Report on 2023-07-28 Fri

WU Zihan

July 28, 2023

CUR

- $C = A(:, q)$
- $R = A(p, :)$
- $U = C^{\dagger} A R^{\dagger}$ to minimize $\|A - CUR\|_F$

The selection of q and p is important. [2] uses the discrete empirical interpolation method (DEIM) and incremental QR decomposition to find the optimal q and p. And since the n-gram result is sparse, the CUR decomposition can be done in a sparse way as [1] does.

Christos Boutsidis and David P. Woodruff.
Optimal CUR matrix decompositions.
In *Proceedings of the forty-sixth annual ACM symposium on Theory of computing*, STOC '14, pages 353–362, New York, NY, USA, 2014. Association for Computing Machinery.

Emily P. Hendryx, Béatrice M. Rivière, Danny C. Sorensen, and Craig G. Rusin.
Finding representative electrocardiogram beat morphologies with CUR.
Journal of Biomedical Informatics, 77:97–110, January 2018.

Last Paper

I have two valuable talks with Dr. Sheheryar Khan. He suggests me to do several revisements on my last paper.

- Make the diagram more attractive by adding some real pictures in the gerenal framework.
- Add some ellipse picture to compatibility matrices figure.
- Develop a submethod to add more comparations between different methods.
- Some videos can be added to the dataset to be used.
- Add more pictures in the metric part and ASSD metric can be added.

He gave me two papers of his and Ming Zhang's and to behave as examples of how to make diagrams attractive.