Week 1

Tensor Decompositions for Data Science -- chapter 3
Tensor Decompositions for Data Science -- chapter 6
Review [1, 2]

[1] Oguz Kaya and Bora Uçar. 2015. Scalable sparse tensor decompositions in distributed memory systems. In Proceedings of the International Conference for High Performance Computing, Networking, Storage and Analysis (SC '15). Association for Computing Machinery, New York, NY, USA, Article 77, 1–11. https://doi.org/10.1145/2807591.2807624

[2] Kaya, Oguz, and Bora Uçar. "High performance parallel algorithms for the tucker decomposition of sparse tensors." *2016 45th International Conference on Parallel Processing (ICPP)*. IEEE, 2016.

Week 2

[1] Oguz Kaya, Bora Uçar. Parallel Candecomp/Parafac Decomposition of Sparse Tensors Using Dimension Trees. SIAM Journal on Scientific Computing, 2018, 40 (1), pp.C99 - C130. ff10.1137/16M1102744ff. ffhal-01397464v2

[2] L. Ma and E. Solomonik, "Efficient parallel CP decomposition with pairwise perturbation and multi-sweep dimension tree," *2021 IEEE International Parallel and Distributed Processing Symposium (IPDPS)*, Portland, OR, USA, 2021, pp. 412-421, doi: 10.1109/IPDPS49936.2021.00049.

[3] Venkatesan T. Chakaravarthy, Jee W. Choi, Douglas J. Joseph, Prakash Murali, Shivmaran S. Pandian, Yogish Sabharwal, and Dheeraj Sreedhar. 2018. On Optimizing Distributed Tucker Decomposition for Sparse Tensors. In Proceedings of the 2018 International Conference on Supercomputing (ICS '18). Association for Computing Machinery, New York, NY, USA, 374–384. https://doi.org/10.1145/3205289.3205315

[4] Shi, Tianyi, Maximilian Ruth, and Alex Townsend. "Parallel algorithms for computing the tensor-train decomposition." *SIAM Journal on Scientific Computing* 45.3 (2023): C101-C130.

Week 3

[0] Advanced sketching leverage score sampling

[1] Ma, Linjian, and Edgar Solomonik. "Fast and accurate randomized algorithms for low-rank tensor decompositions." *Advances in neural information processing systems* 34 (2021): 24299-

24312.

[2] Fahrbach, Matthew, Mehrdad Ghadiri, and Thomas Fu. "Fast low-rank tensor decomposition by ridge leverage score sampling." *arXiv preprint arXiv:2107.10654* (2021).

[3] Battaglino, Casey, Grey Ballard, and Tamara G. Kolda. "A practical randomized CP tensor decomposition." *SIAM Journal on Matrix Analysis and Applications* 39.2 (2018): 876-901.

[4] Minster, Rachel, Zitong Li, and Grey Ballard. "Parallel randomized Tucker decomposition algorithms." *SIAM Journal on Scientific Computing* 46.2 (2024): A1186-A1213.

Week 4

Candidates

- https://inria.hal.science/hal-03081555/file/paralleltt.pdf
- https://dl.acm.org/doi/pdf/10.1145/3472456.3472472
- https://arxiv.org/pdf/1710.08513
- https://arxiv.org/pdf/2406.02749