**IMAGE COMPRESSION BASED ON GAUSSIAN PYRAMIDS**

**ABSTRACT**

The first step in Laplacian pyramid coding is to low-pass filter the original image *g*0 to obtain image *g*1. We say that *g*1 is a "reduced" version of *g*0 in that both resolution and sample density are decreased. In a similar way we form *g*2 as a reduced version of *g*1*,* and so on. Filtering is performed by a procedure equivalent to convolution with one of a family of local, symmetric weighting functions. An important member of this family resembles the Gaussian probability distribution, so the sequence of images *g*0, *g*1, …*, g* n is called the Gaussian pyramid.

A fast algorithm for generating the Gaussian pyramid is given in the next subsection. In the following subsection we show how the same algorithm can be used to "expand" an image array by interpolating values between sample points. This device is used here to help visualize the contents of levels in the Gaussian pyramid.