Muhammad Hamdy AlAref

Computer Engineer

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Experience

Teaching Assistant — *Sep 2019 – May 2020*

Zewail City of Science and Technology

- Co-teach and create new tutorial/lab material for courses; *Artificial Intelligence*, *Big Data Analytics*, *Operating Systems* and *Programming Fundamentals*.
- Set up a *high-performance cluster* for large-scale computations and analytics.

Teaching Assistant — *Sep 2019 – Jan 2020*

Cairo University

- Co-teach *Pattern Recognition & Neural Networks* and *Operating Systems* courses.

Distributed Back-end Engineer — *Jul 2017 – Oct 2017*

CAM^2 Project – Purdue University (remote)

- Researched the possibility of leveraging modern distributed big data frameworks for the *CAM^2* project.
- Developed a distributed version of the *CAM^2* back-end in *Python* using *Apache Spark*.
- Developed a *RESTful API* to unify access to the new back-end using *Flask*.
- Developed a web browser-based interface using *Bootstrap* as well as a command-line interface using *Click* for ease of use.

Education

Bachelor of Computer Engineering — *2015 – 2019*

Cairo University

Grade: *Excellence with Honors*

- Elected *Class Representative* for the senior year.
- Elected *Leader* of a 22-member team for an academic project in artificial intelligence (Scrabble-playing agent).
- Received *Certificate of Appreciation* from my class.

Self-Study

Online Platforms

- Project and Time Management *(UC Irvine, Coursera)*
- Mathematics for Computer Science *(MIT, OCW)*
- Python for Data Science *(UC San Diego, edX)*
- Software Construction in Java *(MIT, edX)*
- Software Security *(University of Maryland, Coursera)*
- Agile Development Using Ruby on Rails *(UC Berkeley, edX)*
- Cloud Computing Concepts and Applications *(University of Illinois, Coursera)*

Languages

English — *Full Professional Proficiency*

Arabic — *Native Proficiency*

Mandatory Military Service

On duty; June 2020/2021

Skills

Good with *Python*, *C/C++*, *Java SE*, *TypeScript*, *JavaScript*, *Linux*, *Git*, *Spark*, *Flask* and *LaTeX*.
Dealt with *Hadoop*, *Flink*, *OpenGL*, *Spring*, *SQL*, *NoSQL*, *Node.js*, *jQuery*, *Bootstrap* and *Heroku*.
Familiar with *Amazon Web Services*, *Google Cloud Platform*, *Kubernetes*, *Ruby on Rails* and *VHDL*.

Academic Team Projects

Digitizer — *Graduation Project*

Low-price high-resolution CNC-based 3D scanner head using *laser triangulation* technology.
Sponsored by *Si-Ware Systems* and *ITIDA*.

House of Words — *Fall 2018*

Scrabble-playing agent with a front-end web client written in *C++* and *JavaScript*.

Crawler Man — *Spring 2018*

Crawler-based search engine written in *Java* using *Spring*, *jQuery*, *Bootstrap* and *MongoDB*.

Code Fight — *Spring 2018*

Cloud-based IDE for real-time code collaboration written in *TypeScript* using *Node.js*, *jQuery*, *Bootstrap* and *Socket.IO*.

Harvey — *Spring 2018*

Harvard architecture-based 5-stage pipelined microprocessor written in *VHDL*.

DCNN+ — *Spring 2018*

Deep Convolutional Neural Network accelerator written in *VHDL*.

Autographer — *Fall 2017*

Photography post-processing application written in *Python* using *OpenCV* and *Kivy*.

Chess Hackster — *Spring 2017*

Real-life Harry Potter-style chess written in *C++* and *C#* using *Arduino* and *Raspberry Pi*.

Adaptive Binary Image Compression — *Spring 2017*

Lossless compression of binary images written in *C++*.

Restaurant Management System — *Fall 2016*

Point-of-sale implementation written in *Java* using *MySQL* and *JavaFX*.

Impossible Race — *Fall 2016*

Racing game written in *C++* using *OpenGL*.

Assymphony — *Fall 2016*

Multiplayer musical game written in *x86 assembly language*.

LogicSim — *Spring 2016*

Basic logic simulator written in *C++* using *SFML*.