Performance Architect – Remote Storage (Intern)

Samsung Semiconductor, Inc. is a world leader in Memory, System LSI and LCD technologies. We are currently looking for a Performance Architect (Intern) to join our team in San Jose, CA.

The Performance Architect Intern will contribute memory and storage system research in the Memory Solutions Lab. He or she will join a team of experts in researching and developing innovative memory and storage system solutions that utilize existing and emerging technologies to add substantial value to remote storage server systems. The ideal candidate must have a strong understanding of computer architecture, memory and storage system, and operating systems.

Project Description:	• Characterize emerging remote storage software architectures to figure out where the bottlenecks lie in the memory and storage hierarchy with respect to NVMe SSDs. Propose and evaluate changes to the existing architectures to alleviate identified bottlenecks.
Responsibilities:	• Characterize iSCSI and ISER storage stacks with different NICs • Find software bottlenecks of an iSCSI stack working with NVMe drives • Contribute towards tools to measure remote storage performance • Work with team members to contribute towards prototyping efforts • Create new and useful IP, publish at conferences, and generate whitepapers
Background / Experience	• Pursuing an MS or PhD in Electrical Engineering, Computer Science or related field, with focus on Systems and Computer Architecture • Good knowledge of networking and RDMA • Research and development experience with Linux-based system instrumentation, performance analysis, scripting, and tool development. • Prior experience with performance bottleneck analysis using performance counters and associated tools (e.g. VTune, oprofile, gprof, systat, strace, ftrace) will be a big plus • Track record of innovation and creativity in problem solving
Skills and Abilities	• Must be highly motivated with excellent verbal and written communication skills • Understanding of Linux kernel and system software • Strong background in C/C++ programming • Knowledge of Python/Perl programming is a big plus • Comfortable working in a multinational environment and understands how to leverage cultural diversity • Inherent technical curiosity

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Performance Architect – Scale-Out Storage (Intern)

Samsung Semiconductor, Inc. is a world leader in Memory, System LSI and LCD technologies. We are currently looking for a Performance Architect (Intern) to join our team in San Jose, CA.

The Performance Architect Intern will contribute memory and storage system research in the Memory Solutions Lab. He or she will join a team of experts in researching and developing innovative memory and storage system solutions that utilize existing and emerging technologies to add substantial value to remote storage server systems. The ideal candidate must have a strong understanding of computer architecture, memory and storage system, and operating systems.

Project Description:	• Characterize emerging scale-out storage software architectures to figure out where the bottlenecks lie in the memory and storage hierarchy with respect to SSDs. Propose and evaluate changes to the existing architectures to alleviate identified bottlenecks.
Responsibilities:	• Characterize open-source scale-out storage platforms • Contribute towards technical path-finding of novel data center scale-out storage architectures • Contribute towards tools to measure remote storage performance • Work with team members to contribute towards prototyping efforts • Create new and useful IP, publish at conferences, and generate whitepapers
Background / Experience	• Pursuing an MS or PhD in Electrical Engineering, Computer Science or related field, with focus on Computer Architecture • Research and development experience with Linux-based system instrumentation, performance analysis, scripting, and tool development • Prior experience with performance bottleneck analysis using performance counters and associated tools (e.g. VTune, oprofile, gprof, systat, strace, ftrace) will be a big plus • Good knowledge of data centers, and typical applications • Experience in memory/storage subsystem performance • Track record of innovation and creativity in problem solving
Skills and Abilities	• Must be highly motivated with excellent verbal and written communication skills. • Understanding of Linux kernel and system software • Strong background in C/C++ programming • Knowledge of Python/Perl programming is a big plus • Comfortable working in a multinational environment and understands how to leverage cultural diversity • Inherent technical curiosity

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Memory System Architect - III (Intern)

Samsung Semiconductor, Inc. is a world leader in Memory, System LSI and LCD technologies. We are currently looking for a Memory System Architect (Intern) to join our team in San Jose, CA.

The Memory System Architect Intern will contribute to memory research in the System Architecture Lab. He or she will join a team of experts in researching and developing innovative memory system solutions that utilize existing and emerging technologies to add substantial value to server systems. The ideal candidate must have a strong understanding of memory system architecture for GPU and CPU, familiarity with various graphics/HPC benchmarks, and a solid background in architecture simulation and performance modeling.

Responsibilities:

- Contribute to technical path-finding of novel memory architectures that can take advantage of in-memory processing
- Contribute to technical path-finding for computation acceleration architectures in memory systems
- Identify applications/functions that can be accelerated in a HPC/Graphics platform
- Define component-level requirements of memory components
- Work with team members to guide implementation and prototyping efforts
- Create new and useful IP, publish at conferences, and generate whitepapers

Background / Experience:

- MS or PhD in Computer Architecture, Electrical Engineering, Computer Science or related field.
- Deep understanding of memory systems of GPU/CPU architectures
- Experience in GPU memory subsystem architecture performance modeling/profiling
- Strong background in C/C++ programming
- Good knowledge of HPC/Graphics applications
- Research and development experience with modeling, performance analysis, simulation tool development
- Experience in memory system design will be great plus

Skills & Abilities:

- Must be highly motivated with excellent verbal and written communication skills
- Track record of innovation and creativity in problem solving
- Comfortable working in a multinational environment and understanding of how to leverage cultural diversity
- Good technical spark and inherent technical curiosity

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System BIOS (Intern)

Samsung Semiconductor, Inc. is a world leader in Memory, System LSI, and LCD technologies. We are currently looking for an intern to join our team in San Jose, CA to work on OS pre-boot, manageability architecture for storage servers.

The BIOS Intern will contribute to memory and storage system research in the Memory Solutions Lab. He or she will join a team of experts in researching and developing innovative memory and storage system solutions that utilize existing and emerging technologies to add substantial value to memory systems. The ideal candidate must have a strong understanding of computer architecture, memory and storage systems, and operating systems in the pre-boot environment.

Project Description:
- Intern will work on adding changes and optimizations to the pre-boot environment of a server BIOS. This will include creating a prototype to demonstrate the concept.

Responsibilities:
- Research UEFI and manageability flows for various system design and device usages
- Research, review and provide feedback on firmware and software architecture and design specifications
- Enhance BIOS and firmware for storage server prototype to demonstrate benefits
- Present reports to group, detailing enhancements and feature benefits

Background / Experience
- Pursuing an MS or PhD in Electrical Engineering, Computer Science or related field
- x86 UEFI/BIOS/BMC/firmware development experience required
- Working knowledge of x86 enterprise platform, UEFI/BIOS/BMC drivers, IO technologies
- OS boot process and firmware interactions experience
- Familiarity with debugging common firmware flows and interactions
- Ability to develop tools, test code / scripting languages

Skills and Abilities
- Must be highly motivated with excellent verbal and written communication skills
- Hands-on software development experience, good design and documentation skills
- PC architecture, BIOS development, Intel CPU/chipset architecture, UEFI, firmware
- Programming background including C, Linux, Windows, scripting
- Comfortable working in a multinational environment with cultural diversity
- Inherent technical curiosity and creative problem solving ability

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Enterprise Product Development (Intern)

Samsung Semiconductor, Inc. is a world leader in Memory, System LSI, and LCD technologies. We are currently looking for an intern to join our team in San Jose, CA for work on Enterprise Product Development.

The Enterprise Product Development Intern will contribute to memory and storage system research in the Memory Solutions Lab. He or she will join a team of experts in researching and developing innovative memory and storage system solutions that utilize existing and emerging technologies to add substantial value to memory systems. The ideal candidate must have a strong understanding of memory and storage systems, good analytic skills, and extensive experience with scripting (Perl or Python).

Project Description:	• Positions are available for the following projects:
	   o SAS SSD device debug analysis and simulation
	   o SAS SSD test automation
	   o Storage SSD device test and debug

Responsibilities may include:	• Learn basic operations of cutting-edge storage devices and SAS SSDs, system-level operations, and test tool suites • Write debug software; work with real-time systems and hardware debugging • Analyze SAS protocol and debug utility; write API for interpretation of data • Learn simulation environment and develop test cases for actual product development • Research and document main issues and feature gaps by testing existing products and system configurations • Explore flash media-centric diagnostic parameters and enhancements • Gain familiarity with Jenkins test automation environment • Work with technical lead to present report to group detailing project work and enhancements implemented
Background / Experience	• Pursuing a BS, MS, or PhD in Computer Science or related field • Knowledge of storage systems and familiarity with flash devices • Comfortable in lab environment and interacting with teams
Skills and Abilities	• Perl or Python scripting • Web apps (Jira-like dashboard) • Document version-control tools • Strong analytic and design aptitude

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Storage Intelligence (Intern)

Samsung Semiconductor, Inc. is a world leader in Memory, System LSI, and LCD technologies. We are currently looking for an intern to join our team in San Jose, CA for work on storage intelligence.

The Storage Intelligence Intern will contribute to memory and storage system research in the Memory Solutions Lab. He or she will join a team of experts in researching and developing innovative memory and storage system solutions that utilize existing and emerging technologies to add substantial value to memory systems. The ideal candidate must have a strong understanding of computer architecture, memory and storage systems, and operating systems.

Project Description:	• Intern will be responsible for researching customer applications (e.g., databases, big data analytics, and datacenter storage solutions such as ceph, openstack, indexing system, etc.) and identify the best applications to leverage in-storage computing as a part of our Storage Intelligence project. The candidate will participate in a state-of-art research across F/W, OS, middleware, and applications (database, big data analytics platform).
Responsibilities:	• Implement the functionalities of database, file system, and storage system engines • Conduct performance evaluations across host systems and devices • Write technical reports on the project, including design, implementation, and performance in terms of power, throughput, and cost • Run a variety of experiments required for the project
Background / Experience	• Pursuing an MS or PhD in Electrical Engineering, Computer Science or related field • Understand Flash/SSD, and No-SQL database, file system, or storage system • Prefer a deep knowledge of software (file systems, databases, storage, hypervisor for flash memory) • Good knowledge of data centers, and typical applications
Skills and Abilities	• Strong C++ programming and Linux system knowledge • Must be highly motivated with excellent verbal and written communication skills • Comfortable working in a multinational environment with cultural diversity • Inherent technical curiosity and creative problem solving ability

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Novel Storage System Architect (Intern)

Samsung Semiconductor, Inc. is a world leader in Memory, System LSI, and LCD technologies. We are currently looking for an intern to join our team in San Jose, CA for work on novel storage architectures for datacenter, hyperscale, and enterprise systems.

The Novel Storage System Architect Intern will contribute to memory and storage system research in the Memory Solutions Lab. He or she will join a team of experts in researching and developing innovative memory and storage system solutions that utilize existing and emerging technologies to add substantial value to memory systems. The ideal candidate must have a strong understanding of computer architecture, memory and storage systems, and operating systems.

Project Description:	• This position is for applied research: hands on prototyping and analysis of novel storage architectures for data center, hyperscale and enterprise systems. The candidate will collaborate with senior architects in SoC and system architecture research through design of experiments, discovery and analysis of complex hardware and software interactions and optimizations with variety of storage, networking stacks, applications and usage models. Key deliverables are functional demonstration of novel prototype systems, software development of new capabilities, design of experiments, data collection, analysis, and presentation of results.
Responsibilities:	• Develop innovative networking and storage technologies for data center, hyperscale and enterprise computing through literature research, and through design and execution of experiments to quantitatively determine optimal software and hardware architecture solutions • Software development, cross-architecture porting, functional analysis and validation • Instrumentation of hardware, OS kernel, and software stacks to identify scalability and high performance bottlenecks. • Prototype system and software to quantitatively demonstrate resolution of bottlenecks while meeting overall requirements. This includes build, integration and demonstration of developed programs in a lab environment. • Present reports to group, detailing enhancements and feature benefits • Design of experiments, lab setup, testing, data collection, and post processing • Write a technical report summarizing results and present to broader team members
Background / Experience	• Pursuing an MS or PhD in Electrical Engineering, Computer Science or related field • Desired previous internship experience in computing systems and architectures
Skills and Abilities	• Must be highly motivated with excellent verbal and written communication skills • Strong hands-on skills

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