

Education:

University of Massachusetts, Amherst, MA	2019 – Now
<ul style="list-style-type: none">MS/Ph.D. Student in College of Information & Computer SciencesMy research focuses on the efficient training and deployment of machine learning systems.Affiliated with Lass research group and supervised by Prof. Prashant Shenoy	GPA: 4.0
Helwan University, Egypt	2015 – 2018
<ul style="list-style-type: none">MS. in Computer EngineeringThesis: Container Type Virtualization Management in Cloud Computing – The work resulted in three publications	GPA: 3.4
Information Technology Institute (ITI), Egypt	2012
<ul style="list-style-type: none">Diploma in Systems Design with a Minor in Software ArchitectureProject: Saaalek, a traffic analytics software deployed in public transportations (1st place in ICT4Change)	
Helwan University, Egypt	2006 – 2011
<ul style="list-style-type: none">B.Sc. in Computer EngineeringGraduation Project: Driver Assistance (Driver Behavior Reporting) using computer vision and ultrasonic sensors	82.5% - Top Of Class

Research Experience:

University of Massachusetts Amherst – Research Assistant	2019 – Now
<i>Machine Learning on the Edge:</i> <ul style="list-style-type: none">Develop ML inference framework on edge devices such as Nvidia Jetson Nano, Google Edge TPUs, and Intel VPUs.The system aims to provide theoretical and technical latency guarantees under static and dynamic workloads.The system is deployed using k8s and allows multi-objective management. <i>Elastic Machine Learning:</i> <ul style="list-style-type: none">Develop a black box performance model for distributed machine learning systems workloads under elastic resources.The model is utilized to provide training time/cost guarantees on multi-tenant cloud resources.	
Testicide, Egypt – Research Engineer	2017 – 2019
<ul style="list-style-type: none">Executed research in Elasticity Control, GUI testing, and Cloud BillingDevelop an elasticity control for Selenium Grid/Docker using case-based reasoning - Publication Pending.Design of an alpha version of the company’s novel “codeless” GUI testing framework	
Public University of Navarra, Spain – Research Assistant	Feb – Aug 2018
<ul style="list-style-type: none">Participated in MEDSOL Project Funded by ERASMUS+ Focused on renewable systems researchPerformed research in “Solar Panels anomaly detection using Machine learning.”My work in detecting panels cleanliness was published ICENCO 2019 conference	
Helwan University, Egypt – Research Assistant	2015 – 2019
<ul style="list-style-type: none">Developed an elasticity control/load balancing algorithms for containers as a service cloud.Construct containers live migration traces and benchmarking tool using Docker-runC and CRIU	

Publications:

- Q. Liang, **W. A. Hanafy**, A. Ali-Eldin, P. Shenoy “Model-driven Resource Management of AI Inference Workloads on Shared Edge Clusters” – Under Review
- W. A. Hanafy**, A. Pina and S. A. Salem, “Machine Learning Approach for Photovoltaic Panels Cleanliness Detection,” 2019 15th International Computer Engineering Conference (ICENCO), Cairo, Egypt, 2019, pp. 72-77, doi: 10.1109/ICENCO48310.2019.9027402.
- W. A. Hanafy**, A. E. Mohamed and S. A. Salem, “A New Infrastructure Elasticity Control Algorithm for Containerized Cloud,” in IEEE Access. doi: 10.1109/ACCESS.2019.2907171.
- W. A. Hanafy**, A. E. Mohamed and S. A. Salem, “Novel selection policies for container-based cloud deployment models,” 2017 13th International Computer Engineering Conference (ICENCO), Cairo, 2017, pp. 237-242, doi: 10.1109/ICENCO.2017.8289794.
- W. A. Hanafy**, A. E. Mohamed and S. A. Salem, “A load balancing with power optimization algorithm for container-based infrastructure management,” 2017 12th International Conference on Computer Engineering and Systems (ICCES), Cairo, 2017, pp. 161-166, doi: 10.1109/ICCES.2017.8275296.

Teaching Experience:

University of Massachusetts Amherst – Teaching Assistant **Spring 2020**

- COMPSCI 577 (OS Design and Implementation): Plan and develop the lab materials and weekly assignments

Information Technology Institute (ITI), Egypt – Visiting Lecturer **2015 – 2019**

- Design and teach multiple hands-on courses in software design, cloud computing, and software architecture
- Technologies: Microsoft Stack, Microsoft Azure, and Docker

Helwan University, Egypt – Teaching Assistant **2015 – 2019**

- Participated in the teaching and design of several courses, including; Software Engineering, Database Systems, Operating System, Cloud Computing, and Distributed Systems.
- Deployed and Administered Cloud Computing Lab based on VMware VCenter 5.5 stack funded by DELL EMC

Development Experience:

IT-Bits, UAE – Software Engineer **2016 – 2017**

- Lead the successful development of software solutions for multiple pharmaceutical companies
- Deployed projects included: Finance Control, Expense Tracking, Personnel Performance Management
- Stack: asp.net– Entity framework - Angular JS – SQL Azure – Azure

Consukorra-PES, Egypt – Software Engineer **2012 – 2013**

- Design and Implement a GIS-based data collection platform, leading to a 200% speedup in the collection process.
- Implemented data visualization and statistics in coordination with the sales team, resulting in multiple deals.
- Stack: .net Stack – PostgreSQL– Quantum GIS

Technical Skill

- Programming Languages: Python, C#, C/C++, Java
- Database Systems: MSSQL, MySQL, COSMOSDB
- Testing: XUnit, Specflow, Selenium
- Web Development: .net Stack, Angularjs
- Cloud Computing: Azure, VMware, Docker, and K8s
- Machine Learning: Python Stack, Pytorch, and Keras

Volunteer Work:

- **Mentor at “Docker Egypt Meetup”** funded by Docker, I delivered multiple training on Docker and Docker Swarm
- **Organizer and Co-Founder of “Cairo. NET Architects Meetup”**