

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

Experiences (Selected)

Senior Software Engineer at Couchbase	2015–PRESENT
<i>Worked on developing storage engine, designing index structures, and optimizing in-memory cache, file system, and block device I/O.</i>	
<ul style="list-style-type: none">• ForestDB project<ul style="list-style-type: none">– 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.– Published a paper (refer to the below publication section).	
Research Assistant at KAIST	2008–2015
<i>Worked on optimizing FTL (Flash Translation Layer), designing index structures for storage (HDD and SSDs), kernel programming including embedded OS and mobile platform (ARM Linux and Android), and file system optimization.</i>	
<ul style="list-style-type: none">• UX-Oriented Mobile Software Platform<ul style="list-style-type: none">– Funded by Korean government.– 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.– Published a paper (refer to the below publication section).• A High-Performance FTL for Large-Capacity Flash SSDs<ul style="list-style-type: none">– Funded by Samsung Electronics.– 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.– Published a paper (refer to the below publication section).	

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	

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, in-memory caching, file systems, key-value store, 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