Hakan Akkan

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System&Parallel programming,
Web application development, Cloud computing

Technical Skills

Operating Systems	Linux, MacOS, MS Windows	**Programming Languages**	Java, C, C++ Bash scripting (advanced) Python (intermediate)
Compiler Writing Tools	Flex scanner generator, Bison parser generator (advanced)	**Web&Java EE Technologies**	Spring Framework, Hibernate, (X)HTML, JavaScript, CSS, Ajax, DOM, XSLT, XPATH

Professional Experience

2013 – Present   **Software Development Engineer**, *Amazon.com*, Seattle, Washington.
Developing and maintaining a highly scalable backend service for Amazon.com website using Spring, Hibernate, Oracle, and AWS. Participating in team on-call rotation to tackle operations and high-severity issues.

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. Studied and 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 short 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.