

Jung-Sang Ahn

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Employment and Education

Couchbase, Inc.	MOUNTAIN VIEW, CA
Senior Software Engineer	2015 – present
KAIST (Korea Advanced Institute of Science and Technology)	DAEJEON, SOUTH KOREA
Ph.D. in Computer Science	2010 – 2015
KAIST (Korea Advanced Institute of Science and Technology)	DAEJEON, SOUTH KOREA
Master in Computer Science	2008 – 2010
KAIST (Korea Advanced Institute of Science and Technology)	DAEJEON, SOUTH KOREA
Bachelor in Computer Science	2004 – 2008

Experience

ForestDB	COUCHBASE / 2013–PRESENT
A single node key-value storage engine. Developed as a standalone library and deployed in the various modules in Couchbase software.	
The original inventor and main contributor: designed and developed the main index structure (HB ⁺ -trie), and other fundamental concepts including block cache, write-ahead logging and circular block reusing.	
Paper: <i>ForestDB: A Fast Key-Value Storage System for Variable-Length String Keys</i> , IEEE TC 2016.	
UX-Oriented Mobile Software Platform	KAIST, LG, KOREAN GOVERNMENT / 2012–2014
A huge academic project in collaboration of 11 graduate school laboratories and 2 companies including LG electronics.	
Worked on core mobile kernel part, designed and developed a lightweight encryption file system for Android platform.	
Paper: <i>Low-Overhead User Data Protection for Smartphones using Plaintext Cache</i> , IEEE Most 2013.	
A High-Performance FTL for Large-Capacity Flash SSDs	KAIST, SAMSUNG / 2008–2009
Development of fast and memory-efficient flash translation layer (FTL) for commercial SSDs.	
Worked on mapping and indexing part, designed and developed a flash-optimized index structure, called μ^* -tree, which is the main mapping structure for the FTL.	
Paper: <i>μ^*-Tree: An Ordered Index Structure for NAND Flash Memory with Adaptive Page Layout Scheme</i> , IEEE TC 2013.	

Publications

ForestDB: A Fast Key-Value Storage System for Variable-Length String Keys	
IEEE Transactions on Computers	2016
Jung-Sang Ahn, Chiyong Seo, Ravi Mayuram, Rahim Yaseen, Jin-Soo Kim, and Seungryoul Maeng	
Low-Overhead User Data Protection for Smartphones using Plaintext Cache	
IEEE Mobile Security Technologies (Symposium on Security and Privacy)	2013
Jung-Sang Ahn and Seungryoul Maeng	
μ^* -Tree: An Ordered Index Structure for NAND Flash Memory with Adaptive Page Layout Scheme	
IEEE Transactions on Computers	2013
Jung-Sang Ahn, Dongwon Kang, Dawoon Jung, Jin-Soo Kim, and Seungryoul Maeng	

Honors and Awards

ACM SIGMOD Programming Contest	3RD PLACE (2012), FINALIST (2011)
Samsung Humantech Thesis Award	BRONZE (2008), SILVER (2004), HONORABLE MENTION (2003)
Korea Olympiad in Informatics (KOI)	GOLD MEDAL (2001)

Skills

Programming languages: C (*proficient*), C++ (*proficient*), MSVC (*experienced*), C# (*experienced*), Java (*experienced*), VB.Net (*experienced*), PHP (*experienced*).

Technical specialties: storage engines, index structures, file systems, key-value store, NoSQL, Linux kernel programming, embedded systems, debugging with GDB, flash translation layer.

Interests

Designing index structures for HDDs and SSDs

Reducing block device I/O overhead (read/write amplification)

Improving in-memory cache performance

Reducing lock contention upon multi-threaded workloads

Linux kernel programming

Mobile kernel programming

File system programming