

Ahmed M. A. SAYED

a.k.a. Ahmed M. Abdelmoniem

Senior Lecturer (Assoc. Prof.)

Queen Mary University of London

MSc Big Data Science Director

DT4SDG Expert & DERI Fellow & FEHA

Eng 153a, School of EECS, QMUL
London, E1 4FZ, United Kingdom

✉ ahmed.sayed@qmul.ac.uk

🌐 www.eecs.qmul.ac.uk/~ahmed

in Ahmed M. A. Sayed

🔗 [ahmedcs](#)

📞 Ahmed M. A. Sayed

📞 [ahmedcs982](#)

Research Profile

I lead SAYED Systems Group (<https://sayed-sys-lab.github.io>) in which we build Scalable, Advanced Yet Efficient Distributed Systems of the Future. Our research spans inter-related disciplines of computer science and engineering with a focus on system design and optimization for machine learning systems (training and inference efficiency, distributed ML, federated learning), distributed systems (architecture design, performance analysis, resource allocation, algorithmic optimization), computer networks (traffic engineering, congestion control, performance optimization, software-defined networking), and wireless networks (routing in mobile ad-hoc and wireless sensor networks). I am part of QMUL's Networks, Communication, and Systems Center (<https://www.seresearch.qmul.ac.uk/cncs/>). We work closely with the Networks group (<https://networks.eecs.qmul.ac.uk/>) and other academics at QMUL and various research groups in the UK and worldwide. Our main research project is KUber (<http://kuber.org.uk/>) funded by UKRI-EPSC.

Current Research Interests

- Systems for ML & ML for Systems
- Edge AI & Federated/Distributed Machine Learning
- Efficient and Resource-Constrained Machine Learning
- Internet of Things, Digital Twin, and Sustainable Computing
- Computer Networks and Systems

Grants and Funding

- 2024 **PI - EPSRC - UKRI**, *KUber: Knowledge Delivery System for Machine Learning at Scale* (<https://kuber.org.uk>), New Investigator Award, Granted 650K GBP
- 2022 **CoI - EPSRC - REPHRAIN Center**, *Moderation in Decentralised Social Networks (DSNmod)*, Granted 81K GBP
- 2022 **CoI - HKRGC - GRF**, *ML Congestion Control in SDN-based Data Center Networks*, Granted 600K HKD
- 2021 **CoI - KAUST - Competitive Research Grant**, *Machine Learning Architecture for Task-based Information Transfer*, Granted 400K USD
- 2013 **PhD - HKPFS - HK Research Grand Council**, *Efficient Optimizations for Water Pipes Monitoring Wireless Sensor Networks*, Granted - 150K USD

Education

- 2013-2017 **Ph.D., Computer Science and Engineering (GGA 4.0/4.2)**, *Computer Science and Engineering Department, Hong Kong University of Science and Technology, Hong Kong*

[PhD Thesis](#)

Title *On Improving The Performance of TCP Applications in Public Cloud Networks*
 Supervisor Assoc. Prof. Brahim Bensaou (CSE, HKUST)
 Committee Prof. Gary Chan (CSE, HKUST), Prof. Danny Tsang (ECE, HKUST), Assoc. Prof. Kai Chen (CSE, HKUST), Assoc. Prof. Chun Tung Chou (UNSW, Australia)
 Description The research led to proposing efficient schemes that have achieved considerable performance gains for cloud applications via mathematical modeling, empirical analysis, simulation, hardware prototyping and real-tested implementation and experiments on various network scenarios and topologies.
 2008–2012 **M.Sc./M.Res (Masters by Courses followed by Research), Computer Science (Distinction, ranked 1st)**, *Computer Science Department, Faculty of Computers and Information, Assiut University, Egypt*

Masters Thesis

Title *Routing Optimization of Mobile AD-HOC Networks Based on Ant Colony Algorithms*
 supervisor Prof. Hosni Ibrahim, Prof. Marghany H. Mohamed, Asst. Prof. Abdel-Rahman Hedar
 Description The research work led to proposing efficient routing optimizations based on Ant Colony Algorithms (ACO) that have demonstrated to achieve considerable performance gains for Mobile Ad-Hoc Networks (MANET) routing protocols via mathematical modelling, simulation analysis and implementation on various network scenarios and topologies. The research project, conducted while working full-time as a Lecturer Assistant, led to one International Conference and one International Journal Publication.

2003–2007 **B.Sc., Computer Science (Distinction with Honors, ranked 2nd)**, *Computer Science Department, Faculty of Computers and Information, Assiut University, Egypt*

Bachelors Thesis

Title *Enabling Video Calls over Internet and Bluetooth* - Ministry of Telecommunications, Egypt
 Description Full system implementation of end-to-end video calls system over Bluetooth and Internet using C# on the back-end server and J2ME on camera-ready mobile devices.
 2000–2003 **Egyptian General Secondary Examination (98.2%, ranked in the top 200 out of 400K+ student)**, *Almoshir Ahmed Esmail Secondary School, Assiut, Egypt*

Work Experience

Aug 2024– **Senior Lecturer (Associate Professor) & Director, MSc Data Science Program, School of Electronic Engineering & Computer Science, Queen Mary University of London**
 Duties **“Research:”** Managing research teams and active grants. Conducting scientific research in computer science and publishing high-quality papers, supervising M.S./Ph.D. students, and preparing research grant proposals. **“Teaching:”** Organizing and delivering modules at both the undergraduate and postgraduate levels. Performance assessment of students in weekly self-practice tasks. Interacting with students within office hours. Preparing and mentoring written examinations and course projects. **“Administration:”** Responsibility for developing and maintaining the MSc Data Science Programme. Active membership in school meetings to discuss departmental and school matters (teaching, research, and school management). Supporting the Networks group and DERI activities. **“Self-Development:”** Organizing workshops and delivering keynote talks and plenary panels in top venues.
 Modules Module organizer and sole lecturer for *ECS765P - Big Data Processing* module taught as part of the MSc Data Science Programme for the postgraduate level (level-7)
 Module organizer and sole lecturer for *EC640U/A/757P - Big Data Processing* module for both undergraduate (level-6) and postgraduate (level-7) levels
 2021–2024 **Lecturer (Assistant Professor) & Director, MSc Big Data Science Program, School of Electronic Engineering & Computer Science, Queen Mary University of London, UK**

- Duties **“Research:”** Managing research teams and active grants. Conducting scientific research in computer science and publishing high-quality papers, supervising M.S./Ph.D. students, and preparing research grant proposals. **“Teaching:”** Organizing and delivering modules at both the undergraduate and postgraduate levels. Performance assessment of students in weekly self-practice tasks. Interacting with students within office hours. Preparing and mentoring written examinations and course projects. **“Administration:”** Responsibility for developing and maintaining the BDS Programme activities about areas of interest and innovation within the Faculty. Active membership in school meetings to discuss departmental and school matters (teaching, research, and school management). **“Self-Development:”** Completed 2 years long PGCAP (4 modules), completed all necessary essential training for the role, and participated in several professional development courses and workshops.
- Modules Module organizer and sole lecturer for ***ECS765P - Big Data Processing*** module taught as part of the MSc Data Science Program for the postgraduate level (level-7)
Co-organize and teach the ***ECS637U/ECS757P - Digital Media and Social Networks*** module for both undergraduate (level-6) and postgraduate (level-7) levels
- 2020–2021 **Research Scientist**, *Extreme Computing Research Center (ECRC), King Abdullah University of Science and Technology (KAUST), Saudi Arabia*
- Duties Develop and write research proposals for obtaining research funding grants. Supervise graduate students. Collect resources and work with team members to complete the research plan. Present research results at meetings and engage in result publications. Be up-to-date with new research directions and findings by attending research seminars, workshops, and conferences. Review the literature and analyze their results. Systematically conduct systems-oriented research with a focus on improving the performance, scalability, and interpretability of distributed machine learning. Find efficient solutions for challenging computer science research problems. Design experiments to verify existing and new solutions and techniques. Write papers on novel ideas and new findings and publish them in reputed venues and journals. Communicate ideas and results with members. Understand relevant literature.
- 2019–2020 **Post-Doctoral Research Fellow**, *Extreme Computing Research Center (ECRC), King Abdullah University of Science and Technology (KAUST), Saudi Arabia*
- Duties Find efficient solutions for challenging computer science research problems. Design experiments to verify existing and new solutions and techniques. Collect resources and work with team members to complete the research plan. Develop and write research proposals for obtaining research funding grants. Present research results at meetings and engage in result publications. Attend research seminars, workshops and conferences to be aware of the new research directions and findings. Review the literature and analyze their results. Conduct computer and network system research with a focus on improving the performance, scalability and interpretability of distributed machine learning applications. Prepare manuscripts of novel ideas and findings to publish in reputed venues and journals. Communicate ideas and results with members. Understand relevant scientific literature. Work with group members.
- 2017-2018 **Senior Researcher**, *Future Network Theory Lab. Huawei Technologies Investing Co. Ltd.*
- Duties Conducting advanced research in network control, traffic engineering and resource management. Leading the system research directions. Research proposal preparation. Research publications. Patent development. Collaboration work management. Recruitment.

- Contributions I have contributed with our team to the redefinition and formulation of the ADN vision and its system implementation and evaluation both in simulation and real-testbed environments. ADN (and specifically fast-slow control) is a major long-term project in the lab, which is the main focus of the lab and so far has resulted in few paper and patent submissions. I have participated and taken the lead on several projects. A few projects are in direct collaboration with renowned professors at Stanford, CalTech, Cornell, CUHK, CityU, HKUST, Nanjing, and Tsinghua Universities. Moreover, I finished a stalled project in a record time. Other projects involved working closely with 4 interns to bring them to completion. Been actively responsible for the recruitment process for new hires and interns to our lab during different venues (e.g., SIGCOMM & NSDI & INFOCOM, etc). Successfully recruited 3 new full-time hires and 1 intern for the lab.
- 2018– **Assistant Professor**, *Faculty of Computers and Information, Assiut University, Egypt*
- Duties **“Research:”** Conducting research in computer science and publishing high-quality papers, supervising M.S./Ph.D. students and preparing research grant proposals. **“Teaching:”** Teaching and managing Computer Science courses at both the undergraduate level such as *Software Engineering, Project Management, Software Development and Technical Practice, Computer Security* and *Parallel Computing* and postgraduate level such as *Object-Oriented Software Engineering* and *Intro to Computers - Fine Arts*. Performance assessment of students in weekly self-practice tasks. Interacting with students within office hours. Preparing and mentoring written examinations and course projects. **“Administrative highlights:”** Active membership in faculty committee meetings to discuss departmental and school matters (teaching, research and school management). Active membership in department and school councils. Organizing research seminars. Director of Information Technology unit of the school. Membership in research council committees.
- 2012–2018 **Assistant Lecturer**, *Faculty of Computers and Information, Assiut University, Egypt*
- Duties Conducting scientific research in computer science and publishing high-quality papers. Pursuing my Doctorate degree. Teaching in classes and laboratories *Computer Networking, Network Programming* and *Network Analysis and Design* to undergraduate students. Performance assessment of students in weekly self-practice tasks. Interacting with students within office hours. Mentoring and grading written examination and course projects
- 2018-2021 **Technical Advisor**, *DeepCloudAI - a Decentralized AI-Driven Cloud Computing Infrastructure*
- Duties Advising throughout the development of DeepCloudAI (www.deepcloudai.com) project, including but not limited to, advising the development of white paper and technical paper, advising the development of the prototype. Consultation on the technical questions and technical problem solutions. Advising on the technical-related activities that is required for the completion of the Initial Coin Offering campaign.
- Fall 2017 **Teaching Assistant**, *Department of Computer Science and Engineering, The Hong Kong University of Science and Engineering.*
- Duties Assist in teaching *Computer Networks: An Internet-Perspective - CSIT5610* MSCIT course to post-graduate students. Grading examination papers. Students’ consultation. Examination proctoring.
- Spring 2017 **Linux Kernel Network Programming Assignment/Quiz Handler**, *Department of Computer Science and Engineering, The Hong Kong University of Science and Engineering.*
- Fall 2016 **Teaching Assistant**, *Department of Computer Science and Engineering, The Hong Kong University of Science and Engineering.*
- Duties Assist in teaching *Computer Networks - COMP 5621* PG Core and *Computer Networks: An Internet-Perspective - CSIT5610* MSCIT course to post-graduate students. Grading examination papers. Students’ consultation. Examination proctoring.

2007–2012 **Teaching Assistant**, *Faculty of Computers and Information, Assiut University, Egypt*
Duties Conducting scientific research in computer science and publishing high-quality papers. Pursuing my Masters degree. Teaching in classes and laboratories ***Computer Networking, Network Programming, Object-Oriented Programming using C++, Introduction to JAVA Programming, Introduction To Computers, Software Testing, Data Structure, Algorithms, Artificial Intelligence, Operating Systems, Distributed Database*** and ***IT Project Management*** to undergraduate students. Performance assessment of students in weekly lab tasks. Interacting with students within office hours. Mentoring and grading written examination and course projects

Other Research Interests

- Computer Networking, Congestion Control, and Traffic Engineering
- Software Defined Networking and Network Function Virtualization
- Feedback Control of Hybrid and Switched Systems
- Mobile Ad-hoc Networks and Wireless Sensors Network
- AI Optimization and Genetic algorithms

Sample Projects

- KUber: Knowledge Discovery System for Machine Learning at Scale (project website <https://kuber.org.uk>), 2024 – Now
- ML Congestion Control in SDN-based Data Center Networks, 2022 – Now
- Moderation in Decentralised Social Networks (DSNmod), 2022 – 2023
- Machine Learning Architecture for Task-based Information Transfer, 2021 – Now
- Efficient Decentralized Learning in Heterogeneous Mobile Edge Computing, 2020 – Now
- Resource Efficient Federated Learning, 2020 – Now
- Design, Implementation and Analysis of Methods to Improve Performance of Distributed Machine Learning Systems, 2019–2020
- Implementation, Evaluation and Analysis of Fast-Slow Network Control Framework for Application-Driven Networking, 2017–2018
- Implementation, Evaluation and Analysis of Efficient, Scalable and Easily-Deployable Congestion Traffic and Control Schemes in Data Centers and Cloud, 2013–2017
- Design, Implementation and Analysis of various routing protocols optimized for Mobile Ad-Hoc Networks (MANET) via leveraging Artificial Intelligence algorithms inspired from Ant Colonies, 2008–2012
- Implementation of a complete system for enabling video calls over Bluetooth and Internet using C# as the back-end server and J2ME as the mobile front-end, 2007

Supervision

- 2024-Now **PostDoc - QMUL**, *KUber: Knowledge Delivery System for Machine Learning at Scale*
- 2024-Now **PhD - QMUL**, *Novel Optimizations for Large Audio Models (LAMs)*
- 2023-Now **PhD - QMUL**, *Novel Optimizations for Large Audio Models (LAMs)*
- 2023-Now **PhD - QMUL**, *Efficient Optimizations for Decentralized Federated Learning on Mobile Devices*
- 2023-2024 **MSc**, *Enhancing Privacy of Decentralized Federated Learning in Healthcare*
- 2023-2024 **MSc**, *Evaluation of Latency for Real-Time Data Processing and Visualisation of Streaming Data*
- 2023-2024 **MSc**, *Comparative Analysis of Federated Transfer Learning Algorithms*

- 2023-2024 **MSc**, *Evaluation of Applications for Federated Transfer Learning*
- 2023-2023 **MSc**, *KubSmart - Kubernetes pod resources optimizer using Reinforcement learning*
- 2022-2023 **MSc**, *Multi-Target Domain Adaptation with Federated Learning*
- 2022-2023 **MSc**, *A Comparative Study of Centralised and Decentralised Fraud Detection Approaches*
- 2022-2023 **MSc**, *Federated Learning in Household Income Prediction*
- 2024-Now **Intern - QMUL**, *FedAgent: A Benchmark of Agent Frameworks of various Federated Learning Algorithms*
- 2022-2023 **Intern - QMUL**, *Energy-Aware Methods for Federated Learning on Battery-limited Clients*
- 2022-2023 **Intern - QMUL**, *Optimizing Distributed ML for Audio Models*
- 2020-2022 **Intern - QMUL**, *Novel Optimization for Efficient and Robust Federated Learning*
- 2021 **MS/PhD - KAUST**, *Mitigating Device Heterogeneity in Federated Learning via Asynchronous Stale Updates*
- 2021 **MS/PhD - KAUST**, *Prioritizing Participant Selection for Efficient Federated Learning*
- 2020 **MS/PhD - KAUST**, *Identifying the Limits of Gradient Sparsification Methods for Distributed Machine Learning*
- 2020 **Research Student Interns - KAUST**, *Study of Fairness and Bias in Federated Learning settings*
- 2020 **Research Student Interns - KAUST**, *An Efficient compression technique to reduce Communication in Distributed Deep Learning*
- 2019 **MS/PhD - KAUST**, *Survey and Empirical Analysis of Compressed Communication for Distributed Deep Learning*
- 2019 **MS/PhD - KAUST**, *Theoretical and Empirical Analysis of Layerwise and Whole-Model Compressed Communication Methods in Distributed Machine Learning*
- 2019 **Research Student Intern - KAUST**, *Energy-Efficiency of Hardware Offloading: Case-Study on Distributed Machine Learning*
- 2019 **Research Student Intern - KAUST**, *Scaling Distributed Machine Learning with In-Network Aggregation using Smart NICs*
- 2019 **Research Student Intern - KAUST**, *Accelerating Distributed Deep Learning with Adaptive Compression and Communication Scheduling*
- 2018 **PhD Research Student Intern - Huawei Research**, *Leveraging Programmable Data Plane to Accelerate Distributed Applications*
- 2018 **PhD Research Student Intern - Huawei Research**, *An Online Learning Multi-Path Selection Framework for Multi-path Transmission Protocols*
- 2018 **Research Student Intern - Huawei Research**, *Implementation of an SDN-based Fast-Slow Control system to Realise an Operational Prototype of the Application-Driven Networking (ADN) Framework*
- 2022-Now **FYPs Undergraduate Students - Queen Mary University of London**, *Resume4All: a simulated Resume Builder using Speech to Text and Text to Speech technologies for the visually impaired, Hybrid Adaptive Intrusion Detection System, Hobby Trader: A web app that lets users trade items to find their new passion, Qira'ah: Online Web Quran Memorization Platform*
- 2007-2013 **FYPs Undergraduate Students - Assiut University**, *Management System for controlling Wireless Access Points, HoneyPot Server Application, WiiMote Body Tracking & Robot Control System, Steganography Application to hide data in images and videos, Remote Desktop Control using Mobile Phones, Mobile Application in Traffic Service, Tourist Heaven - a tourist social networking application and Egyptian tourism company web system*

QMUL PGCAP - ADP7216 - Learning and Teaching in Higher Education
 PGCAP - ADP7217 - Learning and Teaching in the Disciplines
 PGCAP - ADP7218 - Curriculum Design
 PGCAP - ADP7219 - Action (Practitioner) Research
 KAUST Industrial Course on Deep Learning
 HKUST ELEC4320 - FPGA-based Design ELEC4010G - Control System Design
 COMP4511 - System and Kernel Programming in Linux
 COMP6611A - Data Center Networks and Cloud Computing
 COMP6611B - Cloud Computing and Data Analysis Systems
 FINA6900N - Startup Financing and Operations
 IELM5570 - Network Optimization in Transport Systems
 Stanford CVX101 - Convex Optimization
 MIT 6.00.1x - Introduction to Computer Science and Programming Using Python
 UPValencia DC201x - Dynamics and Control
 Microsoft DAT202.1x - Processing Big Data with Hadoop in Azure HDInsight

Professional Development Courses

QMUL	Challenging Unconscious Bias	Equality and Diversity Briefing
	Anti Bribery Essentials	Safeguarding Essentials
	GDPR for Staff	Cyber Security Training
KAUST	Scientific Writing	Communicating with Confidence
	Effective Scientific Writing	Research Communication Skills
	The Art and Science of Communication	Proven Techniques for Technical Communication
	Conveying messages with graphs	Making the most of your presentation
	The art and science of communication	Proven techniques for technical communication
HKUST	Effective Teaching Skills	Marking & Grading
	High-Tech Entrepreneurship	Understand the World of Work
	What Takes to be a Good Researcher	Conducting Labs
	Effective Presentation for Teaching	How to Write a Journal Paper
	How to Write CS Papers	How to Get Published
	Research ethics: Communities, choices, and values	
	Balancing Time between TA Duties and Research	
	Presenting Myself Through a Winning Profile	
AUN	Effective and Efficient Presentation	Academic Work and Research Ethics
	Scientific Publishing	Teaching Methodologies and Skills
	Credit Hour System	Time and Meeting Management
	Quality Assurance of Education Process	
	Communication Skills for Different Educational Approaches	

Voluntary Services

Editor Frontiers in HPC on the research topic of HPC for AI in Big Model Era
 Program 2nd International Workshop on Networked AI Systems (NetAISys) co-located with ACM
 Chair MobiSys, Tokyo, Japan, 2024

5th International Workshop on Embedded and Mobile Deep Learning (EMDL) co-located with ACM MobiSys, Virtual Online, 2021

KAUST-NeurIPS Workshop on Advances of Machine Learning, KAUST, 2019

Tutorial Distributed Deep Learning Clinic, KAUST, Saudi Arabia, 2020

Data Analytics in the Cloud in the International BioDialog Project, Exhibition and Hackathon on BioDiversity Informatics, Egypt, 2018

Preview Congestion Control Session, ACM SIGCOMM, 2022

Reviewer ACM/IEEE Transactions on Networking (ACM/IEEE ToN)

IEEE Transactions on Mobile Computing (IEEE TMC)

IEEE Transactions on Neural Networks and Learning Representation (IEEE TLNLS)

IEEE Internet of Things Journal (IEEE IoTJ)

IEEE Journal on Selected Areas in Communications (IEEE JSAC)

IEEE Transactions on Information Forensics and Security

IEEE Transactions on Cloud Computing (IEEE TCC)

IEEE Transactions on Network and Service Management (IEEE TNMS)

IEEE Transactions on Intelligent Transportation Systems (IEEE ITS)

Proceeding of the IEEE

IEEE Transaction on Machine Learning in Communications and Networking (TMLCN)

IEEE Access

ACM Transactions on Modeling and Performance Evaluation of Computing Systems

Journal of Computer Networks, Elsevier

Journal of Computer Communications, Elsevier

Journal of Future Generation Computer Systems, Elsevier

Journal of King Saud University - Computer and Information Sciences, Elsevier

Journal of Computer Standards and Interfaces, Elsevier

Journal of Telecommunication Systems, Springer

TPC/Reviewer ACM Conference on emerging Networking EXperiments and Technologies (ACM CoNEXT)

IEEE International Conference on Distributed Computing Systems (IEEE ICDCS)

International Conference on Machine Learning (ICML)

International Conference on Representation Learning (ICLR)

ACM The Web Conference (WWW)

IEEE Conference on High-Performance Switching and Routing (IEEE HPSR)

IEEE Vehicular Technology Conference (IEEE VTC)

USENIX Annual Technical Conference (ATC)

AAAI Conference On Artificial Intelligence (AAAI)

IEEE Conference on Network Protocols (IEEE ICNP)

IEEE International Performance Computing and Communications Conference (IPCCC)

IEEE Conference on Local Computer Networks (LCN)

ACM Conference on Modeling and Simulation of Wireless and Mobile System (MSWiM)

Workshop on Machine Learning for Software Networks (NetLearn), IEEE NetSoft

ACM Workshop on Machine Learning and Systems (EuroMLSys), ACM EuroSys

ACM Workshop on Data Privacy and Federated Learning Technologies for Mobile Edge Networks (FedEdge), ACM MobiCom

ACM Workshop on Distributed Machine Learning (Distributed ML), ACM CoNEXT

References - available upon request

Assoc. Prof.	Brahim Bensaou	<i>CSE Dept., HKUST, brahim@cse.ust.hk</i>
Assoc. Prof.	Marco Canini	<i>CEMSE Division, KAUST, macro@kaust.edu.sa</i>
Prof.	Kai Chen	<i>CSE Dept., HKUST, kaichen@cse.ust.hk</i>
Dr.	Bai Bo	<i>Huawei's Theory Lab, ee.bobbai@gmail.com</i>

Publication List-see [Google Scholar](#)

Thesis

- Ahmed M. Abdelmoniem, “On Improving the Performance of TCP Applications in Public Cloud Networks”. Ph.D. Thesis, HKUST, Hong Kong, <https://1bezone.ust.hk/bib/991012554564103412>, 2017.
- Ahmed M. Abdelmoniem, “Routing Optimization of Mobile AD-HOC Networks Based on Ant Colony Algorithms”. M.Sc. Thesis, Assuit University, Egypt, http://www.aun.edu.eg/thesis_files/4341.pdf, 2012.

Published International Refereed Journal Publication

- Ahmed M. Abdelmoniem and Brahim Bensaou. “Alleviating Congestion via Switch Design for Fair Buffer Allocation in Datacenters”. *IEEE Transactions on Cloud Computing (TCC)*, 2024.
- Chengyuan Huang, Tianfan Zhang, Li Wang, Yibo Xiao, Chao Yang, Chen Tian, Xiaoliang Wanga, Dong Zhang, Bingheng Yan, Ahmed M. Abdelmoniem, Wanchun Dou, Guihai Chena, “MpScope: Enabling Multi-pipeline Monitoring Inside a Switch”, *Elsevier Computer Networks*, 2024.
- Yuchao Zhang, Haoqiang Huang, Ahmed M. Abdelmoniem, Gaoxiong Zeng, Chenyue Zheng, Xirong Que, Wendong Wang, Ke Xu. “FLAIR: A Fast and Low-Redundancy Failure Recovery Framework for Inter Data Center Network”. *IEEE Transactions on Cloud Computing (TCC)*, 2024.
- Jian Chen, Yuan Gao, Gaoyang Liu, Ahmed M Abdelmoniem, Chen Wang, “Manipulating Pre-trained Encoder for Targeted Poisoning Attacks in Contrastive Learning”, in *IEEE Transactions on Information Forensics and Security*, 2024.
- Wenhao Song, Xiangqin Zeng, Ahmed M Abdelmoniem, Housheng Zhang, Mingliang Gao, “Cross-Modality Interaction Network for Medical Image Fusion”, in *IEEE Transactions on Consumer Electronics*, 2024
- Jianyong Wang, Xiangyu Guo, Qilei Li, Ahmed M Abdelmoniem, Mingliang Gao, “SDANet: Scale-Deformation Awareness Network for Crowd Counting”, in *Journal of Electronic Imaging*, 2024
- Amna Arouj, Ahmed M. Abdelmoniem, “Towards Energy-Aware Federated Learning via Collaborative Computing Approach”, *Computer Communications, Elsevier*, 2024
- Hadeel Alrubayyi; Moudy Sharaf Alshareef; Zunaira Nadeem; Ahmed M. Abdelmoniem; Mona Jaber. “Security Threats and Promising Solutions Arising from the Intersection of AI and IoT: A Study of IoMT and IoET Applications”. *MDPI Future Internet*, 2024.
- Z. Tian, Z. Wang, Ahmed M. Abdelmoniem, G. Liu and C. Wang, “Knowledge Representation of Training Data With Adversarial Examples Supporting Decision Boundary”, in *IEEE Transactions on Information Forensics and Security*, vol. 18, pp. 4116-4127, 2023.
- Ahmed M. Abdelmoniem and Brahim Bensaou. “Enhancing TCP via Hysteresis Switching: Theoretical Analysis and Empirical Evaluation”. *ACM/IEEE Transactions on Networking (ToN)*, 2023.

- **Ahmed M. Abdelmoniem** and Chen-yu Ho, Pantelis Papageorgiou, Marco Canini. “**A Comprehensive Empirical Study of Heterogeneity in Federated Learning**”. *IEEE Internet of Things (IoT) Journal*, 2023.
- Amuda James Abu, Brahim Bensaou, **Ahmed M. Abdelmoniem**, “**Dimensioning the pending interest table in content-centric networks**”. *Future Generation Computer Systems (FGCS)*, Elsevier, Volume 152, 2024, Pages 179-192
- Shiladitya Bhattacharjee, Himanshi Sharma, Tanupriya Choudhury, **Ahmed M. Abdelmoniem**, “**Leveraging Chaos for Enhancing Encryption and Compression in Large Cloud Data Transfers**”, *Journal of Supercomputing*, Springer, 2024
- Nauman Khan, Rosli bin Salleh, Zahid Khan, Anis Koubaa, Mosab Hamdan, **Ahmed M. Abdelmoniem**, “**Ensuring Reliable Network Operations and Maintenance: The Role of PMRF for Switch Maintenance and Upgrades in SDN**”. *Journal of King Saud University - Computer and Information Sciences*, Elsevier, 2023
- Karan Gadgil, Sukhpal Singh Gill, Ahmed M. Abdelmoniem, “**A Meta-learning based Stacked Regression Approach for Customer Lifetime Value Prediction**”. *Journal of Economy and Technology*, Elsevier, 2023
- Eric Bragion, Habiba Akter, Mohit Kumar, Minxian Xu, **Ahmed M. Abdelmoniem**, Sukhpal Singh Gill, **Fortaleza: The emergence of a network hub**. *Internet of Things and Cyber-Physical Systems*, Volume 3, 2023, Pages 272-279
- Sundas Iftikhar, Sukhpal Singh Gill, Chenghao Song, Minxian Xu, Mohammad Sadegh Aslanpour, Adel N Toosi, Junhui Du, Huaming Wu, Shreya Ghosh, Deepraj Chowdhury, Muhammed Golec, Mohit Kumar, **Ahmed M Abdelmoniem**, Felix Cuadrado, Blesson Varghese, Omer Rana, Schahram Dustdar, Steve Uhlig. “**AI-based fog and edge computing: A systematic review, taxonomy and future directions**”. *Internet Of Things Journal*, Elsevier, 2022.
- S Abdulah, W Atwa, **Ahmed M. Abdelmoniem**. **Active clustering data streams with affinity propagation**. *ICT Express* 8 (2), 276-282, 2022
- **Ahmed M. Abdelmoniem** and Brahim Bensaou. “**T-RACKs: A Faster Recovery Mechanism for TCP in Data Center Networks**”. *ACM/IEEE Transactions on Networking (ToN)*, 2021.
- Jiaqing Dong, Chen Tian, **Ahmed M. Abdelmoniem**, Huaping Zhou, Bo Bai, Hao Yin, Gong Zhang. “**Uranus: Congestion-proportionality among Slices based on Weighted Virtual Congestion Control**”. *Computer Networks*, Elsevier.
- **Ahmed M. Abdelmoniem**, Brahim Bensaou, and Amuda James Abu. “**Mitigating Incast-TCP Congestion in Data Centers with SDN**”. *Annals of Telecommunications - Springer. Special issue on Cloud Communications and Networking*.
- **Ahmed M. Abdelmoniem**, Hosny M. Ibrahim, Marghny H. Mohamed, and Abdel-Rahman Hedar. “**Ant Colony and Load Balancing Optimizations for AODV Routing Protocol**”. *International Journal of Sensor Networks and Data Communications*, volume 1, 2011. doi:10.4303/ijsndc/X110203

Published International Refereed Conference/Workshop Publications

- Ahmad Faraz Khan, Azal Ahmad Khan, **Ahmed M. Abdelmoniem**, Samuel Fountain, Ali Butt, Ali Anwar. “**FLOAT: Federated Learning Optimizations with Automated Tuning**”. *Proceedings of ACM EuroSys*, Athens, Greece, 2024
- Vibhor Agarwal, Aravindh Raman, Nishanth Sastry, **Ahmed M. Abdelmoniem**, Gareth Tyson, and Ignacio Castro. “**Decentralised Moderation for Interoperable Social Networks: A Conversation-based Approach for Pleroma and the Fediverse**”. *To Appear in Proceedings of AAAI ICWSM*, 2024.

- Gengxiang Chen, Kai Li, **Ahmed M. Abdelmoniem**, and Linlin You. “**Exploring Representational Similarity Analysis to Protect Federated Learning from Data Poisoning**”. In *Companion Proceedings of the ACM on Web Conference 2024 (WWW '24)*
- Jose A. Esquivel, Bradley Adlous, **Ahmed M. Abdelmoniem**, Ahmad Hilal, Linlin You, “**Performance Profiling of Federated Learning Across Heterogeneous Mobile Devices**”, In *Proceedings of the 24th International Conference of Software Quality, Reliability and Security (QRS), Cambridge, UK, 2024*
- Shaoyuan Chen, Linlin You, Rui Liu, Shuo Yu and **Ahmed M. Abdelmoniem**. “**Federated Knowledge Transfer Fine-tuning Large Server Model with Resource-constrained IoT Clients**”. *International Workshop on Federated Learning at International Joint Conference on Artificial Intelligence (IJCAI)*, Korea, 2024, **Best Student Paper Award**
- Peixuan Song, JunKyu Lee, **Ahmed M. Abdelmoniem**, Lev Mukhanov. “**Do 5G Networks Achieve The Proclaimed Promises? An Empirical Study Using YouTube Edge Service**”. *To appear in the Proceedings of IEEE Edge, Shenzhen, China, 2024.*
- Kasra Zaeri, **Ahmed M. Abdelmoniem**. “**EMPRN: Reinforcement Learning-based ECN Tuning Using Message Passing Graph Recurrent Networks for Datacenters**”. *To appear in the Proceedings of IEEE ICC, Denver, CO, USA, 2024.*
- Bradely Aldous, **Ahmed M. Abdelmoniem**. “**Comparative Profiling: Insights into Latent Diffusion Model Training**”. *Proceedings of ACM EuroMLSys (colocated with EuroSys), Apr 2024.*
- Amna Arouj, **Ahmed M. Abdelmoniem**, Ahmad Hilal, Linlin You and Chen Wang, “**Resource-Aware Split Federated Learning for Edge Intelligence**”, In *Proceedings of the 3rd Workshop on Machine Learning on Edge in Sensor Systems (co-located with CPS-IoT Week), Hong Kong, China, 2024*
- **Ahmed M. Abdelmoniem**, Yomna M. Abdelmoniem and Brahim Bensaou. “**Design and Analysis of an Incast Mitigation System** ”. *Accepted to Appear in Proceedings of IEEE International Telecommunications Conference (ITC) Egypt (IEEE ITC-Egypt), Cairo, Egypt, 2024..*
- **Ahmed M. Abdelmoniem**, AN Sahu, M Canini, SA Fahmy. “**REFL: Resource Efficient Federated Learning**”. In *Proceedings of ACM EuroSys, Rome, Italy, 2023*
- **Ahmed M. Abdelmoniem**, Y. M. Abdelmoniem and A. Elzanaty, “**A2FL: Availability-Aware Selection for Machine Learning on Clients with Federated Big Data**”, In *Proceedings of IEEE ICC, Rome, Italy, 2023*
- Chehri Abdellah, **Ahmed M. Abdelmoniem**, Muhammad Zeeshan Shakir, “**Machine Learning Classification of Hermite Gaussian Beams for 5G and Beyond Free-Space Optical Backhaul Links**”. In *Proceedings of IEEE Globecom, Kuala Lumpur, Malaysia, 2023*
- Tianfan Zhang, Huaping Zhou, Chengyuan Huang, Chen Tian, Wei Zhang, Xiaoliang Wang, Yi Wang, **Ahmed M. Abdelmoniem**, Matthew Tan, Wanchun Dou, Guihai Chen. “**Achieving Zero-copy Serialization for Datacenter RPC**”. In *Proceedings of IEEE IPCCC, Anaheim, CA, USA, 2023*
- Moudy Alshareef, Mona Jaber, **Ahmed M. Abdelmoniem**. “**A Differential Privacy Approach for Privacy-Preserving Multi-Modal Stress Detection**”. In *Proceedings of IEEE CAMAD, Edinburgh, UK, 2023*
- **Ahmed M. Abdelmoniem**, “**REFL: Resource Efficient Federated Learning**”. *Fifth UK Mobile, Wearable and Ubiquitous Systems Research Symposium, 2023*

- Sofia Zahri, Hajar Bennouri, Abdellah Chehri, **Ahmed M. Abdelmoniem**. “**Federated Learning for IoT Networks: Enhancing Efficiency and Privacy**”. In *Proceedings of IEEE World Forum on IoT, Portugal, 2023*
- **Ahmed M. Abdelmoniem**, AN Sahu, M Canini, SA Fahmy. “**Resource Efficient Federated Learning**”. *ICML Workshop on Federated Learning and Analytics in Practice: Algorithms, Systems, Applications, and Opportunities, 2023*
- Amna Arouj, **Ahmed M. Abdelmoniem**. **Towards Energy-Aware Federated Learning on Battery-Powered Clients**. In *Proceedings of the ACM Workshop on Data Privacy and Federated Learning Technologies for Mobile Edge Networks (FedEdge), ACM MobiCom, 2022*
- **Ahmed M. Abdelmoniem**. **Towards Efficient and Practical Federated Learning**. *Proceedings of the Workshop on Cross-Community Federated Learning: Algorithms, Systems and Co-designs (CrossFL), MLSys, 2022*
- **Ahmed M. Abdelmoniem**, CY Ho, P Papageorgiou, M Canini. **Empirical analysis of federated learning in heterogeneous environments**. *Proceedings of the 2nd European Workshop on Machine Learning and Systems (EuroMLSys), ACM EuroSys, 2022*
- Atal Sahu, Aritra Dutta, **Ahmed M Abdelmoniem**, Trambak Banerjee, Marco Canini, Panos Kalnis. **Rethinking gradient sparsification as total error minimization**. *Proceedings of NeurIPS, Spotlight (Top 3%), Virtual Conference, 2022*.
- Kelvin H.T. Chiu, Jason Min Wang, **Ahmed M. Abdelmoniem**, Brahim Bensaou. “**A Two-tiered Caching Scheme for Information-Centric Networks**”. *Proceedings of IEEE High Performance Switching and Routing (IEEE HPSR), Paris, France, June 2021*.
- **Ahmed M. Abdelmoniem**, Marco Canini. “**DC2: Delay-aware Compression Control for Distributed Machine Learning**”. *Proceedings of IEEE Computer Communications Conference (IEEE INFOCOM), Virtual Conference, May 2021*.
- **Ahmed M. Abdelmoniem**, Marco Canini. “**Towards Mitigating Device Heterogeneity in Federated Learning via Adaptive Model Quantization**”. *Proceedings of EuroMLSys workshop at ACM European Conference on Computer Systems (ACM EuroSys), Virtual Conference, Apr 2021*.
- Hang Xu, Chen yu-ho, **Ahmed M. Abdelmoniem**, Aritra Dutta, Elhoucine Bergou, Konstantinos Karatsenidis, Marco Canini, Panos Kalnis, “**GRACE: A Compressed Communication Framework for Distributed Machine Learning**”. *Proceedings of IEEE International Conference on Distributed Computing Systems (IEEE ICDCS), Virtual Conference, 2021*.
- **Ahmed M. Abdelmoniem**, Ahmed Elzanaty, Mohamed Slim-alouini, Marco Canini. “**An Efficient Statistical-based Gradient Compression Technique for Distributed Training Systems**”. *Proceedings of the International Conference on Machine Learning and Systems (MLSys), Virtual Conference, Apr 2021*.
- Rishikesh R. Gajjala*, Shashwat Banchhor*, **Ahmed M. Abdelmoniem***, Aritra Dutta, Marco Canini, Panos Kalnis. “**Huffman Coding Based Encoding Techniques for Fast Distributed Deep Learning**”. *Proceedings of Distributed ML workshop at 16th ACM International Conference on emerging Networking EXperiments and Technologies (ACM CoNEXT), Virtual Conference, Dec 2020*.
- **Ahmed M. Abdelmoniem**, Brahim Bensaou, Hengky Susanto. “**Reducing Latency in Multi-Tenant Data Centers via Cautious Congestion Watch**”. *Proceedings of 49th ACM International Conference on Parallel Processing - ICPP, Edmonton, Canada, 2020*.

- Aritra Dutta, Houcine Bergou, **Ahmed M. Abdelmoniem**, Chen-yu Ho, Atal Sahu, Marco Canini, Panos Kalnis, “**On the Discrepancy between the Theoretical Analysis and Practical Implementations of Compressed Communication for Distributed Deep Learning**”. *Proceedings of Thirty-Forth AAAI Conference on Artificial Intelligence (AAAI-20), New York, USA, Feb 2020.*
- **Ahmed M. Abdelmoniem**, Brahim Bensaou and Hengky Susanto. “**Taming Latencies in Data Center Networks via Active Congestion-Probing**”. *Proceedings of IEEE International Conference on Distributed Computing Systems (ICDCS), Dallas, Texas, USA, July 2019.*
- Hengky Susanto, **Ahmed M. Abdelmoniem**, Benyuan Liu, Honggang Zhang, Don Towsley. “**A Near-Optimal Multi-Faced Job Scheduler for Datacenter Workloads**”. *Proceedings of IEEE International Conference on Distributed Computing Systems (ICDCS), Dallas, Texas, USA, July 2019.*
- Hengky Susanto, **Ahmed M. Abdelmoniem**, Hao Jin, Brahim Bensaou. “**Creek: Inter Many-to-Many Coflows Scheduling for Datacenter Networks**”. *Proceedings of IEEE Communications Conference (IEEE ICC), Shanghai, China, May 2019.*
- **Ahmed M. Abdelmoniem** and Brahim Bensaou. “**Hysteresis-based Active Queue Management for TCP Traffic in Data Centers**”. *Proceedings of IEEE Computer Communications Conference (IEEE INFOCOM), Paris, France, Apr 2019..*
- **Ahmed M. Abdelmoniem**, Yomna M. Abdelmoniem and Brahim Bensaou. “**On Network Systems Design: Pushing the Performance Envelope via FPGA Prototyping**”. *Proceedings of IEEE Recent Trends in Computer Engineering Conference (IEEE ITCE), Aswan, Egypt, Feb 2019..*
- **Ahmed M. Abdelmoniem**, Brahim Bensaou, Victor Barsoum “**IncastGuard: An Efficient TCP-Incast Congestion Effects Mitigation Scheme for Data Center Network**”. In *Proceedings of IEEE Global Communications Conference (IEEE GlobeCom), UAE, Dec 2018.*
- **Ahmed M. Abdelmoniem** and Brahim Bensaou. “**Curbing Timeouts for TCP-Incast in Data Centers via A Cross-Layer Faster Recovery Mechanism**”. *IEEE Conference on Computer Communications (IEEE INFOCOM), Honolulu, HI, April 2018.*
- Abadhan S. Sabyasachi, H M Dipu Kabir, **Ahmed M. Abdelmoniem**, Subrota K. Mondal. “**A Resilient Auction Framework for Deadline-Aware Jobs in Cloud Spot Market**”. *IEEE 36th Symposium on Reliable Distributed Systems (IEEE SRDS), Hong Kong, Sept 2017.*
- **Ahmed M. Abdelmoniem** and Brahim Bensaou. “**Enforcing Transport-Agnostic Congestion Control via SDN in Data Centers**”, In *IEEE Conference on Local Computer Networks (IEEE LCN), Singapore, Oct 2017.*
- **Ahmed M Abdelmoniem**, Brahim Bensaou and Amuda James Abu. “**SICC: SDN-based Incast Congestion Control for Data Centers**”. *IEEE International Conference on Communications (IEEE ICC), Paris, France, May 2017.*
- Amuda James Abu, Brahim Bensaou, **Ahmed M Abdelmoniem**. “**Inferring and Controlling Congestion in CCN Via the Pending Interest Table Occupancy**”. *Proceedings of the 40th IEEE Conference on Local Computer Networks (IEEE LCN), Dubai, UAE, Oct. 2016*
- **Ahmed M Abdelmoniem**, Brahim Bensaou, Amuda James Abu. “**HyGenICC: Hypervisor-based generic IP congestion control for virtualized data centers**”. In *Proceedings of IEEE International Conference on Communications (IEEE ICC), Kuala Lumpur, Malaysia, May 2016.*

- Amuda James Abu, Brahim Bensaou, **Ahmed M Abdelmoniem**. “**A Markov Model of CCN Pending Interest Table Occupancy with Interest Timeout and Retries**”. In *Proceedings of IEEE International Conference on Communications (ICC)*, Kuala Lumpur, Malaysia, May 2016.
- **Ahmed M. Abdelmoniem** and Brahim Bensaou. “**Efficient Switch-Assisted Congestion Control for Data Centers: an Implementation and Evaluation**”. In *Proceedings of the IEEE International Performance Computing and Communications Conference (IPCCC) 2015*, Nanjing, China, Dec 2015.
- **Ahmed M. Abdelmoniem** and Brahim Bensaou. “**Incast-Aware Switch-Assisted TCP Congestion Control for Data Centers**”. In *Proceedings of IEEE Global Communications Conference (IEEE GlobeCom)*, San Diego, USA, Dec 2015.
- **Ahmed M. Abdelmoniem** and Brahim Bensaou. “**Reconciling Mice and Elephants in Data Center Networks**”. In *Proceedings of IEEE International Conference on Cloud Networking (IEEE CloudNet)*, Niagara Falls, Canada, Aug. 2015
- **Ahmed M. Abdelmoniem**, Hosny M. Ibrahim, Marghny H. Mohamed, and Abdel-Rahman Hedar. “**An ant colony optimization algorithm for the mobile ad hoc network routing problem based on AODV protocol**”. In *Proceedings of the 10th IEEE International Conference on Intelligent Systems Design and Applications (IEEE ISDA)*, Cairo, Egypt, Nov. 2010.

Referred Book Chapters

- Mousumi Hota, **Ahmed M. Abdelmoniem**, Minxian Xu, Sukhpal Singh Gill, “**Leveraging Cloud-Native Microservices Architecture for High Performance Real-Time Intra-Day Trading: A Tutorial**”. In: *Kumar, M., Gill, S.S., Samriya, J.K., Uhlig, S. (eds) 6G Enabled Fog Computing in IoT. Springer, Cham.*
- Sanskar Tewatia, Ankit Anil Patel, **Ahmed M. Abdelmoniem**, Minxian Xu, Kamalpreet Kaur, Mohit Kumar, Deepraj Chowdhury, Adarsh Kumar, Manmeet Singh, Sukhpal Singh Gill, “**GPU Based AI for Modern E-Commerce Applications: Performance Evaluation, Analysis and Future Directions**”. In: *Kumar, M., Gill, S.S., Samriya, J.K., Uhlig, S. (eds) 6G Enabled Fog Computing in IoT. Springer, Cham.*

Accepted Referred Publications

- **Ahmed M. Abdelmoniem**, Brahim Bensaou and Hengky Susanto. “**Starting on the Right Foot: Congestion-Probing on Connection Setup to Control Latency in Data Center**”. Accepted In IEEE Conference on Local Computer Networks (IEEE LCN), Chicago, Oct 2018. *Withdrawn due to publication as a poster.*
- Wenwen Fu, Tao Li, **Ahmed M. Abdelmoniem**, and Zhigang Sun, “**STRIDE: Single-Trip-time based Reliable Data Transport Protocol for the Reconfigurable Cloud**”. Accepted In Proceedings of IEEE Global Communications Conference (IEEE GlobeCom), UAE, Dec 2018. *Withdrawn due to company policy, published later in ICC’18 without any Huawei authors.*

Patents

- **Ahmed M. Abdelmoniem**, Ahmed Elzanaty, Mohamed Slim-alouini, Marco Canini. “**Efficient Gradient Compression for Fast Distributed Training**”. *US Patent WO2022003562A1*
- Hengky Susanto, **Ahmed M. Abdelmoniem** and Amuda James Abu. A “**MX-ECN: Multi-Level Queue Congestion Notification Scheme**”. *Pending Submission.*

Oral Presentations and Talks

- **Ahmed M. Abdelmoniem**, “**Performance Profiling of Federated Learning Across Heterogeneous Mobile Devices**”, 24th *International Conference of Software Quality, Reliability and Security (QRS)*, Cambridge, UK, Jul 2024

- “Resource-Aware Split Federated Learning for Edge Intelligence”. In *Proceedings of ACM SenSys-ML (CPS-IoT)*, Hong Kong, May 2024
- “A Differential Privacy Approach for Privacy-Preserving Multi-Modal Stress Detection”. In *Proceedings of IEEE CAMAD*, Edinburgh, UK, Nov 2023
- Ahmed M. Abdelmoniem, “REFL: Resource Efficient Federated Learning”. *Proceedings of ACM European Computer Systems Conference (ACM EuroSys)*, Rome, May 2023.
- Ahmed M. Abdelmoniem, “DC2: Delay-aware Compression Control for Distributed Machine Learning”. *Proceedings of IEEE Computer Communications Conference (IEEE INFOCOM)*, Virtual Conference, May 2021.
- Ahmed M. Abdelmoniem “Towards Mitigating Device Heterogeneity in Federated Learning via Adaptive Model Quantization”. *Proceedings of EuroMLSys workshop at ACM European Conference on Computer Systems (ACM EuroSys)*, Virtual Conference, Apr 2021.
- Ahmed M. Abdelmoniem “An Efficient Statistical-based Gradient Compression Technique for Distributed Training Systems”. *Proceedings of the International Conference on Machine Learning and Systems (MLSys)*, Virtual Conference, Apr 2021.
- Hengky Susanto and Ahmed M. Abdelmoniem. “Reducing Latency in Multi-Tenant Data Centers via Cautious Congestion Watch”. *Proceedings of 49th ACM International Conference on Parallel Processing - ICPP*, Virtual Conference, 2020.
- Ahmed M. Abdelmoniem. “Taming Latencies in Data Center Networks via Active Congestion-Probing”. *IEEE ICDCS 2019*, Dallas, Texas, USA, July 2019.
- Ahmed M. Abdelmoniem. “On Network Systems Design: Pushing the Performance Envelope via FPGA Prototyping”. *IEEE ITCE*, Aswan, Egypt, 2nd Feb 2019.
- Ahmed M. Abdelmoniem. “Hands-on Tutorial on Data Analytics in the Cloud”. *The International BioDialog Project, Exhibition and Hackathon on BioDiversity Informatics*, Egypt, Nov, 2018.
- Ahmed M. Abdelmoniem. “Curbing Timeouts for TCP-Incast in Data Centers via A Cross-Layer Faster Recovery Mechanism”. *IEEE INFOCOM*, Honolulu, HI, April 2018.
- Ahmed M. Abdelmoniem. “Enforcing Transport-Agnostic Congestion Control via SDN in Data Centers”, In *IEEE LCN*, Singapore, Oct 2017.
- Ahmed M Abdelmoniem. “SICC: SDN-based Incast Congestion Control for Data Centers”. *IEEE ICC*, Paris, France, May 2017.
- Ahmed M Abdelmoniem. “HyGenICC: Hypervisor-based generic IP congestion control for virtualized data centers”. *IEEE ICC*, Kuala Lumpur, Malaysia, May 2016.
- Ahmed M. Abdelmoniem. “Incast-Aware Switch-Assisted TCP Congestion Control for Data Centers”. *IEEE GlobeCom*, San Diego, USA, Dec 2015.

Poster Presentations

- Abadhan S. Sabyasachi, H M Dipu Kabir, Ahmed M. Abdelmoniem, Subrota K. Mondal. “A Resilient Auction Framework for Deadline-Aware Jobs in Cloud Spot Market”. *IEEE 36th Symposium on Reliable Distributed Systems (SRDS)*, 6-Pages Hong Kong, Sept 2017.

Invited Abstracts/Keynotes/Talks

- Ahmed M. Abdelmoniem. “Towards Practical and Efficient Federated Learning”. *The Intelligent Methods, Systems, and Applications (IMSA) Conference*, Cairo, Egypt, Jul. 2023

- Ahmed M. Abdelmoniem. “AI and Edge Technologies for Fostering SDGs”. *International Conference on SUSTAINABILITY: Recent developments in research and teaching towards the United Nations Sustainable Development Goals, Online, Jun. 2023*
- Ahmed M. Abdelmoniem. “REFL: Resource-Efficient Federated Learning”. *MobiUK workshop, Lancaster, UK, May. 2023*
- Ahmed M. Abdelmoniem. “Distributed Deep Learning Clinic”. *KAUST-NeurIPS meet-up workshop, Saudi Arabia, Dec. 2019*
- Ahmed M. Abdelmoniem. “Data Analytics in the Cloud (hands-on tutorial)”. *The BioDialog Project: Exhibition and Hackathon on BioDiversity Informatics, Assiut University, Egypt, Nov. 2018*
- Ahmed M. Abdelmoniem. “VRC: Fast and Slow Control for Bandwidth Guarantee and Bounded-Delay in Data Centers”. *Joint Workshop among Huawei’s Research Labs and Academic Advisory Board, Beijing, Mar. 2018.*
- Ahmed M. Abdelmoniem. “Improving Applications’ Performance in the Cloud and the Road toward Application Driven Networking”. *Invited Talk, School of Science and Technology, Singapore University of Social Sciences (SUSS), Singapore, Nov. 2017.*
- Ahmed M. Abdelmoniem. “Cloud Networking: Current Trends, Problems and Some Solutions”. *Keynote Speech 7th IEEE International Conference on Intelligent Computing and Information Systems (IEEE ICICIS), Cairo, Egypt, Jan. 2016.*

Technical Reports

- Hang Xu, Chen yu-ho, Ahmed M. Abdelmoniem, Aritra Dutta, Elhoucine Bergou, Konstantinos Karatsenidis, Marco Canini, Panos Kalnis, “Compressed Communication for Distributed Deep Learning: Survey and Quantitative Evaluation”. *Tech. Rep. KAUST. <http://hdl.handle.net/10754/662495>.*
- Ahmed M. Abdelmoniem and Brahim Bensaou, “Switch-based Schemes for TCP Performance Enhancement in Data Centers: Design, Synthesis and Evaluation”. *Tech. Rep. HKUST-CS17-03.*
- Ahmed M. Abdelmoniem and Brahim Bensaou, “End-host Timely TCP Loss Recovery via ACK Retransmission in Data Centres”. *Tech. Rep. HKUST-CS17-02.*
- Ahmed M. Abdelmoniem and Brahim Bensaou, “Control Theory Based Hysteresis Switch for Congestion Control in Data Centers”. *Tech. Rep. HKUST-CS17-01.*
- Ahmed M. Abdelmoniem and Brahim Bensaou, “SDN-based Generic Congestion Control Mechanism for Data Centers: Implementation and Evaluation”. *Tech. Rep. HKUST-CS16-02*
- Ahmed M. Abdelmoniem and Brahim Bensaou, “SICC: SDN-based Incast Congestion Control Framework for Data Centers: Implementation and Evaluation”. *Tech. Rep. HKUST-CS16-01.*
- Ahmed M. Abdelmoniem and Brahim Bensaou, “Generic Hypervisor-based congestion control for data centers: Implementation and evaluation”. *Tech. Rep. HKUST-CS15-03.*

PrePrints

- Ahmed M. Abdelmoniem and Brahim Bensaou. A “FairQ: Fair and Fast Rate Allocation in Data Centers”. *arXiv:2401.04850, Jan 2024.*
- Ahmed M. Abdelmoniem, Pantelis Papageorgiou, Chen-yu Ho, Marco Canini, Muhammed Bilal. “On the Impact of Device and Behavioral Heterogeneity in Federated Learning”. *arXiv:2102.07500, Feb. 2021.*

- **Ahmed M. Abdelmoniem**, Ahmed Elzanaty, Mohamed Slim-alouini, Marco Canini. “**An Efficient Statistical-based Gradient Compression Technique for Distributed Training Systems**”. *arXiv:2101.10761, Jan 2020*.
- **Ahmed M. Abdelmoniem** and Brahim Bensaou. A “**Design and Implementation of Fair Congestion Control for Data Centers Networks**”. *arXiv:2012.00339, Dec 2020*.