

# Abstract

The *size distribution* or *granulometry* is a mathematical morphology technique used to analyze the geometrical structures of elements found in images, and to identify these elements as well. We can set a comparison to a *sieving* process where the elements in the images (in this case treated as grains) will be distinguished by their size through a granulometric curve.

Widely explored in its binary and shades of gray form, the morphology of colored images presents subjects that need deeper research. The processing of colored images through morphological tools is usually treated as a special case of gray morphology, where its operators are applied separately on the  $R$ ,  $G$  and  $B$  components, and then recombined. In general, this procedure's final result is not expected. And it is difficult in assuming the color's order, what, in fact, hinders the creation of the order relations found on monochromatic morphology, appears as its main reason.

This work tries to define a metric for  $HSV$  color space, so that the creation of a granulometry in this space becomes possible. After a revision on mathematical morphology, the colors representation techniques; the researches on the colored mathematical morphology field; and the work's contribution to this area are brought to discussion. Finally, the current granulometric techniques are also discussed and applied to synthetic and real colored images using the proposed metric.