path/to/your/image.png

Figure 1: Decomposition $\boldsymbol{J} = \boldsymbol{U}_J \boldsymbol{\Sigma}_J \boldsymbol{V}_J^\top$ in the case where $r_J = 2$. Each of the joint components has an n-dimensional score vector (column of $\boldsymbol{U}_J$) and a p-dimensional loading vector (row of $\boldsymbol{V}_J^\top$) associated with it; in this example, $n = 3$ and $p = 4$. Each subward has an r_J-dimensional score vector (row of $\boldsymbol{U}_J$) associated with it, and each feature has a r_J-dimensional loading vector (column of $\boldsymbol{V}_J^\top$). Given that the singular values in $\boldsymbol{\Sigma}_J$ are distinct and ordered from largest to smallest, the decomposition is identifiable up to multiplication of components by -1: we can multiply any column of $\boldsymbol{U}_J$ and the corresponding column of $\boldsymbol{V}_J$ (row of $\boldsymbol{V}_J^\top$) by -1 without changing the value of $\boldsymbol{U}_J \boldsymbol{\Sigma}_J \boldsymbol{V}_J^\top$.