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.