Machine Intelligence II
Exercise 6 (ICA)

Group 1
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1   Results

After applying the mixing transformation A the mixed signal and the sources are still significantly correlated. However after permuting the samples this correlation drops to zero.

We use the permuted signal to estimate the un-mixing matrix W which we use to recover the original sources. This shows that ICA does not rely on the order in which the samples are presented. As expected, the correlation of the recovered sources with the original ones is high and close to 1. For example we obtain these correlation values: correlation signal vs. sources: 0.79999
correlation signal (permuted) vs. sources: -0.0040099
correlation sources vs. rec. sources: 0.9967

Figure 1 shows that the ICA algorithm can recover the sources in a different order and with an arbitrary scaling factor. In order to compute the right correlations at the end we thus need to figure out the order in which the sources have been reconstructed.
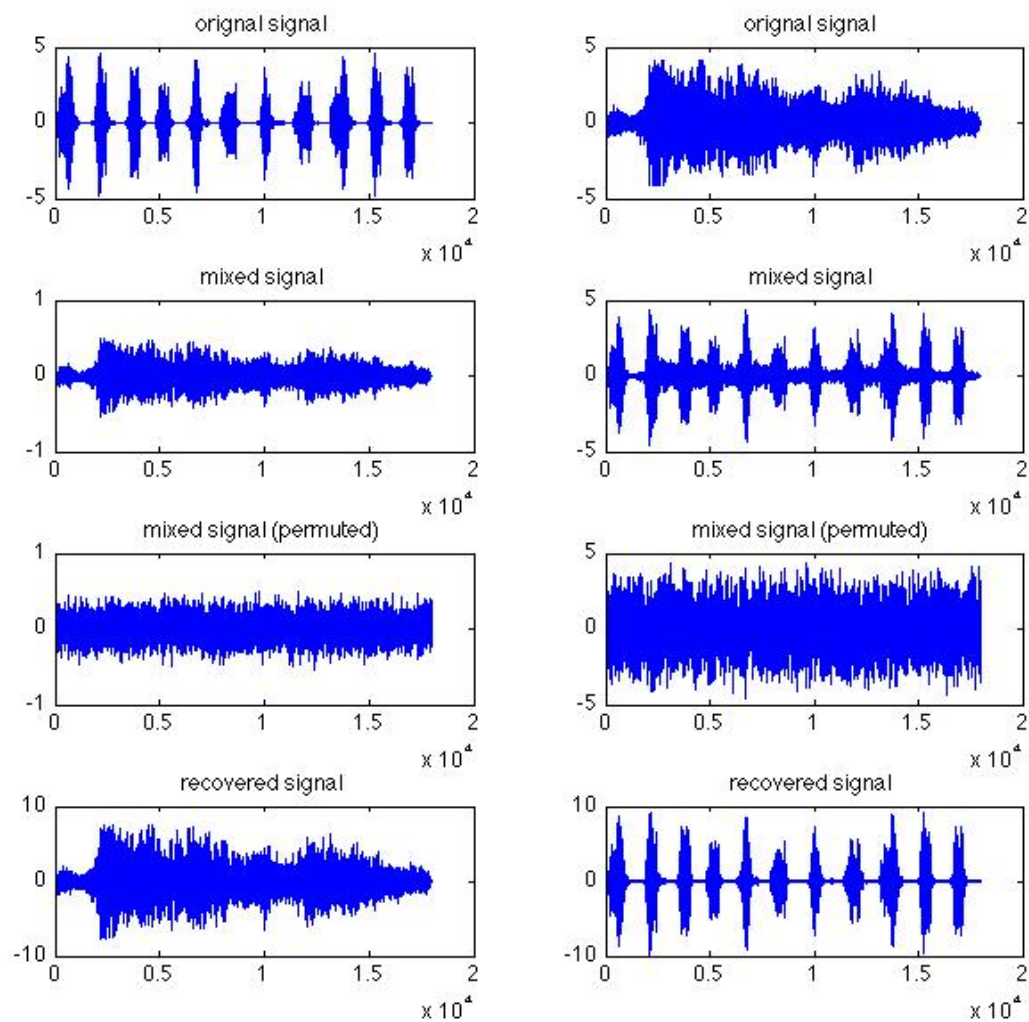
Figure 1: Plots of the signals