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Author: Tiago B.A. de Carvalho Maria A.A. Sibaldo Ing Ren Tsang George D.C. Cavalcanti Jan Sijbers Ing Jyh Tsang



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# IntensityPatches and RegionPatches for Image Recognition

Tiago B. A. de Carvalho<sup>a,\*</sup>, Maria A. A. Sibaldo<sup>a</sup>, Ing Ren Tsang<sup>b</sup>, George D.  
C. Cavalcanti<sup>b</sup>, Jan Sijbers<sup>c</sup>, Ing Jyh Tsang<sup>d</sup>

<sup>a</sup>Universidade Federal Rural de Pernambuco, Unidade Acadêmica de Garanhuns, PE, Brasil

<sup>b</sup>Universidade Federal de Pernambuco, Centro de Informática, Recife, PE, Brasil

<sup>c</sup>University of Antwerp, IMEC - Vision Lab, Antwerp, Belgium

<sup>d</sup>Nokia, Antwerp, Belgium

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## Abstract

In this paper, we propose a framework for defining feature extraction techniques, called Pixel Clustering. It is an extension of feature extraction with Wavelets. We propose two linear feature extraction techniques using Pixel Clustering: IntensityPatches and RegionPatches. We assess the methods in color and grayscale image datasets: two face datasets and two object datasets. The proposed methods present a short computation time for feature extraction and high accuracy compared with linear feature extraction methods and other state-of-the-art feature extraction techniques.

*Keywords:* Dimensionality reduction, Feature extraction, Feature learning, Linear methods, Principal Component Analysis, Unsupervised machine learning, Wavelets

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## 1. Introduction

Image shrinkage seems to have only a minor influence on recognition tasks. This can be observed in the experiments performed using Waveletfaces [1]. Here, we investigate and present a reasonable explanation for this effect, which is

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\*Corresponding author

Email address: [tbac@cin.ufpe.br](mailto:tbac@cin.ufpe.br), [tiago.buarque@ufpe.br](mailto:tiago.buarque@ufpe.br) (Tiago B. A. de Carvalho)

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