyagarajan Subramanian. In-vivo transcranial ultrasound imaging of induced Substantia Nigra hyperechogenicity using adaptive sparse Third Order Volterra Filter. doi.org/10.1109/NER.2017.8008366

Posters

STM'18 Islam Elhelf, Hadia Abdelaal, Abeer Almekkawy, **Hadeel Albahar**, Mohamed Almekkawy. The Emerging Role of High Intensity Focused Ultrasound (HIFU) in Cancer Immunomodulation. researchgate.net/Immunomodulation

Talks and Presentations

Jan 2024 **Kuwait University AI and Robotics Society**. Linux - The basics of bash scripting and terminal commands.

Awards and Honors

2023 Judge, Hour of Code, programming competition by the Computer Engineering Society (CPES) and the Information Science Club (CLICKIT), Sabah Al-Salem University City, Kuwait.

2022 Student Volunteer, SCinet @ SC, Dallas, TX, USA.

2022 Grace Hopper Celebration virtual Hopper (Volunteer).

2022 GHC Student Scholarship to attend the virtual component of the Grace Hopper Celebration.

2021-2023 Member, I WILL (Inspiring Women in Lifelong Leadership) Institute, Virginia Tech.

2015 Hackathon Volunteer, the Data Science Institute at Columbia University, New York, NY.

2014 Kuwait University Scholarship recipient, Full scholarship to pursue M.S. and Ph.D. degrees.

2013 One of the top 10 students graduating from College of Engineering and Petroleum – Graduates of Excellence Ceremony Class of 2012/2013 under the patronage and presence of HH the Amir of Kuwait.

2012 Accepted into the Kuwait Fund For Arab Economic Development Training Program for Newly Graduated Engineers and Architects.

2008-2011 Dean's Honor list and Outstanding Students list – College of Engineering and Petroleum, Kuwait University.

Technical Skills

General Python, Bash, git, LaTeX, Matlab, Java, C/C++, SQL, HTML, ASP, Verilog, Assembly.

Systems Linux, Docker Containers, Kubernetes, Slurm, Cloud Computing (AWS), Ray, Openwhisk.

Analytics Machine Learning, Hadoop (Pig, Hive, Hbase, OOzie), Mahout, Spark (Scala).

Professional Service

Reviewer IEEE Transactions on Network Science and Engineering ('21, '22)

Sub-Reviewer IPDPS ('19 – '23), ICCD ('19), ICDCS ('19 – '22), BigData ('19, '21), HPDC ('20 – '22), CLUSTER ('20, '21), ICS ('21), ICMLA ('21), SC ('22), ECML PKDD ('22)

Mentoring Experience

Graduate Students

2021-present Shruti Dongare, Virginia Tech

2022 Anish Reddy Ellore, Virginia Tech

2022-present Sabiha Afroz, Virginia Tech

Undergraduate Students

2021-2022 Yanlin Du, Virginia Tech

Coursework, Workshops, and Training

Training Certificates Oak Ridge Leadership Computing Facility (OLCF) Hands-On HPC (HPC, MPI, OpenMP, CUDA programming) on Summit Supercomputer.

Graduate Coursework Deep learning, Information storage and retrieval, Algorithms Design, Theory of Computation, Numerical Solutions Applied to Heat Transfer and Fluid Mechanics problems, Performance Evaluation, Networks, Digital Communications, Network Security, Operating Systems, Advanced Internet Services, Big Data Analytics, Next Generation Networks, Content Distribution Networks, etc.

Workshop Certificates Team Building and Teamwork, Communication and Presentation Skills, Self and Time Management, Feasibility Study and Business Planning, Finance for Non Financials, Problem Solving and Decision Making, Project Management for Non Managerial, Contracts and Contract Management, Value Engineering, Report Writing, Organizational Structure and Work Ethics and Behavior, Health, Safety and Environment in Engineering Projects, Negotiation Skills.

Undergraduate Coursework Data structures and Algorithms, C++ and Java, Operating Systems, Digital logic, Embedded Systems, Circuits and Electronics series, Signals and systems, Computer Organization and Architecture, Networks series, Databases, etc.