

# Jinwoong Kim

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EDUCATION **Ms-Ph.D Program in Computer Science and Engineering** *Mar 2011 - Present*  
*Ulsan National Institute of Science and Technology (UNIST)*  
*Advisor : Dr. Beomseok Nam*

**B.S. in Computer Engineering** *Feb 2011*  
*Chungbuk National University, South Korea*

RESEARCH INTERESTS Database Systems  
Distributed and Parallel Systems  
Parallel Multi-dimensional Indexing on the GPU  
Distributed Semantic Caching Frameworks  
Non-Volatile Memory based Logging  
Machine Learning  
Distributed Graph Processing Systems

ACADEMIC/ RESEARCH EXPERIENCE **Research Intern**  
Carnegie Mellon University, Pittsburgh, PA, USA(Prof. Andrew Pavlo) *May - Aug, 2015*  
Designed and developed the in-memory database system, *Peloton*

- Implemented the Catalog, DDL, DML, Bootstrap, Logging, etc.
- Designed the non-volatile memory based logging, *Write-Behind Logging*, VLDB, 2016.

**Visiting Research Scholar**  
University of California Berkeley, Berkeley, CA, USA(Prof. Ikhtlaq Sidhu) *Nov 2015 - Jan 2016*

**Research Assistant**  
*Data Intensive Computing Lab, UNIST* *Spring 2011 - Present*

- Designed and implemented parallel indexing schemes for multi-dimensional range query processing on the GPU
- Implemented a distributed semantic caching framework for MapReduce
- Worked on multi-dimensional query processing with distributed cache infrastructure in cloud environments
- Implemented non-volatile memory based *Heap manager* to improve logging performance for SQLite

*Korea Institute of Science and Technology Information (KISTI)* *May 2015 - Nov 2015*

- Designed and implemented the GPU-based multi-dimensional indexing for *GLOVE*

*LG Electronics (CTO)* *Jan 2015 - Jun 2015*

- Worked on multi-thread query processing for SQLite.

## Teaching Assistant

- TA for Prof. Beomseok Nam, Object-Oriented Programming *Spring 2014*
- TA for Prof. Beomseok Nam, Advanced Programming *Fall 2013*
- TA for Prof. Beomseok Nam, Introduction to Database Systems *Winter 2012*
- TA for Prof. Tsz-Chiu Au, Engineering Programming *Fall 2012*
- TA for Prof. Young-ri Choi, Engineering Programming *Spring 2012*
- TA for Prof. Beomseok Nam, Engineering Programming *Fall 2011*

## HONORS AND AWARDS

- Naver PhD Fellowship**, Naver Corp. *2016*  
**Prof. Ram Kumar Fellowships at ICDE**, Ramkumar Foundation. *2015*  
**Merit-based Scholarship**, Chungbuk National University *Spring 2009*  
**Merit-based Scholarship**, Chungbuk National University *Fall 2008*

## PUBLICATIONS

- 12 **Jinwoong Kim** and Beomseok Nam, “Co-Processing Heterogeneous Parallel Index for Multi-Dimensional Datasets”, *Journal of Parallel and Distributed Computing(JPDC)*, in minor revision, 2017.
- 11 Wook-Hee Kim, Jihye Seo, **Jinwoong Kim**, and Beomseok Nam, “clfB-tree: Cache-line Friendly Persistent B-tree for NVRAM”, To appear in *ACM Transactions on Storage(TOS)*, Special issue on NVM and Storage, 2017.
- 10 Moohyeon Nam, **Jinwoong Kim**, Beomseok Nam “Parallel Tree Traversal for Nearest Neighbor Query on the GPU” 45th International Conference on Parallel Processing (**ICPP**), Philadelphia, PA, USA, Aug. 2016.
- 9 Wookhee Kim, **Jinwoong Kim**, Woongki Baek, Beomseok Nam and Youjip Won “NVWAL: Exploiting NVRAM in Write-Ahead-Logging ” 21st International Conference on Architectural Support for Programming Languages and Operating Systems (**ASPLOS**), Atlanta, GA, USA, Apr. 2016
- 8 **Jinwoong Kim**, Sehoon Lee, Joong-Youn Lee, Beomseok Nam, Min Ah Kim “GLOVE: An Interactive Visualization Service Framework with Multi-Dimensional Indexing on the GPU ” 27th International Conference for High Performance Computing, Networking, Storage and Analysis(**SC**), Poster, Austin, TX, Nov. 2015.
- 7 **Jinwoong Kim**, Won-Ki Jeong, and Beomseok Nam “Exploiting Massive Parallelism for Indexing Scientific Datasets on the GPU” *IEEE Transactions on Parallel and Distributed Systems(TPDS)*, Vol. 26, No. 8, pp 2258-2271, Aug. 2015. (**Selected as the featured paper of Aug. 2015 issue**)
- 6 Youngmoon Eom, **Jinwoong Kim**, and Beomseok Nam “Multi-dimensional Multiple Query Scheduling with Distributed Semantic Caching Framework” *Cluster Computing*, Vol. 18, No. 3, pp 1141-1156, Springer, Jun. 2015.
- 5 Youngmoon Eom, **Jinwoong Kim**, Deukyeon Hwang, Jaewon Kwak, Minho Shin, Beomseok Nam “Improving Multi-dimensional Query Processing with Data Migration in Distributed Cache Infrastructure”, 21st IEEE International Conference on High Performance Computing (HiPC 2014)(23% a/r). Goa, India, Dec. 2014.
- 4 Youngmoon Eom, Jonghwan Moon, **Jinwoong Kim**, Beomseok Nam, “Collaborative Multi-dimensional Dataset Processing with Distributed Cache Infrastructure in the Cloud”, 2nd International Workshop on Autonomic Management of Grid and Cloud Computing (AMGCC’14) (in conjunction with IEEE CAC 2014), London, UK, Sep. 2014.
- 3 **Jinwoong Kim**, Sul-Gi Kim, Beomseok Nam, “Parallel Multi-dimensional Range Query Processing with R-Trees on GPU”, *Journal of Parallel and Distributed Computing (JPDC)*, Vol. 73, Issue 8, 1195-1207, Elsevier, Aug, 2013.

- 2 Beomseok Nam, Deukyeon Hwang, **Jinwoong Kim**, and Minho Shin, “High-Throughput Distributed Query Scheduling with EMA-based Statistical Prediction”, Special Issue on Data Intensive eScience, Distributed and Parallel Databases, Vol. 30, issue 5–6, pp 401-414, Springer, Jun. 2012.
- 1 **Jinwoong Kim**, Sumin Hong, and Beomseok Nam “A Performance Study of Traversing Spatial Indexing Structures in Parallel on GPU”, 3rd International Workshop on Frontier of GPU Computing (FGC), in conjunction with HPCC 2012, Liverpool, UK, Jun. 2012.

#### INVITED TALKS

- 1 ”Exploiting Massive Parallelism for Indexing Multi-dimensional Datasets on the GPU” Parallel Data Lab (**PDL**) at CMU, Pittsburgh, PA, USA, Aug. 2015.

#### SKILLS

- Programming Languages :  
C/C++/C#, JAVA, JSP, Python, Ruby, CUDA
- Libraries, and Knowledge:  
SQL, MPI  
Linux, Git, LaTeX

#### REFERENCES

- **Beomseok Nam**  
Associate professor  
Department of Computer Science and Engineering  
School of Electrical and Computer Engineering  
Ulsan National Institute of Science and Technology(UNIST), Ulsan, South Korea  
E-mail: bsnam@unist.ac.kr
- **Won-Ki Jeong**  
Associate professor  
Department of Computer Science and Engineering  
School of Electrical and Computer Engineering  
Ulsan National Institute of Science and Technology (UNIST), Ulsan, South Korea  
E-mail: wkjeong@unist.ac.kr
- **Woongki Baek**  
Assistant Professor  
Department of Computer Science and Engineering  
School of Electrical and Computer Engineering  
Ulsan National Institute of Science and Technology (UNIST), Ulsan, South Korea  
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- **Andrew Pavlo**  
Assistant Professor  
Department of Computer Science  
Carnegie Mellon University, Pittsburgh, USA  
E-mail: pavlo@cs.cmu.edu

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