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"Abordagem da Função de Green para o Realce de Bordas em Imagens Digitais"

In this dissertation, we consider several approaches for edge detection in digital images, starting with the Gradient-based detectors, such as those of Roberts, Sobel and Prewitt, and then considering Canny's systematic approach, based on a mathematical formulation of the relevant detection criteria. Next, we introduce a new approach - based on the Green's function of the signal-matching equation - for the design of differential operators, which we for use to obtain step-edge enhancement filters whose performance, evaluated through Canny's criteria, proved superior to those reported in the literature. Our approach, besides its greater simplicity, has the advantage of yielding filters that are explicitly designed as differential operators, and thus may find applications in signal processing domains other than edge detection.