
United States Patent Application

20060101106

Kind Code

A1

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May 11, 2006

Methods and apparatus for computing the input and output signals of a linear shift-variant system

Abstract

This invention is based on a new signal processing transform named Rao Transform (RT) which was invented recently by the author of the present invention. Forward RT provides a computationally efficient method and an associated apparatus for computing the output signal of a Linear Shift-Variant System (LSVS) from the input signal and a set of moment parameters of the linear Shift-Variant Point Spread Function (SV-PSF) that characterizes the LSVS. Inverse RT provides a computationally efficient method and an associated apparatus for computing the input signal or restored signal of an LSVS from the output signal and a set of moment parameters of the linear SV-PSF that characterizes the LSVS. This invention is useful in many applications including the restoration of defocus blurred and motion blurred images recorded by a camera with a linear SV-PSF. The apparatus include means for computing forward and inverse RT coefficients.

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Serial No.: **235724**

Series Code: **11**

Filed: **September 26, 2005**

U.S. Current Class:

708/400

U.S. Class at Publication:

708/400

Intern'l Class:

G06F 17/14 20060101 G06F017/14
