

Unknown

$$\mathcal{Z} = \underbrace{\text{[Image 1]} + \dots + \text{[Image 2]}}_{\text{Low-rank}}$$

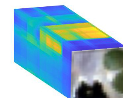
Diagram illustrating the decomposition of the unknown tensor \mathcal{Z} into a sum of low-rank components. The first component is a grayscale image with a blue spectral curve above it. The second component is a grayscale image with a blue spectral curve above it.

$$\tilde{\mathcal{Z}} = \text{[Image 1]} + \underbrace{\text{[Image 2]} + \dots + \text{[Image 3]}}_{\text{Variability model}}$$

Diagram illustrating the decomposition of the unknown tensor $\tilde{\mathcal{Z}}$ into a sum of components. The first component is a color image with a yellow star. The second component is a grayscale image with a red spectral curve above it. The third component is a grayscale image with a red spectral curve above it.

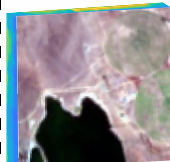
Observations

Spatial degradation



\mathcal{Y}_H

Spectral degradation



\mathcal{Y}_M

Unmixing

$$\approx \text{[Image 1]} + \dots + \text{[Image 2]}$$

Diagram illustrating the unmixing process for the observation \mathcal{Y}_H , showing the decomposition into a sum of low-rank components. The components are enclosed in a red dashed box. The first component is a grayscale image with a blue spectral curve above it. The second component is a grayscale image with a blue spectral curve above it.

$$\approx \text{[Image 1]} + \dots + \text{[Image 2]}$$

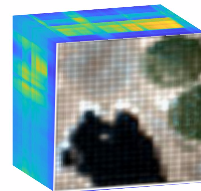
Diagram illustrating the unmixing process for the observation \mathcal{Y}_M , showing the decomposition into a sum of low-rank components. The components are enclosed in a red dashed box. The first component is a grayscale image with a purple spectral curve above it. The second component is a grayscale image with a purple spectral curve above it.

LL1-BTD

$$\text{[Cube]} = \text{[A}_1\text{]} \overset{\text{C}_1}{\text{[B}_1\text{]}} + \dots + \text{[A}_R\text{]} \overset{\text{C}_R}{\text{[B}_R\text{]}}$$

Diagram illustrating the LL1-BTD model, showing the decomposition of a cube into a sum of products of matrices A_i and B_i , weighted by coefficients C_i .

HSR



$\hat{\mathcal{Z}}$