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A new matrix operation in compressed sensing

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In this speech, we propose a new matrix operation called P-tensor product (PTP) and apply it to compressed sensing (CS), the new model of CS is named PTP-CS. In order to break the restrictions of the traditional matrix multiplication, the PTP makes the dimension of two matrices matching by Kronecker product. Aiming at the large storage of the random matrix in CS, the PTP can construct a high-dimension matrix using a matrix, which can be chosen as random matrix or generalized permutation matrix. Similar with the traditional CS, we analyze some reconstruction conditions of the PTP-CS such as the spark, the coherence and the restricted isometry property (RIP). The experimental results demonstrate that our PTP-CS model can not only increase the choice of Kronecker matrix and decrease the storage of traditional CS, but also maintain the considerable recovery performance.

Biography

Yaqi Mi received his Bachelor of Science degree in Computer Science and Technology from Zhejiang University of Finance & Economics, Hangzhou, China in 2016. Now she is working towards the Master of Science degree in Information Security at Beijing University of Posts and Telecommunications, Beijing, China. Her major interests are compressive sensing and signal processing.

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