

Computation, Problem Set #3, Decomposition

OSM Lab, Jan Ertl

Due Tuesday, July 10 at 6:00pm

Do the following Exercises from the Brigham Young University Applied Mathematics and Computational Emphasis (ACME) Python labs [Humpherys and Jarvis \(2017\)](#) and from Evans notes.

1. **Exercises from ACME: QR Decomposition lab.** Do problems 1 through 5 from [The QR Decomposition](#) lab.
2. **Exercises from ACME: Least Squares and Eigenvalues lab.** Do problems 1 through 6 from the [Least Squares and Computing Eigenvalues](#) lab. You will need to download the [housing.npy](#) and [ellipse.npy](#) files, which are saved in the course repository.
3. **Exercises from ACME: SVD Image Compress lab.** Do problems 1 through 5 from [SVD and Image Compression](#) lab. You will need to download the [hubble.jpg](#) file, which is saved in the course repository.
4. **Exercises from ACME: Drazin Inverse lab.** Do problems 1 through 5 from [Drazin Inverse](#) lab. You will need to download the [social_network.csv](#) file, which is saved in the course repository.
5. **Exercises from ACME: PageRank lab.** Do problems 1 through 5 (NOT problem 6) from [PageRank](#) lab. You will need to download the [matrix.txt](#) and [ncaa2013.csv](#) files, which are saved in the course repository.
6. **Exercises from ACME: Conditioning and Stability lab.** Do problems 1 through 6 from [Conditioning and Stability](#) lab. You will need to download the [stability_data.npy](#) file, which is saved in the course repository.

References

Humpherys, Jeffrey and Tyler Jarvis, “Computational Labs for Foundations of Applied Mathematics, Volumes I and II,” 2017.