Min Lee

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Education

- Ph.D., Computer Science, Georgia Institute of Technology, Atlanta, GA — December 2013
- M.S., Computer Science, KAIST, Daejeon, Korea — February 2006
  Best paper award of 2006 graduation, Computer Science Department, KAIST
- B.S., Computer Science, Yonsei University, Seoul, Korea — February 2004
  Graduation with highest honor in Computer Science Department

Research Areas / Summary

- Hypervisor, System virtualization – Xen, VM scheduling and consolidation, Memory and cache management, MMU virtualization, Real-time support
- Operating System – Linux, Physical memory management, Buffer cache
- Computer Architecture – Multi/manycore, last-level/distributed cache management
- Cache and memory hierarchy – NUMA memory support, interconnect
- Parallel computing and runtime – HPC workload support at runtime/OS, MPI library
- Emerging memory technologies – Software support for new memory technologies (such as 3D-stacked)
- Power-aware system – Power-aware memory support
- GPU virtualization and enabling in clouds – GPU virtualization and modern GPU support

Papers

- Vishal Gupta, Min Lee, Karsten Schwan. "HeteroVisor: Exploiting Resource Heterogeneity to Enhance the Elasticity of Cloud Platforms." VEE 2015, Istanbul, Turkey, March 14-15, 2015.
- Joong-Yeon Cho, Hyun-Wook Jin, Min Lee and Karsten Schwan. "Dynamic Core Affinity for High-Performance File Upload on Hadoop Distributed File System." Parallel Computing, the special issue on Data-Intensive Scalable Computing Systems, 2014.
- Joong-Yeon Cho, Hyun-Wook Jin, Min Lee and Karsten Schwan. "On the Core Affinity and File Upload Performance of Hadoop." DISCS 2013 (The 2013 International Workshop on Data-Intensive Scalable Computing Systems), Denver, CO, November 18, 2013.
- Min Lee, Vishal Gupta, Karsten Schwan. "Software-Controlled Transparent Management of Heterogeneous Memory Resources in Virtualized Systems." MSPC 2013 (ACM SIGPLAN Workshop on Memory Systems Performance and Correctness), Seattle, Washington, June 21, 2013.
- Min Lee, Karsten Schwan. "Region Scheduling: Efficiently Using the Cache Architectures via Page-level Affinity." ASPLOS 2012, London, UK, March 3-7, 2012.
  - ACM SIGARCH Computer Architecture News 40 (1), 451-462
  - ASPLOS 2012 Student Travel Grant
- Mrinmoy Ghosh, Ripal Nathuji, Min Lee, Karsten Schwan, and Hsien-Hsin S. Lee. "Symbiotic Scheduling for Shared Caches in Multi-Core Systems Using Memory Footprint Signature." ICPP 2011 (IEEE International Conference on Parallel Processing), Taipei, Taiwan, September, 2011.
- Min Lee, A. S. Krishnakumar, P. Krishnan, Navjot Singh, Shalini Yajnik. "Hypervisor-Assisted Application Checkpointing in Virtualized Environments." DSN 2011 (International Conference on Dependable Systems and Networks), Hong Kong, June 27-30, 2011.
  - DSN 2011 Student Travel Grant
- Min Lee, A. S. Krishnakumar, P. Krishnan, Navjot Singh, Shalini Yajnik. "XenTune: Detecting Xen Scheduling Bottlenecks for Media Applications." IEEE Globecom 2010 (Communications Software, Services and Multimedia Applications Symposium), Miami, FL, Dec 6-10, 2010.

- Min Lee, A. S. Krishnakumar, P. Krishnan, Navjot Singh, Shalini Yajnik. "Supporting Soft Real-Time Tasks in the Xen Hypervisor." VEE 2010, Pittsburgh, PA, March 17-19, 2010.
    - ACM Sigplan Notices 45 (7), 97-108
    - Invited and presented at Xen Summit North America at AMD April 28-29, 2010.
- Jiantao Kong, Karsten Schwan, Min Lee, and Mustaque Ahamad. "ProtectIT: Trusted Distributed Services Operating on Sensitive Data." EuroSys 2008, Glasgow, Scotland, March 31 – April 4, 2008.
    - ACM SIGOPS Operating Systems Review 42 (4), 137-147
- Min Lee, Euiseong Seo, Joonwon Lee, Jin-soo Kim. "PABC:Power Aware Buffer Cache Management for Low Power Consumption." IEEE Transactions on computers, April 2007 (Vol. 56, No. 4) pp. 488-501.
    - Three awards received. (See KAIST bullet in Awards section.)

Book

- Operating System Inside (In Korean)
    - http://osinside.net/osinside/osinside.htm

Research/Work Experience

- VMware, Austin, TX 2016~Present
    - Core Graphics team, GPU virtualization and VMware graphics software stack.
    - VMware SVGA driver development toward modern GPU support (WDDM2.0)
    - Gained skillsets on Windows, Graphics, WDDM, and modern GPUs.
- Intel, Santa Clara, California 2013~2016
    - Memory management in Open Collaborative Runtime (OCR, see https://xstack.exascale-tech.com/wiki/) for Xstack project which aims novel task-based runtime for exascale HPC. This supports Intel's open-source research prototype TG architecture.
    - Design/Implement runtime/OS for Exascale project (FastForward), which aims entirely new high performance, energy-efficient next-generation processor that is essential for developing Exascale systems.
    - Design/Implement lightweight MPI library for the new novel Exascale processor to support legacy code.
- Avaya Labs, Basking Ridge, New Jersey (was part of Bell Labs) 2009/2010 Summer
    - Design/Implement Xen real-time scheduler [VEE2010]to support enterprise IP Telephony server workload including Xen monitoring tools [Globecom2010] and hypervisor-assisted application checkpointing work for high availability [DSN2011].
- Georgia Institute of Technology, Atlanta, Georgia 2006~2013
    - A study on core affinity for Hadoop [DISCS2013, PC2014]
    - Design/Implement SW management of heterogeneous memory (3D-stacked memory) in virtualized environment [MSPC2013, VEE2015].
    - Design/Implement software approach at hypervisor-level (Xen) for cache management in CMP environment. Departing from traditional CPU-centric scheduler, newly memory-centric scheduler is proposed [ASPLOS2012].
    - Design and evaluate shared-memory based communication among Xen-domains. Develop and evaluate kernel module for efficient communication [EuroSys2008].
- Intel, Portland, Oregon 2007 Summer
    - Design and analyze on NUCA-aware scheduling policy using SESC microprocessor simulator and Bochs full system simulator. To make efficient use of NUCA architecture for CMP processors, new OS policies are proposed. [ICPP2011]
- KAIST, Daejeon, Korea 2004~2006
    - Design/implement PABC (Power-Aware Buffer Cache) management scheme in Linux kernel [TOC2007], which led to my master thesis.
- ETRI (Electronics and Telecommunications Research Institute), Daejeon, Korea 2005 Fall
    - RFID/USN project hosted by ETRI
    - Implementing RFID reader protocols and tag processing engines
- Yonsei University, Seoul, Korea 1998~2004
    - Internet-based radio project for embedded devices. Personal Audio Station, Undergraduate thesis. Kernel scheduler and memory allocator modification and evaluation. First place prize in the Yonsei creativity fair.

Fellowships, Grants, and Awards

- Intel
  - Q2'2016 TCAR Award, TCAR's highest recognition, for critical OCR and tools support on XStack2
  - Q2'2015 DCG Award for a disruptive execution model implemented as a runtime system (OCR) helps the community to continue innovations, strengthening future Intel platforms.
  - Q2'2013 TCAR Award, the department's highest recognition, for that "ramp & delivery went above and beyond all expectations".
- KAIST
  - Best paper award of 2006 graduation, Computer Science Department, KAIST.
  - Bronze Prize in the Samsung Humantech Thesis Award competition, Feb 2006.
  - Prize in the 25th student's thesis competition, Korea Information Science Society. (2006)
- KFAS (Korea Foundation for Advanced Study)
  - Doctoral Study Abroad Scholarship (2004)
- Yonsei University
  - Scholarships for academic excellence (1999 Fall, 2002/2003 Spring)
  - Prizes with high honor (1999 Fall, 2003 Spring)
  - Prize with highest honor (2002 Spring)
  - Graduation with highest honor in CS department. (2003 Fall)
  - First place prize in the Yonsei creativity fair (Undergraduate thesis competition)

Skills/Experiences

- Linux / Xen kernel development, C/C++/Java/Python
- MPI programming, and some OpenMP experience
- A novel task-based parallel runtime, OCR, for high performance computing
- Newlib experience (C library for embedded systems)
- Windows driver development, WDDM driver, D3D APIs, Graphics stack, modern GPUs

Software

- Soft real-time scheduler for the Xen hypervisor
- MPI-lite library for next-generation chips for HPC workloads
- Quick Allocator for fast and scalable memory allocation

Patents

- U.S. Patent #8,245,234 Credit scheduler for ordering the execution of tasks
- U.S. Patent #8,166,485 Dynamic techniques for optimizing soft real-time task performance in virtual machines
- U.S. Patent #8,161,491 Soft real-time load balancer

Extra Activities

- Organizing/leading Linux kernel study groups in Yonsei CS dept.
- KTF mobile futurist activity (internship)
- Winner of KTF-cup Alkkagi Tournament.
- Small College 20th class. (Classic reading and discussion activity)
- President of GTKSA-CS (GT Korean Students Association in Computer Science) in 2007-2008
- A co, 122Sig, 2nd Infantry Division, US 8th Army in Korea (Military service) in 2000~2002

Last Updated: Feb 2020

Min-Ho Lee, Actor: Sangsogjadeul. Lee Min Ho is a South Korean actor who is known for his leading roles in television dramas such as Boys Over Flowers, City Hunter and Heirs.Â Lee Min Ho is a South Korean actor who is known for his leading roles in television dramas such as Boys Over Flowers, City Hunter and Heirs. He started his career in 2006 and since then has been cast in various TV shows, short dramas and minor movie roles. He first gained widespread fame with his role as Gu Jun Pyo in Boys Over Flowers in 2009.