

# Computing@PNNL SEMINAR

## *Scalable Tensor Decompositions in High Performance Computing Environments*

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In her talk, Jiajia Li will present scalable tensor decompositions in high-performance computing platforms, which includes multicore CPUs, GPUs, and distributed memory systems. Tensor decompositions are noted for their ability to discover multidimensional dependencies and have found numerous uses in healthcare analytics, social networks analytics, machine learning, computer vision, and signal processing, to name only a few. Some fundamental challenges exist in optimizing tensor decompositions, such as arbitrary tensor dimensions, the curse of dimensionality, irregularity, and mode orientation. Dr. Li will propose different techniques to overcome these challenges, including the memorization method, a new sparse tensor format with better data locality, as well as avoiding tensor-matrix transformation and multi-grained blocking techniques. Along with the optimization work, she also will describe how to employ an automatically tuning method to pursue close-to-optimal performance.