**User Manual - Chemical Image Analysis**

1. **File Selection Page**
2. Select File (button): pick an input *.tif* or *.txt* file or enter the file path manually
3. Denoising method (checkbox):
4. Bm4d (Block Matching 4D filtering)
5. STV (Spectral Total Variation)
6. Decomposition method (checkbox):
7. Spectral Phasor
8. MCR (Multivariate Curve Resolution and Alternating Least Square Fitting)
9. LS (Least Square Fitting)
10. Transform (button): perform a 3D transformation on a 2D image montage (button appears only if the input file is in the *.txt* format)

Graphical user interface, application

Description automatically generated

1. **Denoising Page**

**B1. Denoising - Bm4d**

1. Parameters (with defaults showing):
2. Distribution (dropdown list)
   1. Gauss – Gaussian distribution
   2. Rice – Rician distribution
3. Profile (dropdown list)
   1. mp – modified profile
   2. np – normal profile
   3. lc – low complexity
4. Do wiener (dropdown list): enable Wiener filtering
5. Verbose (dropdown list): verbose mode
6. Estimate Sigma (dropdown list): enable sigma estimation
7. Crop Phantom (dropdown list): experiment on smaller phantom
8. Variable Noise (dropdown list): enable spatially varying noise
9. Sigma (entry): enter sigma value manually
10. Noise Factor (entry): enter noise factor manually
11. Denoise (button): begin bm4d denoising

**B2. Denoising – STV**

1. Parameters (with defaults showing):
2. tv method (total variation method): ‘aniso’ or ‘iso’
3. rho r: initial penalty parameter for ||u-Df||
4. rho o: initial penalty parameter for ||f-g-r||
5. beta: regularization parameter [a b c] for weighted TV norm
6. gamma: update constant for rho\_r
7. max iteration: maximum iteration
8. alpha: constant that determines constraint violation
9. tolerance: tolerance level on relative change
10. Denoise (button): begin STV denoising