

# CAF algorithms for real sources

More details can be found in the main functions header.

There are 4 different CAF algorithms. Actually, each one corresponds to a different CanD algorithm: ALESCAF (uses ALS), LEMACAF (uses Levenberg-Marquardt), GRADCAF (uses the gradient) and CGRADCAF (uses a conjugate gradient with optimal step). Each algorithm embeds a parameterizable Enhanced Line Search (ELS) procedure.

## 1. Evaluation function.

Function `caf_eval.m` allows to evaluate the different CAF algorithms from synthesized data. The source matrix is generated from simulated telecommunication signals (2psk, 2qam), the mixing matrix is randomly drawn and the observation matrix is built according to the linear model. Then a CAF algorithm is run in order to estimate the mixing matrix.

All parameters are defined at the beginning of the function's body. Thereby, one can vary, the source type, the source number, the observation number, the SNR, the mixture type (real or complex), the CAF algorithm and all the algorithm parameters (differentiation order, number of iterations...).

The function displays and returns the NMSE between the real and estimated mixing matrices.

## 2. Running the CAF Algorithms.

Of course, the different CAF algorithms can be directly run on an observation matrix. These are directly accessible from a unique function:

```
[He,err,eH]=run_caf(X,nbs,nu,fac,ordre,nbtest,ini,tol,algo,niter,elsper,col,H);
```

X contains the observation matrix and algo specifies the CAF algorithm. All details about the input and output arguments are given in the function header.