

Marked Point Process in Image Analysis

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In this talk I will review the marked point process modeling framework in image processing. This framework, which can be interpreted as an extension of the Markov random field approach, provides flexible models that embed geometrical properties on the searched solution. We will consider the different aspects such as modeling, estimating and optimizing. A particular emphasis will be made on the recent optimization algorithms based on multiple births and deaths processes and graph cut techniques. Several applications taken from remote sensing, biomedical imaging will be detailed concerning essentially multiple objects detection.