Dictionary

Methods:

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| Methods | Description |
| NeighborhoodRandomVoxels | returns the Neighborhood of m randomly chosen voxels |
| NeighborhoodRegularGridVoxels | returns the Neighborhood of the voxels in a regular grid with pitch of q |
| Revise | to revise the properties of a given dictionary without re-instantiation |
| Patch | Extracts patches using the Neighborhood Nd and calculates the mean of each Patch |
| TransPatch | Inserts back the patches into the image |
| initialDictionary | Initialize dictionary |
| normalize\_dictionary | Normalize atoms of dictionary D, |D\_i|=1 |
| plot\_dictionary |  |
| sparse\_coding | Sparse coding using specified SC algorithm, default, ‘LASSO’ |
| dictionary\_update | Dictionary update using DU algorithm, default, ‘MOD’ |
| DictionaryLearning | Loops over SC and DU |
| derivative\_DLprior | Return the derivative of DL prior |
| TrainingSet | Derives random Training sets for dictionary learning |
| RemoveMeanOfPatch |  |

Properties:

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| --- | --- |
| **Data** | **Description** |
| ImageSize | [256 256 1] |
| PatchSize | 12 |
| PatchNumel | 144 |
| PatchPitch | 3 |
| nPatches | 7056 |
| nAtoms | 720 |
| is3D | 0 |
| NdPatches | Neighbourhoods used to extract patches |
| SC\_algorithm | OMP, LASSO, FOCUSS |
| SC\_maxL2Error | 1.0000e-03 |
| SC\_LASSO\_lambda | 1 |
| SC\_LASSO\_niter | 50 |
| SC\_FOCUSS\_lambda | 0 |
| SC\_FOCUSS\_p | 1 -> L0 norm approximation  0.5 -> L1 norm approximation |
| SC\_FOCUSS\_niter | 3 |
| SC\_OMP\_method | 'mex’ 'Script' 'Matlab' |
| DU\_algorithm | 'MOD' 'AK-SVD' 'K-SVD' 'GD' |
| DU\_GD\_niter | 100 |
| DU\_AK\_SVD\_niter | 3 |
| DL\_niter | 50 |