Omar Aaziz

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Education

2012–2018 **Doctoral of Philosophy of Computer Science**, *New Mexico State University*, Las Cruces, NM.

2000–2002 **Masters of Computer Science**, *University of Baghdad*, Baghdad, Iraq.

1996–2000 **Bachelor of Computer Science**, *Al-Rafidain University*, Baghdad, Iraq.

Technical skills

- Linux OS: Red Hat Enterprise, Fedora, Ubuntu
- Programming (C/C++, Perl, Python, Bash, Java, C# ASP.NET)
- Multiprocessor and GPU Programming MPI, OpenMP, CUDA
- Shared-memory parallel programming, debugging, performance tuning
- Numerical algorithms: research, development and exposition
- Batch Schedulers (Torque, Slurm)
- Object-oriented design, analysis, and programming (OOA/OOD/OOP, UML)
- Relational Database Systems (SQL Server, SSIS, SSRS, MySQL)
- Agile Design
- Strong general management, negotiation, inter-personal, communication and team building skills

HPC Experience

2018–Present **Sr. Software Engineer**, Sandia National Laboratories, Albuquerque, .

- Supporting the High Performance Computing (HPC) systems mission
- Evaluating current and future HPC system performance.
- Creating a benchmark and tool suite of codes.
- System administration and optimizing applications in a Linux-based HPC enviroment.

2017–2018 **Year-round Intern**, Sandia National Laboratories, Albuquerque, .

- Created data-driven methodology for characterizing the relationship between real and proxy applications based on collecting runtime data from both and then using data analytics to find their correspondence and divergence
- Developed a statical module to predict application runtime using hardware counters in large scale production clusters.

2014–2018 **HPC Engineer**, New Mexico state university, Las Cruces.

- Administrated the Computer Science department super computer.
- Supported the department production cluster and managed nearly 100 active users with 20000 jobs annually.
- Managed builds, configurations, deployments, and troubleshot of nearly 120 parallel scientific applications and benchmarks.
- Addressed problems in users parallel applications and run configurations and tuned it to gain approximately 15% increase in application runtime performance.
- Deployed 23 compilers, 12 third party tools, and packages and make it available to the cluster users using modules.
- Developed CUDA applications to simulate the temperature distribution from a central source.
- Developed an MPI+OpenMP application to simulate the water flow under the earth surface.
- Developed nearly 12 MPI applications to solve variety of scientific problems.
- Created approximately 35 R-scripts to analyze large amount of data.
- Created around 100 scripts for automation, monitoring and testing using Shell, Python, and Perl.
- Managed one MongoDB, and two SQL databases with 2 TB of data.
- Initialized and configured newly installed 120 TB storage using RAID 6.
- Initialized and configured newly installed 16 TB storage using RAID 1.

2015–2017 **Research Assistant**, New Mexico state university, Las Cruces,
Funded by Sandia National Laboratories.

- Studied the behavior patterns of parallel scientific applications using statistical and numerical techniques.
- Created a new mechanism to collect hardware counters from applications running on production clusters with less than 1% runtime overhead to discover performance drawbacks.
- Desing and implemented a framework to automatically monitor and predict the performance, load balance of parallel applications.

Summer 2016 **Summer Intern**, Sandia National Laboratories, Albuquerque.

Developed a low overhead monitoring framework to evaluate application performance in production machines using event data.

2014–2015 **Research Assistant**, New Mexico state university, Las Cruces,
Funded by the Computer Science department.

Designed a production monitoring framework that is capable of collecting performance data from applications run on large scale clusters. Also measured the impact of the message size on the MPI applications communication performance.

2013–2017 **Research Assistant**, New Mexico state university, Las Cruces,
Funded by the Communication department.

Investigate whether there is a causal relationship between the presence of customizability technology (i.e., technology that allows individuals/websites to tailor the information environment according to user's preferences) and political selective exposure.

2012–2013 **Research Assistant**, New Mexico state university, Las Cruces,
Funded by the Computer Science department.

Designed of solar images search engine than can search hundred of millions of images stored in a datacenter efficiently.

Other Experience

2009-2014 **Database and C# ASP.Net Developer**, Alleqa Elementary School, Baghdad, Iraq.

- Designed and developed ALLEQA Elementary School website.
- Developed thorough understanding of School specifications and produce.

2010-2012 **Database and C# ASP.Net Developer**, Citi Group, Dallas.

- Develop applications for home mortgages.
- Develop a thorough understanding of business specifications and produce financial applications.
- Provide status on the progress of the development effort to development management.

2009-2010 **Database and Windows Server Administrator**, Teleplan, Dallas.

- Develop Laptops repair tracking system using C# with SQL server.
- Desktop and laptop installation and problem resolution in a Windows XP environment.

Teaching and Mentoring Experience

2016-2017 **Graduate Mentor**, New Mexico State University, Las Cruces.

- Mentored one master student in the computer science department to visualize and analyze large data collections using MongoDB and Node.js.

2014-2016 **Instructor**, Dona Ana Community Collage, Las Cruces, Taught multiple courses, each class had around 25 students.

2013-2016 **Teaching Assistant**, New Mexico State University, Las Cruces, I was a teaching assistant for multiple courses, each course had 30 to 40 undergraduate and/or graduate students.

2003-2009 **Instructor**, University of Baghdad, Baghdad, Iraq, Taught multiple courses, each class had around 45 students.

2003-2009 **Undergraduate Mentor**, University of Baghdad, Baghdad, Iraq.

- Mentored 14 undergraduate students in the computer science department to implement 7 projects.
- Guided the students in preparation and presentation of research findings.

Publications & Posters

[1] Sharifi, Hadi, **Omar Aaziz**, and Jonathan Cook. "Monitoring HPC applications in the production environment." Proceedings of the 2nd Workshop on Parallel Programming for Analytics Applications. ACM, 2015.

[2] **Omar Aaziz**, Jonathan Cook, and Hadi Sharifi. "Push me pull you: Integrating opposing data transport modes for efficient hpc application monitoring." Cluster Computing (CLUSTER), 2015 IEEE International Conference on. IEEE, 2015.

[3] Tanash, Mohammed, Nasim Ghazanfari, **Omar Aaziz**, and Jonathan Cook. "Automatically Instrumenting Scientific Applications to Produce Heartbeat Events." In Parallel and Distributed Processing Symposium Workshops, 2016 IEEE International, pp. 1678-1686. IEEE, 2016.

[4] Dylko, Ivan, Igor Dolgov, William Hoffman, Nicholas Eckhart, Maria Molina, and **Omar Aaziz**. "The dark side of technology: An experimental investigation of the influence of customizability technology on online political selective exposure." Computers in Human Behavior 73 (2017): 181-190.

[5] **Omar Aaziz**, Ujjwal Panthi, and Jonathan Cook. "YAViT (Yet Another Viz Tool): Raising the Level of Abstraction in End-User HPC Interactions." Cluster Computing (CLUSTER), 2017 IEEE International Conference on. IEEE, 2017.

[6] Dylko, Ivan, Igor Dolgov, William Hoffman, Nicholas Eckhart, Maria Molina, and **Omar Aaziz**. "Impact of customizability technology on political polarization." Journal of Information Technology and Politics 15.1 (2018): 19-33.

[7] **Omar Aaziz** and Jonathan Cook. "HPC Production Job Quality Assessment." Poster session presented at the Super Computing 2017, Denver, CO.

Projects

YAViT	An HPC application performance visualization tool that presents views organized by applications.
ProMon	A tool for production side monitoring of scientific applications.
LDMS	Contributed in LDMS development, a Sandia National Laboratory monitoring tool.
AppInfo	Scalable parallel clustering library, used in LDMS monitoring tool.
CustomNews	A customized website application reflects Google news.
Solarstorm	A solar data center search engine web interface, provides fast retrieve of sun images.
Helioviewer	Solar and heliospheric image visualization tool.

Awards & Honors

2017	Linux Foundation Training (LiFT) Scholarship in the category of SysAdmin Superstars.
2017	J. Mack Adams Endowed Scholarship.
2013-2016	Student with excellent records fellowship (GAANN) – Computer Science Department.
2015, 2016	Graduate College Conference Travel Grant.
2000	Qualified by graduating with honors and ranking 9th among computer science major.

Memberships

IEEE, ACM

Community Service

2018	**Students Mentor**, SC18 CONFERENCE, A member of the Mentor-Protege Program.
2017	**DevOps**, SCINET, A member of 20 volunteers served to build the world's fastest temporary network for the Super Computing 2017 Conference.

2014-2017 **President**, New Mexico State University, Served as the president of the computer science graduate student organization representing the graduate students in the computer science department.

2016 **Volunteer**, Lynn Middle School, Las Cruces, Taught Arduino programming to 23 students.

2014-2015 **Volunteer**, University Hills Elementary School, Las Cruces, Taught Lego robotics programming to 35 students and participated in the state competition.

2013-2014 **Vice President**, New Mexico State University, Served as the vice president of the computer science graduate student organization representing the graduate students in the computer science department.