This file provides an overview of the codes included in different folders. Most of them are MATLAB files. The codes are accompanied with demos for demonstration purposes.

Hyperspectral Image Processing contains the codes for:

- Denoising: an implementation of [13];
- Band Selection: an implementation of [14];
- Classification: an implementation of multi-class SVM with one-against-all strategy;
- Simulation: generating HSI and MSI from SRI, see Section 4.1 of [2];
- Fusion: reconstructing SRI from HSI and MSI using graph Laplacian regularization [2];
- Quality Evaluation: various metrics for evaluating the reconstructed SRI.

Compressed Sensing contains the codes for:

- Multilevel sampling: adaptive sampling method in [1];
- CS based fusion: codes for the recovery of SRI from the samples of HSI and MSI, see [4].

Low Rank Approximation contains the codes for:

- CUR: CUR decomposition [10] with different sampling strategies;
- SketchySVD: an implementation of [16];
- SketchyCoreSVD: [6], SketchySVD with random subsampling.

Tensor Decomposition contains the codes for:

- CP: alternating least squares, see [11];
- Tucker: high-order orthogonal iteration (HOOI) [11], SketchyTucker [15], and the extension of [6] to Tucker decomposition, see Section 1 of [5];
- Tensor Train: an implementation of [12].

Modeling Dynamics contains the codes for:

- Dynamics Mode Decomposition: exact DMD [17], randomized DMD [9], EDMD [18] with Gaussian and quadratic polynomial kernels;
- Cardiac Velocities: for a Cardiac MRI video, the velocities are inferred from the video based on optical flow techniques [7], then the velocity fields are decomposed into divergence-free, curl-free, and harmonic parts [8]. The implementation of EDMD with matrix kernels are included. For separable kernels, see Section 1 of [3]. For divergence-free (curl-free) kernels, see Section 15 of [3].

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