

Ahmed M. A. SAYED

a.k.a. Ahmed M. Abdelmoniem

Senior Lecturer (Assoc. Prof.)

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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
- Federated & Distributed Machine Learning
- Computer Networks and Systems

Grants and Funding

- 2023 **PI - EPSRC - UKRI**, *KUber: Knowledge Delivery System for Machine Learning at Scale*, 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 Proposing efficient schemes that have demonstrated to achieve considerable performance gains for cloud applications via mathematical modeling, empirical analysis, simulation, hardware prototyping and real-testbed implementation and experiments on various network scenarios and topologies.
- 2008–2012 **M.Sc., 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 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 modeling, simulation analysis and implementation on various network scenarios and topologies.
- 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

- 2024–Now **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 research 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 them in reputed venues and journals. Communicate ideas and results with members. Understand relevant scientific literature. Work with group members.
- 2018– **Assistant Professor**, *Faculty of Computers and Information, Assiut University, Egypt*

- Duties **“Research:”** Conducting scientific 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 and library council committees.
- 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 resulted in few paper and patent submissions. Have participated and taken the lead on several projects. A few of the projects are in direct collaboration with renowned professors at Stanford, CalTech, Cornell, CUHK, CityU, HKUST, Nanjing, and Tsinghua Universities. Moreover, 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 for the Lab 3 new full-time hires and 1 intern.
- 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

Relevant Research Experience and 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

- ML Congestion Control in SDN-based Data Center Networks, 2022 – Now
- Moderation in Decentralised Social Networks (DSNmod), 2022 – Now
- 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**, *Advancing NLP via Accelerated Deep Learning*
- 2023-Now **PhD - QMUL**, *Novel Optimizations for Large Audio Models (LAMs)*
- 2023-Now **PhD - QMUL**, *Efficient Optimizations for Decentralized Cross-Silo Federated Learning*
- 2022-Now **Intern - QMUL**, *Energy-Aware Methods for Federated Learning on Battery-limited Clients*
- 2022-Now **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 Inters - KAUST**, *Study of Fairness and Bias in Federated Learning settings*
- 2020 **Research Student Inters - 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*
- 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*

Honors, Awards and Scholarships

- 2013–2017 **Hong Kong PhD Fellowship (HKPFS) award**, *HK Research Grants Council*
- 2013–2017 **HKPFS research travel grant award**
- 2017 **Student Participation Grant**, *Local Computer Networks (IEEE LCN)*, IEEE CompSoc
- 2015 **Travel Grant award**, *Global Communications (GlobeCom) conference*, IEEE ComSoc
- 2007 **FYP sponsorship award**, *Ministry of Telecommunications*, Egypt
- 2003–2007 **Undergraduate Distinction award**, *for TGA of 85%-above*, Assiut University
- 2003–2007 **Dean's Honors**, *TGA of 85%+*, Faculty of Computers and Information, Assiut University

Programming, Presentation, Modeling and System Skills

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|--------------|---------------------|--------------------------------------------------------------------------------------|
| Presentation | Power Point, Beamer | Typography L ^A T _E X, Microsoft office |
| | AI/ML | Tensorflow, PyTorch, Distributed ML, Federated Learning, RAY, Horovod, BytePS, WANDB |
| | Modeling | Mathematical, Queueing theory, MatLab, Simulink |
| | Info. | Awk, Gnuplot, Matplotlib, Pandas, Bokeh, Perl, Excel, SPSS |
| | Extraction | |
| | Simulation | NS-2, NS-3, OPNET Modeler, Mininet |

Programming, C, C++, Java, Python, C#, Git, Network Programming, SDN Applications, Ryu SDN
 Web & DB Controller, P4/Tofino, Verilog, Tcl, shell scripting, HTML, PHP, SQL Server, Oracle DB
 System Linux Kernel Modules, NetFilters, TCP/IP Stack, RDMA/RoCE/PFC, NetFPGA, Ku-
 Prototyping bernetes, Kprobes, Open vSwitch, OVN, OpenFlow, OpenStack, DPDK, JUJU, CONDA,
 Ubuntu MASS, Broadcom OpenNSL & OFDPA API, Amazon EC2, Microsoft Azure
 Virtualization KVM, Qemu, Xen Hypervisor, Virtual Box
 OS Linux (Desktop/Server), Windows (Pro/Server), MacOS, Open Network Linux, SONiC

Language Proficiencies

Arabic	Native	<i>Listening, Reading, Speaking and Writing</i>
English	Fluent	<i>Listening, Reading, Speaking and Writing</i>

Professional Membership

IEEE	IEEE and IEEE ComSoc Society Regular Member
ACM	ACM Regular Member
USENIX	USENIX Regular Member
Cisco	Cisco Networking Academy Certified Instructor
Comp Soc	Hong Kong Computer Society Member

Professional Courses and Certification

Nvidia	NVIDIA training: Data Science at Scale
Nvidia	Nvidia-HKUST (DBI) Joint Deep Learning Workshop
Cisco	Cisco Certified Networking Associate (CCNA)
Oracle	Oracle Database Administration (Oracle DBA)

Surplus Courses

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 Chair	2nd International Workshop on Networked AI Systems (NetAISys) co-located with ACM 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 Neural Networks and Learning Representation (IEEE TLNNS)
	IEEE Internet of Things Journal (IEEE IoTJ)
	IEEE Journal on Selected Areas in Communications (IEEE JSAC)
	ACM Transactions on Modeling and Performance Evaluation of Computing Systems
	IEEE Transactions on Cloud Computing (IEEE TCC)
	IEEE Transactions on Mobile Computing (IEEE TMC)
	IEEE Transactions on Network and Service Management (IEEE TNMS)
	IEEE Access
	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

International Journal of Artificial Intelligence (IJ-AI)

The Computer Journal by Oxford Academic

The Arabian Journal for Science and Engineering (AJSE)

International Journal of Systems, Control and Communications (IJSCC)

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

IEEE International Conference on Distributed Computing Systems (ICDCS)

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

International Conference on Machine Learning (ICML)

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

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

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.
- 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
- 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 Abdullah, 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 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)*
- 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*.
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