

When AI meets high-speed networking — Making AI Computing and Services Anywhere Anytime

Abstract

Artificial intelligence (AI) and high-speed network (e.g., high-speed Internet, 5G) are two major information technology fields that have a significant impact on our lives and the world. The intersection and deep fusion of these two fields will incubate many new applications, as well as present some new technological challenges. Networking itself can benefit from these promising AI technologies, for example, by bringing machine learning algorithms into the network domain to leverage the powerful abilities for higher network performance. Meanwhile, the distributed computing system built on high-speed networking is also the key infrastructure to provide efficient computational resources for AI. By utilizing the ultra-high-speed networking technology, it is highly promising to connect many hardware and devices distributed geographically to provide a unified computing platform in which some large-scale AI tasks can be run, in particular jointly training a very deep model on a large dataset, or performing inference jointly on hierarchically distributed computing system consisting of the cloud, the edge and devices. In this talk, I will briefly report the related research and development that are conducted on the Pengcheng Laboratory, Shenzhen, China. Basically, how to combine AI and future networking infrastructure is the core topic in two major ongoing projects in this lab.

Bio



Yonghong Tian is currently a Boya Distinguished Professor with the School of EECS, Peking University, China, and is also the deputy director of Artificial Intelligence Research Center, PengCheng Laboratory, Shenzhen, China. His research interests include computer vision, multimedia big data, and brain-inspired computation. He is the author or coauthor of over 180 technical articles in refereed journals such as IEEE TPAMI/TNNLS/TIP/TMM/TCSVT/TKDE/TPDS, ACM CSUR/TOIS/TOMM and conferences such as NeurIPS/CVPR/ICCV/AAAI/ACMMM/WWW. Prof. Tian was/is an Associate Editor of IEEE TCSVT (2018.1-), IEEE TMM (2014.8-2018.8), IEEE Multimedia Mag. (2018.1-), and IEEE Access (2017.1-). He co-initiated IEEE Int'l Conf. on Multimedia Big Data (BigMM) and served as the TPC Co-chair of BigMM 2015, and also served as the Technical Program Co-chair of IEEE ICME 2015, IEEE ISM 2015 and IEEE MIPR 2018/2019, and General Co-chair of IEEE MIPR 2020. He is the steering member of IEEE ICME (2018-) and IEEE BigMM (2015-), and is a TPC Member of more than ten conferences such as CVPR, ICCV, ACM KDD, AAI, ACM MM and ECCV. He was the recipient of the Chinese National Science Foundation for Distinguished Young Scholars in 2018, two National Science and Technology Awards and three ministerial-level awards in China, and obtained the 2015 EURASIP Best Paper Award for Journal on Image and Video Processing, and the best paper award of IEEE BigMM 2018. He is a senior member of IEEE, CIE and CCF, a member of ACM.