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Academic Employment

Aug 2018 – **Assistant Professor – School of Computing**
The University of Georgia, Athens, GA, USA

Education

May 2018 **Ph.D. in Computer Science**, *University of Virginia, Charlottesville, VA, USA*

Thesis Proactive Resource Provisioning to Ensure Predictable End-to-End Performance for Cloud Applications.

Advisor Dr. Marty Humphrey

Feb 2007 **M.S. in Computer Science and Engineering**, *Inha University, South Korea*

Feb 2001 **B.S. in Computer Science and Engineering**, *Inha University, South Korea*

Publications (31 Total, 5 Journals, 22 Conferences, 4 Workshops, ^s: a student author under my supervision, * : co-first authors.)

IC2E'22 V. K. Jayakumar, S. Arbat^s, **I. K. Kim**, W. Wang. CloudBruno: A Low-Overhead Online Workload Prediction Framework for Cloud Computing. *IEEE International Conference on Cloud Engineering*, September, 2022.

Elsevier O. Setayeshfar*, K. Subramani*, X. Yuan, R. Dey, D. Hong, **I. K. Kim**, K. H. Lee.
PMC'22 Privacy Invasion via Smart-Home Hub in Personal Area Networks. In *Pervasive and Mobile Computing*, 2022.

ACM J. Hao^{s*}, P. Subedi^{s*}, **I. K. Kim**, L. Ramaswamy. Reaching for the Sky: Maximizing
TOIT'22 Deep Learning Inference Throughput on Edge Devices with AI Multi-tenancy. *ACM Transactions on Internet Technology*, 2022.

EDGE'22 K. R. Rajput^{s*}, C. D. Kulkarni^{s*}, B. Cho, W. Wang, **I. K. Kim**. EdgeFaaS Bench: Benchmarking Edge Devices Using Serverless Computing. In *IEEE International Conference on Edge Computing*, July, 2022.

IEEE **I. K. Kim**, J. Hwang, W. Wang, M. Humphrey. Guaranteeing Performance SLAs of
TCC'22 Cloud Applications under Resource Storms. *IEEE Transactions on Cloud Computing*, Vol. 10, Issue 2, pp.1329-1343, July, 2022.

AAAI/
IAAI'22 S. Arbat^s, V. K. Jayakumar, J. Lee, W. Wang, **I. K. Kim**. Wasserstein Adversarial Transformer for Cloud Workload Prediction. In *Thirty-Fourth Annual Conference on Innovative Applications of Artificial Intelligence*, February, 2022.

- ASE'21 S. He, T. Liu, P. Lama, J. Lee, **I. K. Kim**, W. Wang. A Performance Testing for Cloud Computing with Dependent Data Bootstrapping. In *IEEE/ACM International Conference on Automated Software Engineering*, November, 2021.
- CLOUD'21 P. Subedi^s, J. Hao^s, **I. K. Kim**, L. Ramaswamy. AI Multi-Tenancy on Edge: Concurrent Deep Learning Model Executions and Dynamic Model Placements on Edge Devices. In *IEEE International Conference on Cloud Computing*, September, 2021.
- CLOUD'21 J. Hao^{s*}, T. Jiang^{s*}, W. Wang, **I. K. Kim**. An Empirical Analysis of VM Startup Times in Public IaaS Clouds. In *IEEE International Conference on Cloud Computing*, September, 2021.
- SMART-COMP'21 O. Setayeshfar^{*}, K. Subramani^{*}, X. Yuan, R. Dey, D. Hong, K. H. Lee, **I. K. Kim**. ChatterHub: Privacy Invasion via Smart Home Hub. In *IEEE International Conference on Smart Computing*, August, 2021.
- SNTA @HPDC'21 J. Hao^s, P. Subedi^s, **I. K. Kim**, L. Ramaswamy. Characterizing Resource Heterogeneity in Edge Devices for Deep Learning Inferences. In *ACM International Workshop on System and Network Telemetry and Analytics*, June, 2021.
- IPDPS'20 V. K. Jayakumar, J. Lee, **I. K. Kim**, W. Wang. A Self-Optimized Generic Workload Prediction Framework for Cloud Computing. In *IEEE International Parallel & Distributed Processing Symposium*, May, 2020.
- IEEE TCC'20 **I. K. Kim**, W. Wang, Y. Qi, M. Humphrey. Forecasting Cloud Application Workloads with CloudInsight for Predictive Resource Management. *IEEE Transactions on Cloud Computing*, 2020.
- CogMI'19 L. Xian^s, S. D. Vickers^s, A. L. Giordano, J. Lee, **I. K. Kim**, L. Ramaswamy. #selfharm on Instagram: Quantitative Analysis and Classification of Non-Suicidal Self-Injury. In *IEEE International Conference on Cognitive Machine Intelligence*, December, 2019.
- TRB'19 **I. K. Kim**, D. Yan, B. Park, J. Guo. Traffic Flow Insight: A Novel Online Ensemble Model for Short-Term Traffic Volume Prediction. In *Transportation Research Board Annual Meeting*, January, 2019.
- CLOUD'18 **I. K. Kim**, W. Wang, Y. Qi, M. Humphrey. CloudInsight: Utilizing a Council of Experts to Predict Future Cloud Application Workloads. In *IEEE International Conference on Cloud Computing*, July, 2018. **Best Student Paper Runner-Up**, acceptance rate: 15%
- ISPDC'18 **I. K. Kim**, J. Hwang, W. Wang, M. Humphrey. Orchestra: Guaranteeing Performance SLAs for Cloud Applications by Avoiding Resource Storms. In *IEEE International Symposium on Parallel and Distributed Computing*, June, 2018.
- IC2E'17 **I. K. Kim**, S. Zeng, C. Young, J. Hwang, M. Humphrey. iCSI: A Cloud Garbage VM Collector for Addressing Inactive VMs with Machine Learning. In *IEEE International Conference on Cloud Engineering*, April, 2017. acceptance rate: 24%
- Middleware'16 **I. K. Kim**, S. Zeng, C. Young, J. Hwang, M. Humphrey. A Supervised Learning Model for Identifying Inactive VMs in Private Cloud Data Centers. In *ACM/IFIP/USENIX Middleware Conference*, December, 2016. acceptance rate: 20%

- CLOUD'16 **I. K. Kim**, W. Wang, Y. Qi and M. Humphrey. Empirical Evaluation of Workload Forecasting Techniques for Predictive Cloud Resource Scaling. In *IEEE International Conference on Cloud Computing*, June, 2016. *acceptance rate: 15%*
- BigData'15 **I. K. Kim**, J. Steele, A. Castronova, J. Goodall, and M. Humphrey. WDCloud: An End to End System for Large-Scale Watershed Delineation on Cloud. In *IEEE International Conference on Big Data*, December, 2015.
- CLOUD'15 **I. K. Kim**, W. Wang, and M. Humphrey. PICS: A Public IaaS Cloud Simulator. In *IEEE International Conference on Cloud Computing*, June, 2015. *acceptance rate: 18%*
- CLOUD'15 A. Ruiz-Alvarez, **I. K. Kim**, and M. Humphrey. Toward Optimal Resource Provisioning for Cloud MapReduce and Hybrid Cloud Applications. In *IEEE International Conference on Cloud Computing*, June, 2015. *acceptance rate: 18%*
- UCC'14 **I. K. Kim**, J. Steele, Y. Qi, and M. Humphrey. Comprehensive Elastic Resource Management to Ensure Predictable Performance for Scientific Applications on Public IaaS Clouds. In *IEEE/ACM International Conference on Utility and Cloud Computing*, December, 2014. *acceptance rate: 27%*
- eScience'13 M. Humphrey, J. Steele, **I. K. Kim**, M. G. Kahn, J. Bondy. M. Ames. CloudDRN: A Lightweight, End-to-End System for Sharing Distributed Research Data in the Cloud. In *IEEE International Conference on eScience*, October, 2013.
- FGCN'07 S. H. Jang, **I. K. Kim**, and J. S. Lee. Node Availability-Based Congestion Control Model Using Fuzzy Logic for Computational Grid. In *International Conference on Future Generation Communication and Networking*, December, 2007.
- UPWN **I. K. Kim**, S. H. Jang, and J. S. Lee. QLP-LBS: Quantization and Location Prediction-based LBS for Reduction of Location Update Costs. In *International Workshop on Ubiquitous Processing for Wireless Networks*, August, 2007.
- SCS **I. K. Kim**, S. H. Jang, and J. S. Lee. Adaptive and Mobility-Predictive Quantization-based Communication Data Management in High-Performance Distributed Computing. *SIMULATION: Transactions of The Society for Modeling and Simulation International*, Vol. 83, Issue 7, pp.529-548, July, 2007.
- MDC **I. K. Kim**, S. H. Jang, and J. S. Lee. Adaptive Distance Filter-based Traffic Reduction for Mobile Grid. In *International Workshop on Mobile Distributed Computing*, June, 2007.
- HPG **I. K. Kim**, Y. B. Ma, and J. S. Lee. Adaptive Quantization-based Communication Data Management for High-Performance Geo-computation in Grid Computing. In *International Workshop on High Performance Geo-computation*, October, 2006.
- ICCSA'06 **I. K. Kim** and J. S. Lee. Resource Demand Prediction-based Grid Resource Transaction Network Model in Grid Computing Environment. In *International Conference on Computational Science and Its Applications*, May, 2006.

Miscellaneous (arXiv, Non-CS/Interdisciplinary Publications, or Extended Abstract)

- DAF Data & **I. K. Kim**, L. Ramaswamy. Towards High-Performance AI Operations at the Edge. AI Forum'22 *DAF & AI Forum*, 2022.

- arXiv'21 J. Hao, T. Jiang, W. Wang, **I. K. Kim**. An Empirical Analysis of VM Startup Times in Public IaaS Clouds: Extended Report. *arXiv*, 2021.
- Int'l J. Adv. Counselling'21 A. L. Giordano, L. Lundeen, K. Wester, J. Lee, S. D. Vickers, M. Schmit, **I. K. Kim**. Nonsuicidal self-injury on Instagram: Examining hashtag trends. In *International Journal for the Advancement of Counselling*, in press, 2021.
- AGU'13 J. L Goodall, M. B Ercan, A. M Castronova, M. Humphrey, N. Beekwilder, J. Steele, **I. K. Kim**. Using the cloud to speed-up calibration of watershed-scale hydrologic models (*Invited*), In *AGU Fall Meeting*, December, 2013.

Patents

- I. K. Kim et al., **Managing Idle and Active Servers in Cloud Data Centers**. US Patent Number: 10834182, 2020, United States.
- I. K. Kim, **IP-PBX Cluster System and its Implementation Methods**. Patent Number: 10-2011-0134711, 2011, South Korea.
- I. K. Kim, **Cluster Node Control Method and Internet Protocol Private Branch Exchange**. Patent Number:10-2010-0136393, 2010, South Korea.
- I. K. Kim, **Local Survival Node Management Method for IP PBX**. Patent Number:10-2009-0128849, 2009, South Korea.
- I. K. Kim et al., **Grid Resource Management System and Method**. Patent Number:10-0833534, 2008, South Korea.
- I. K. Kim et al., **Location-Based Service Management Device and Method**. Patent Number:10-0771155, 2007, South Korea.

Classes Taught

- 2022 Spring CSCI 4795/6795 Cloud Computing
- 2021 Fall CSCI 4730/6730 Operating Systems, CSCI 8795 Advanced Cloud Computing
- 2021 Spring CSCI 4795/6795 Cloud Computing
- 2020 Fall CSCI 8795 Advanced Cloud Computing
- 2020 Spring CSCI 4795/6795 Cloud Computing
- 2019 Fall CSCI 8795 Advanced Cloud Computing
- 2019 Spring CSCI 4795/6795 Cloud Computing
- 2018 Fall CSCI 8000 Advanced Special Topics in Computer Science

Miscellaneous

- 2018-present **TPC Member:** IEEE/ACM CCGRID, IEEE CLOUD, ACM/IEEE IoTDI, IEEE IC2E, IEEE/ACM UCC, IEEE CloudCom, IEEE/ACM BDCAT, IEEE ICFEC, ACM SNTA@HPDC
- 2019 **Publicity Chair:** SNTA@HPDC 2019

- 2013-present **Reviewer:** IEEE IWQoS, IEEE Big Data, IEEE NAS, ACM HPDC, AI-Science, IEEE Trans. Parallel and Distributed Systems, IEEE Trans. Services Computing, IEEE Trans. Cloud Computing, ACM Trans. Sensor Networks, ACM Trans. on Modeling and Performance Evaluation of Computing Systems, Future Generation Computing Systems (Elsevier), Journal of Parallel and Distributed Computing (Elsevier), Computer Networks (Elsevier), Computing (Springer), Journal of Grid Computing (Springer), Journal of Cloud Computing (Springer), Software: Practice and Experience (Wiley), etc.
- 2018 Best Student Paper Runner-Up, IEEE CLOUD 2018
- 2006 Brain Korea 21 (BK-21) Scholarship, Korea Research Foundation
- 2005, 2006 Graduate Research Scholarship, Inha University Graduate School of Engineering

Software Release

- PICS Public IaaS Cloud Simulator
- GitHub <https://github.com/ik2sb/PICS>
- Project Page <http://cobweb.cs.uga.edu/~kim/PICS/>

Past Professional Experience

- Summer 2016 **Research Intern**
IBM T.J. Watson Research Center, Yorktown Heights, NY, USA
- 2007-2012 **Software Research Engineer**
Ericsson-LG Enterprise, South Korea
- 2001-2004 **Software Development Engineer**
Pandora TV, South Korea