

4단계 BK21 해외석학 세미나

Designing Reusable Composable Components for the (HPC) I/O Stack

일시: 2021년 11월 12일 (금요일) (오전 11:00)

장소: Zoom (<https://sogang-ac-kr.zoom.us/j/81300431563>)

강사: Prof. Ali Butt (Virginia Tech, USA)

[Abstract]

The rise of AI/ML in HPC applications is also driving the need for suitable storage abstractions such as the key-value (KV) stores. These abstractions pose new challenges for the HPC I/O stack. Enterprise KV stores are not well suited for HPC applications, and entail customization and cumbersome end-to-end KV design to extract the applications needs. To this end, I will present BESPOKV, an adaptive, extensible, and scale-out KV store framework. BESPOKV decouples the KV store design into the control plane for distributed management and the data plane for local data store. BESPOKV takes as input a single-server KV store, called a datalet, and transparently enables a scalable and fault-tolerant distributed KV store service. The resulting distributed stores are also adaptive to consistency or topology requirement changes and can be easily extended for new types of services. I'll show that BESPOKV-enabled distributed KV stores scale horizontally to a large number of nodes, and performs comparably and sometimes better than the state-of-the-art systems.

[강사 소개]

Ali is a Professor of Computer Science (and ECE by courtesy) and Associate Department Head for Faculty Development in CS@VT. He is an ACM Distinguished Member. He received his Ph.D. degree in Electrical and Computer Engineering from Purdue University in 2006. He is a recipient of an NSF CAREER Award (2008), IBM Faculty Awards (2008, 2015), a VT College of Engineering (COE) Dean's award for "Outstanding New Assistant Professor" (2009), an IBM Shared University Research Award (2009), and NetApp Faculty Fellowships (2011, 2015). He was named a VT COE Faculty Fellow in 2013. Ali was an Academic Visitor at IBM Almaden Research Center (Summer 2012) and a Visiting Research Fellow at Queen's University of Belfast (Summer 2013). He has served as the Associate Editor for IEEE Transactions on Cloud Computing (2018-present), ACM Transactions on Storage (2016-present), IEEE Transactions on Parallel and Distributed Systems (2013-2016), Cluster Computing: The Journal of Networks, Software Tools and Applications (2013-present), and Sustainable Computing: Informatics and Systems (2010-2015). He is an alumni of the National Academy of Engineering's US Frontiers of Engineering (FOE) Symposium (2009), US-Japan FOE (2012), and National Academy of Science's AA Symposium on Sensor Science (2015). He was also an organizer for the US FOE in 2010. Ali's research interests are in: cloud and high-performance computing systems; systems support for machine and deep learning applications; file, I/O, and storage systems; distributed systems; and large-scale experimental computer systems. At Virginia Tech he leads the Distributed Systems & Storage Laboratory (DSSL).

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