Online Appendix: Animations

Animations for some of the numerical experiments are provided as animated GIFs. For each algorithm (NMF, MCA, and LinCA) two animations are given: one of an application to artificial data and one of an application to more realistic data. Animations show the modification of generative fields during learning. For artificial data we additionally provide animations of the data point sorting and classification during learning. The sorting is used to remove data points that are not well approximated (compare Figure 4D). For NMF and LinCA we observed an early convergence to the true causes in most trials but a relatively late convergence in some trials (compare likelihood values in Figures 4A and 10C). The trial `NMF_Bars_GenFields.gif` and `NMF_Bars_Sorting.gif` is an example of an early convergence. The trial `LinCA_Bars_GenFields.gif` and `LinCA_Bars_Sorting.gif` is an example of a late convergence. The animation `NMF_MNIST_GenFields.gif` shows an application of the NMF algorithm to MNIST data. The animation `MCA_Grass_GenFields.gif` shows an application of MCA to data as displayed in Figure 9 (with $H = 100$, every third iteration is shown). The animation `LinCA_Phonemes_GenFields.gif` shows an application of LinCA to linear mixtures of phonemes, which represents an additional experiment.

Artificial data:

`NMF_Bars_GenFields.gif`
`NMF_Bars_Sorting.gif`

`MCA_Bars_GenFields.gif`
`MCA_Bars_Sorting.gif`

`LinCA_Bars_GenFields.gif`
`LinCA_Bars_Sorting.gif`

More realistic data:

`NMF_MNIST_GenFields.gif`

`MCA_Grass_GenFields.gif`

`LinCA_Phonemes_GenFields.gif`