Journal club report

March 17, 2017

We discussed tensor ring decomposition at Mar.17
The main idea of this paper:

According to previous paper, the model of tensor ring decomposition is proposed. The main contributes of this paper is further introducing the model, giving mathematical definition, solutions, relation with other decomposition methods, and applications.
Main discussion:

1) Compared with TT, the main advantages of tensor ring decompositions is the the TR ranks is more small and balanced.

2) Due to the trace operation in the TR model, circular dimensional permutation invariance lends to convenience of calculations. It is clever ideas to use trace operation.

3) Algorithm: author use t-svd and ALS to solve the optimization problem respectively.

4) Author proposes systematic introduction of mathematical operations based TR representation and suggests that TR decomposition is the generalization of other popular decomposition methods, like CPD, Tucker decomposition, TT etc.

5) In experiment part, we discussed many detailed problem, include how to use the features for classification, how to make the SNR fixed.