

PCA or ICA?

Why not both?

Your friend has invited you to her cello recital and asked you to record her so that she could hear herself afterward. However, she failed to mention that due to budget constraints, her recital hall was also being partially rented out to a 30 Seconds to Mars listening party and a dinner party. You, being a good friend, resolve to record the recital anyway. Since you know PCA and ICA, you figure you can later separate out her performance from the background.

Using the sample recordings provided online, separate out the various sources of sound. First perform PCA and plot PC_i vs PC_j for each PC. Then determine how many sources there are and perform ICA on the appropriate number of PCs. Suppose you have another friend who asked you to get him a recording of the listening party so he could bootleg the 30 Second to Mars album being played. How good a friend are you?

Please submit the audio files you generate, as well as the requested plots.

(Hint: audio, tuneR, seewave, and fastICA are some useful packages)