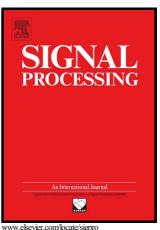
## Author's Accepted Manuscript

Blind noisy mixture separation for independent/dependent sources through a regularized criterion on copulas

A. Ghazdali, M. El Rhabi, H. Fenniri, A. Hakim, A. Keziou



www.elsevier.com/locate/sigpro

PII: S0165-1684(16)30231-6

DOI: http://dx.doi.org/10.1016/j.sigpro.2016.09.006

SIGPRO6261 Reference:

To appear in: Signal Processing

Received date: 18 September 2015

30 July 2016 Revised date: Accepted date: 7 September 2016

Cite this article as: A. Ghazdali, M. El Rhabi, H. Fenniri, A. Hakim and A Keziou, Blind noisy mixture separation for independent/dependent source through regularized criterion copulas, Signal **Processing** on http://dx.doi.org/10.1016/j.sigpro.2016.09.006

This is a PDF file of an unedited manuscript that has been accepted fo publication. As a service to our customers we are providing this early version o the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain

### ACCEPTED MANUSCRIPT

# Blind noisy mixture separation for independent/dependent sources through a regularized criterion on copulas

A. Ghazdali<sup>a</sup>, M. El Rhabi<sup>b</sup>, H. Fenniri<sup>c</sup>, A. Hakim<sup>d</sup>, A. Keziou<sup>e,\*</sup>

<sup>a</sup>LAMAI, FSTG, Université Cadi-Ayyad, Marrakech, Maroc <sup>b</sup>Ecole des Ponts ParisTech (ENPC), France <sup>c</sup>CReSTIC, Université de Reims Champage-Ardenne, France <sup>d</sup>LAMAI, FSTG, Université Cadi-Ayyad, Marrakech, Maroc <sup>e</sup>LMR EA 4535 and ARC-Mathématiques CNRS 3399, Université de Reims Champagne-Ardenne, France

#### Abstract

The paper introduces a new method for Blind Source Separation (BSS) in noisy instantaneous mixtures of both independent or dependent source component signals. This approach is based on the minimization of a regularized criterion. Precisely, it consists in combining the total variation method for denoising with the Kullback-Leibler divergence between copula densities. This latter takes advantage of the copula to model the structure of the dependence between signal components. The obtained algorithm achieves separation in a noisy context where standard BSS methods fail. The efficiency and robustness of the proposed approach are illustrated by numerical simulations.

*Keywords:* Blind source separation; Noisy instantaneous mixtures; Copulas; Total variation; Mutual information; Kullbak-Leibler divergence between copulas.

#### Contents

1	Introduction	2
2	The BSS model	3
	2.1 BSS model in the noise-free case	3

Email addresses: a.ghazdali@gmail.com (A. Ghazdali), elrhabi@gmail.com (M. El Rhabi), hassan.fenniri@univ-reims.fr (H. Fenniri), abdelilah.hakim@gmail.com (A. Hakim), amor.keziou@univ-reims.fr (A. Keziou)

<sup>\*</sup>Corresponding author

### Download English Version:

# https://daneshyari.com/en/article/6958099

Download Persian Version:

https://daneshyari.com/article/6958099

<u>Daneshyari.com</u>