Young-Kyoon Suh, Ph.D.

Contact Information

Supercomputing R&D Center,
Korea Institute of Science and Technology Information (KISTI),
Daejeon, Republic of Korea, 305-806
Office: +82-42-869-0725, Cell: +82-10-9223-6570
Email: yksuh@kisti.re.kr (personal: youngkyoon.suh@gmail.com)
Homepage: http://www.cs.arizona.edu/∼yksuh

Research Interests

Database Systems/Design, Ergalics (science of computing), Storage Systems, Big Data Processing, Data Science, and Reachability Query Processing on Big Graphs

Education

The University of Arizona, Tucson, AZ, USA

Ph.D., Department of Computer Science, May 2015

Dissertation Title: "Exploring Causal Factors of DBMS Thrashing"
Dissertation Advisor: Prof. Richard T. Snodgrass

Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea

M.S., Computer Science Division, Department of Electrical and Engineering and Computer Science (EECS), Feb. 2005

Thesis Title: "Optimization of Multiple Continuous Queries on Data Streams"
Thesis Advisor: Prof. Myoung Ho Kim

Kyungpook National University (KNU), Daegu, Korea

B.S., Department of Computer Science, Feb. 2003

Thesis Research: "Design and Implementation of XML Document Extraction from ORDBMS"
Primary Advisor: Prof. Young-Chul Park

Honors and Awards

Best Paper Award, ACM Emerging Database Technology (EDB), Jeju Island, Korea, October 2016

Best Research Poster Award, IEEE/ACM Int'l Symp. on Cluster, Cloud and Grid Computing (CCGrid), Cartagena, Colombia, May 2016

Graduate and Professional Student Council (GPSC) Travel Grant Award, University of Arizona, Tucson, AZ, USA, August 2012

National Full Scholarship, KAIST, Daejeon, Korea, 2003 - 2005

BK21 Full Scholarship, KNU, Daegu, Korea, 1999 - 2003

Research Experience

The University of Arizona, Tucson, Arizona, USA

Research Associate, Department of Computer Science August 2010 - July 2014

Supervisor: Prof. Richard T. Snodgrass

- Science of Databases: Query execution time measurement protocols (TTPv1 and TTPv2), query suboptimality, and AZDBLab (a system for large-scale empirical DBMS studies)
- Micro-specialization on PostgreSQL and VoltDB: Runtime invariant identification analysis (co-supervised by Prof. Saumya Debray)

– Concrete complexity (co-supervised by Profs. Peter Downey and John Kececioglu): Execution time measurement protocol for a Linux program in pure-computation mode

Research Assistant, Department of Management Information System June 2010 - August 2010

Supervisor: Prof. Sudha Ram

Ontology design based upon the W-7 model in data provenance management system

Research Assistant, Department of Computer Science January 2009 - December 2009

Supervisor: Prof. Bongki Moon

– Design and implementation of extent mapping schemes for flash memory devices (co-advised by Prof. Alon Efrat)
– I/O performance analysis over off-the-shelf solid-state drives (SSDs) on TPC-C workloads

Graduate Associate, Department of Computer Science August 2008 - December 2008

Supervisor: Prof. Paul Cohen

Department publication management system development

Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea

Research Assistant, Database System Laboratory 2003 - 2005

Supervisor: Prof. Myoung Ho Kim

– Design and implementation of a sensor simulator with query processor
– Design and implementation of a continuous nearest neighbor (CNN) query processing system over moving object databases (MODBs)

Kyungpook National University (KNU), Daegu, Korea

Undergraduate Research Assistant, Department of Computer Science 2001 - 2002

Supervisor: Prof. Young-Chul Park

Design and Implementation of a Novel XML Document Extraction System on an Object-Relational DBMS (Summer and Fall 2002)

Supervisor: Prof. Sungkee Lee

3D Model House Using OpenGL (Summer and Fall 2001)

Teaching Experience

The University of Arizona, Tucson, Arizona, USA

Teaching Assistant, Department of Computer Science Spring 2010, Spring 2014

Instructor: Prof. Richard T. Snodgrass
CSc560 Database Systems Implementation (Spring 2014)

Instructor: Prof. Saumya Debray
CSc352 Systems Programming+Unix (Spring 2010)

Korea Advanced Institute of Science and Technology (KAIST), Daejeon, Korea

Teaching Assistant, Computer Science Division, Dept. of EECS 2003 - 2004

Instructor: Prof. Myoung Ho Kim
SEP541 Information Systems for e-Business (Spring 2004), CS360 Introduction to Database Systems (Fall 2003)

Instructors: Prof. Chin-Wan Chung / Prof. Taehwan Kim
CS206 Data Structures (Fall / Spring 2003)

Refereed Journal Articles

Sabah Currim, Richard T. Snodgrass, **Young-Kyoon Suh** (corresponding author), and Rui Zhang, "A Better Way to Measure Query Time," *ACM Transactions on Database Systems* (TODS), Vol. 42, No. 1, Issue 3 (42+8 pages), 2017 (extended version).

Ki Yong Lee, YoonJae Shin, YeonJeong Choe, SeonJeong Kim, **Young-Kyoon Suh** (corresponding author), Jeong Hwan Sa, JongSuk Luth Lee, Kum Won Cho, "Development of a Simulation Prediction System Using Statistical Machine Learning Techniques," *KJPS Transaction Software and Data Engineering* (KTSDE), Vol. 4, No. 12, pp.543–548, November 2016 (in Korean).

Young-Kyoon Suh, Ahmad Ghazal, Alain Crolotte, and Pekka Kostamaa, "MLPPI Wizard: An Automated Multi-Level Partitioning Tool," under view at *IEICE Transactions on Information Systems* (IEICE) (extended version), August 2016.

Young-Kyoon Suh and Kum Won Cho, "Construction and Service of a Web-based Cyber-Learning Platform for the Computational Science and Engineering Community in Korea," Journal of Internet Computing and Services (JICS), 17(4): pp. 115–125, August 2016 (in Korean).

Young-Kyoon Suh and Jong Wook Kim, "A Review of Science of Databases and Analysis of Its Case Studies," *Journal of Korean Institute of Information Scientists and Engineers* (KIISE), Vol. 43, No. 2, pp.237–245, February 2016 (in Korean).

Jong Wook Kim and **Young-Kyoon Suh** (corresponding author), "An Efficient Top-k Query Processing Algorithm over Encrypted Outsourced-Data in the Cloud," *KJPS Transaction Software and Data Engineering* (KTSDE), Vol. 4, No. 12, pp.543–548, December 2015 (in Korean).

Young-Kyoon Suh, Sabah Currim, and Richard T. Snodgrass, "An Empirical Study of Transaction Throughput Thrashing Across Relational DBMSes," under view (in minor revision) at *Information Systems*, November 2015.

Young-Kyoon Suh, Richard T. Snodgrass, John Kececioglu, and Peter J. Downey, "EMP: Execution Time Measurement Protocol for a Compute-Bound Program on Linux," under view (minor revision) at *Software: Practices and Experiences* (SPE), October 2015.

Young-Kyoon Suh, Bongki Moon, Alon Efrat, Jin-Soo Kim, and Sang-Won Lee, "Memory Efficient and Scalable Address Mapping for Flash Storage Devices," *Journal of Systems and Architecture* (JSA) 60(4):357–371, April 2014.

Young-Kyoon Suh, Jin-Hyun Son, Myoung Ho Kim, "An Algorithm to Optimize Multiple Continuous Queries on Data Streams," *Journal of Korean Institute of Information Scientists and Engineers* (KIISE): *Databases*, Vol. 33, No. 4, pp.409–422, April 2006 (in Korean).

Refereed Conference and Workshop Articles

Ki Yong Lee, YoonJae Shin, YeonJeong Choe, SeonJeong Kim, **Young-Kyoon Suh** (corresponding author), Jeong Hwan Sa, and Kum Won Cho, "Design and Implementation of a Data-Driven Simulation Service System," in *Proceedings of the 6th ACM International Conference on Emerging Databases* (EDB'16), Jeju Island, Korea, October 2016 (Best Paper Award).

Sabah Currim, Richard T. Snodgrass, **Young-Kyoon Suh**, Rui Zhang, Matthew Wong Johnson, and Cheng Yi, "DBMS Metrology: Measuring Query Execution Time," in *Proceedings of the 39th ACM SIGMOD Conference* (SIGMOD'13), New York City, NY, USA, pp. 421–432, June 2013.

Young-Kyoon Suh, Ahmad Ghazal, Alain Crolotte, and Pekka Kostamaa, "A New Tool for Multilevel Partitioning in Teradata," in *Proceedings of the 21st ACM International Conference on Information and Knowledge Management* (CIKM'12), Maui, HI, USA, pp. 2214–2218, October 2012.

Young-Kyoon Suh, Bongki Moon, Alon Efrat, Jin-Soo Kim, and Sang-Won Lee, "Extent Mapping Scheme for Flash Memory Devices," in *Proceedings of the 20th IEEE International Symposium on Modeling, Analysis and Simulation of Computer and Telecommunication Systems* (MASCOTS'12), Arlington, VA, USA, pp. 331–338, August 2012.

Byungsang Kim, Dukyun Nam, **Young-Kyoon Suh**, June Hawk Lee, Kumwon Cho, and Soonwook Hwang, "Application Parameter Description Scheme for Multiple Job Generation in Problem Solving Environment," in *Proceedings of the 4th IEEE International Conference on e-Science and Grid Computing* (eScience'07), Bangalore, India, pp. 509–515, December 2007.

Young-Kyoon Suh, Jin-Hyun Son, and Myoung Ho Kim, "GAGPC: Optimization of Multiple Continuous Queries on Data Streams," in *Proceedings of the IASTED International Conference on Database and Applications* (DBA'06), Innsbruck, Austria, pp. 215–220, February 2006.

Selected Reviews and Other Publications

Young-Kyoon Suh, Hoon Ryu, and Hangi Kim, and Kum Won Cho, "EDISON: A Web-based Simulation Execution Framework for Large-scale Scientific Computing Software," demonstration proposal, in *Proceedings of the 16th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing* (CCGrid'16), Cartagena, Colombia, pp. 608–612, May 2016 (Best Poster Award).

Young-Kyoon Suh, Richard T. Snodgrass, and Rui Zhang, "AZDBLab: A Laboratory Information System for a Large-scale Empirical DBMS Study," demonstration proposal, *Proceedings of the VLDB Endowment* (PVLDB) 7(13): 1641–1644, Hangzhou, China, September 2014.

WooLam Kang, Dong-Hoon, Choi, **Young-Kyoon Suh**, and Yoon-Joon Lee, "Integration of Avian Influenza Virus Information Sources for Korea e-Science," demonstration proposal, in *Proceedings of the 4th IEEE International Conference on e-Science and Grid Computing* (eScience'08), Indianapolis, IN, USA, pp. 372–373, December 2008.

Works-in-Progress

Young-Kyoon Suh with Sabah Currim, Richard T. Snodgrass, and Rui Zhang, "A Causal Model of Query Suboptimality," to be submitted to *ACM Transactions on Database Systems* (TODS), 2016.

Young-Kyoon Suh with Richard T. Snodgrass, "AZDBLab: A Laboratory Information System for a Large-Scale Empirical DBMS Study," to be submitted to *Software Practice and Experience* (SPE) (extended version), 2016.

Young-Kyoon Suh with Richard T. Snodgrass, "A Novel Method of Identifying an Infrequent, Long-running Daemon Process on Linux," to be submitted to *Information Software Technology* (IST), 2016.

Young-Kyoon Suh with Ki Yong Lee, "Design and Implementation of a Data-driven Simulation Service System," to be submitted to *Journal of Supercomputing* (SPE) (invited paper), 2016.

Work Experience

Korea Institute of Science and Technology Information (KISTI), Daejeon, Korea

Researcher March 2005 - present (on leave: August 2008 - July 2014)

Teradata Corporation, El Segundo, CA, USA

Research Intern January 2012 - August 2012

Manager: VP. Pekka Kostamaa
Mentor: Dr. Ahmad Ghazal
Columnar Wizard: A New Tool for Column Partitioning in Teradata 14.10

Teradata Corporation, El Segundo, CA, USA

Research Intern May 2011 - August 2011

Manager: VP. Pekka Kostamaa
Mentor: Dr. Ahmad Ghazal
MLPPI Wizard: A New Tool for Multi-Level Partitioning in Teradata

Korea Institute of Science and Technology Information (KISTI), Daejeon, Korea

Researcher March 2005 - July 2008

Academic Activities

Sigma XI

Regular Member September 2014 - Present

IEICE

Regular Member September 2015 - Present

ACM

Member November 2015 - Present

ACM SIGMOD 2010, IEEE ICDE 2011, and ER 2011

External Reviewer

Korea Information Science Society, Seoul, Korea

Regular member December 2015 - Present

Computer Skills

- Operating Systems: Linux/Unix, Mac OS X, and Windows
- DBMSes: Microsoft SQL Server, MySQL, IBM DB2, JavaDB, Oracle, PostgreSQL, and Teradata
- Statistical Packages: Gnuplot, Matlab, Matplotlib, Numpy/SciPy, and R
- I/O Performance Measurement: ORION, Hammerora, Spew, and Blktrace
- Code Version/Issue Management Systems: CVS, SVN, GitHub, MantisBT and Piazza
- Computer Languages: C/C++/Java, XML/JSP/Servlet/Portlet, SQL/PL-SQL, Perl, and Python
- Languages: English (fluent) and Korean (native)

Reference

Prof. Richard T. Snodgrass
Department of Computer Science
The University of Arizona
Tucson, AZ 85721

Dr. Sabah Currim
Alumni Association
The University of Arizona
Tucson, AZ 85721

Dr. Ahmad Ghazal
Oracle Endeca
El Segundo, CA 90245

VP. Pekka Kostamma
Teradata
El Segundo, CA 90245

Dr. Hoon Ryu
Nat'l Inst. of Supercomputing & Networking
KISTI
Daejeon, Republic of Korea

Others upon request.