

Image separation using wavelets and Curvelets (α -Curvelet)

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INTRODUCTION

The task of separating an Image that's often composed of two or more geometrically distinct constituents has recently drawn a lot of attention due to its significance for applications. It would be ideal to process a single image and extract two geometrically 'pure' images, each one containing features from only one of the two geometric constituents. This seems to be a seriously underdetermined problem, but recent empirical work achieved highly persuasive separations. The aim of this talk is to present a theoretical analysis showing that accurate geometric separation of point and curve singularities can be achieved by minimizing the l_1 norm of the representing coefficients in two geometrically complementary frames: Wavelets and Curvelets (α -curvelets). This ideal representation has the property that important coefficients are clustered geometrically in phase space, and that at fine scales, we have asymptotically near-perfect separation.