

Hakan Akkan

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Software Engineer with 4+ years experience developing distributed systems and microservices.

Professional Experience

- 2017 – Present **Software Development Engineer**, *DynamoDB, Amazon Web Services*, Seattle, Washington.
Developed several scalability improvements in the DynamoDB core services and implemented components for several to-be-released features. Currently designing and implementing a new (confidential) component while participating in team on-call rotation.
- 2013 – 2016 **Software Development Engineer**, *Amazon.com*, Seattle, Washington.
Designed and developed microservices, workflows, and UI widgets that support and carry out foreign exchange payments in Amazon.com using Spring, Hibernate, Oracle, and AWS services. Lead the team for 1+ year in technical direction while mentoring juniors and providing technical guidance on several technologies within the Consumer Payments organization. Participated in team on-call rotation.
- 2011 – 2013 **Junior Research Scientist**, *Ultrascale Systems Research Center, New Mexico Consortium & Los Alamos National Laboratory*, Los Alamos, New Mexico.
Conducted research on OS scalability in many-core systems. Modified Linux kernel to remove the inherent system noise caused by the timer interrupt. Developed several research prototypes for multicore synchronization and OS supported asynchronous shared memory primitives.
- 2011 **Graduate Teaching Assistant**, *Computer Science and Engineering, New Mexico Institute of Mining and Technology (NMT)*, Socorro, New Mexico.
Developed lab assignments in several compiler tools and technologies for *compiler writing* class. Responsibilities included giving a lecture before each lab topics ranging from x86 assembly to optimizations, grading all class material, and helping students with their designs and implementations of their ANSI C compilers.
- 2009 – 2010 **Graduate Research Assistant**, *Computer Science and Engineering, NMT*.
Installed and experimented with multi-clustered Eucalyptus cloud computing platform. Ran simple distributed Hadoop applications for evaluation. Implemented and performance tested Role Based Access Control in Eucalyptus.
- 2009 **Assistant System Administrator**, *Earth and Environmental Sciences, NMT*.
Maintained instructor, staff, and student computers (Windows XP, MacOS X, Linux) including software and hardware updates and problems. Designed and implemented a department printing accounting system leveraging Samba, CUPS, and, PyKota in RHEL 5. Experimented with Xen virtualization on RHEL 5 for application confinement.
- 2008 – 2009 **Web Application Developer**, *Hydrology Department, NMT*.
Designed and developed a Java web application for the Web calculators of the NSF funded CRONUS Earth Project. Provided an API for developers to easily manage and deploy online calculators. Installed and maintained a server machine to host the developed software. (*This project has grown into an independent study for my Master's degree.*)
- 2004 – 2006 **Helpdesk Operator**, *TR.NET Internet Service Provider*, Ankara, Turkey.
Aided customers mainly in dial-up networking and various software problems.

Education

- 2009 **M.S. Computer Science with Information Technology Option**, *New Mexico Institute of Mining and Technology*, Socorro, New Mexico.
- 2006 **B.S. Metallurgical and Materials Engineering**, *Middle East Technical University*, Ankara, Turkey.

Publications

- 2013 H. Akkan, M. Lang, L. Ionkov, *HPC runtime support for fast and power efficient locking and synchronization*, In Proceedings for IEEE Cluster 2013
- 2013 H. Akkan, L. Ionkov, M. Lang, *Transparently consistent asynchronous shared memory*, Proceedings of the 3rd International Workshop on Runtime and Operating Systems for Supercomputers
- 2012 H. Akkan, M. Lang, L. Liebrock, *Understanding and isolating the noise in the Linux kernel*, International Journal of High Performance Computing Applications
- 2010 D. Shin, H. Akkan, W. Claycomb, K. Kim, *Toward role-based provisioning and access control for infrastructure as a service (IaaS)*, Collaborative Computing Networking Applications and Worksharing CollaborateCom 2010 6th International Conference
- 2009 S. Marrero, B. Borchers, H. Akkan, F. Phillips, *Cosmogenic Cl-36 surface exposure age calculator*, *Geochimica et Cosmochimica Acta Supplement - Vol.73*, p.A836

Other Selected Experience

- 2010 **Compiler writing**: Developed a compiler in C++ for a subset of ANSI C with a group of 4 people. I was mainly responsible for designing interfaces among different components and implementing first and middle stages of the compiler. Also implemented several compiler optimizations.
- 2008 **Online form management system**: Developed a web service on a *LAMP* server in which users are provided a web interface to create, review, and digitally sign forms.
- 2008 **Access control in Minix3 kernel**: Added capability concept to the Minix3 kernel. Implemented a *reference monitor* into the kernel which checks capabilities of every process making system calls.
- 2007 **Cryptography using low-end embedded processors**: Developed RSA and ECC cryptography schemes in C and tested them on embedded processor simulators.
- 2007 **LabVIEW Programmer**: Developed a LabVIEW application for remote controlling two spray motors that are used during plasma spraying process. Established all networking and communication requirements for the equipment.