# Super Resolution for Automated Target Recognition

Maksim Levental

Abstract—Super resolution is the process of producing high-resolution images from low-resolution images while preserving ground truth about the subject matter of the images and potentially inferring more such truth. Algorithms that successfully carry out such a process are broadly useful in all circumstances where high-resolution imagery is either difficult or impossible to obtain. In particular we look towards super resolving images collected using longwave infrared cameras since high resolution sensors for such cameras do not currently exist. We present an exposition of motivations and concepts of super resolution in general and current techniques, with a qualitative comparison of such techniques. Finally we suggest directions for future research.

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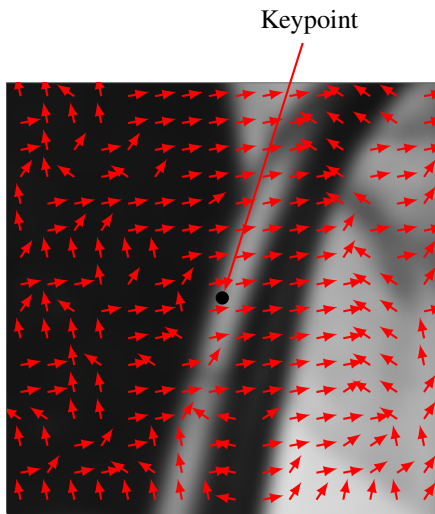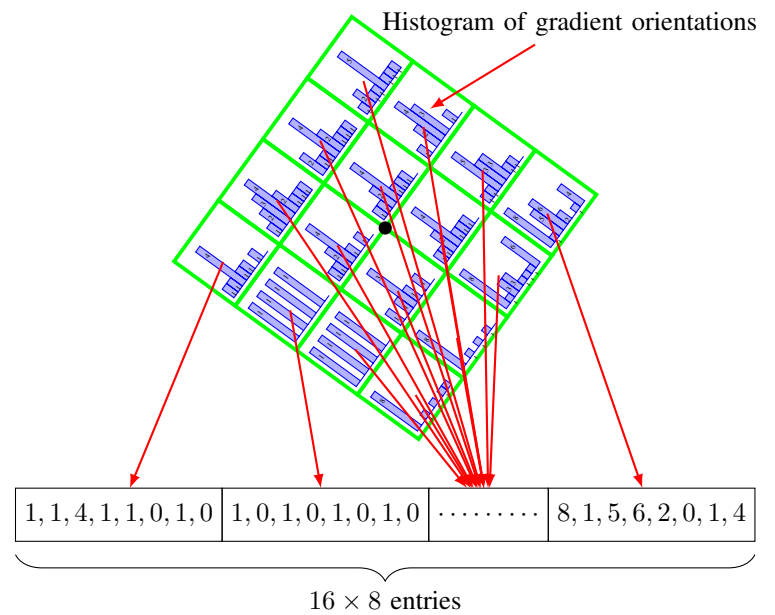
(1.a) Keypoint neighborhood
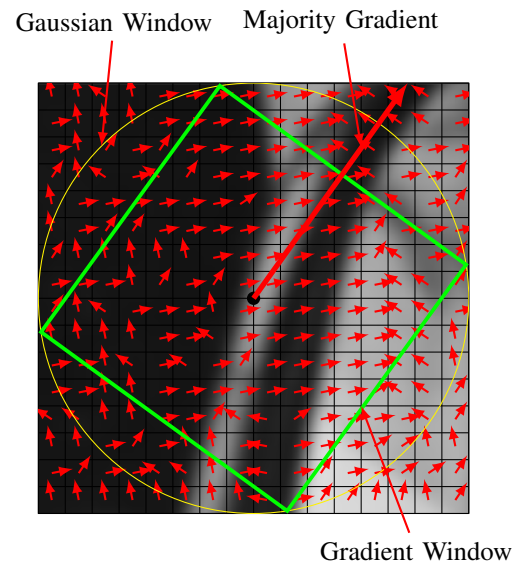
(1.b) Oriented and filterd keypoint gradient neigbhorhood
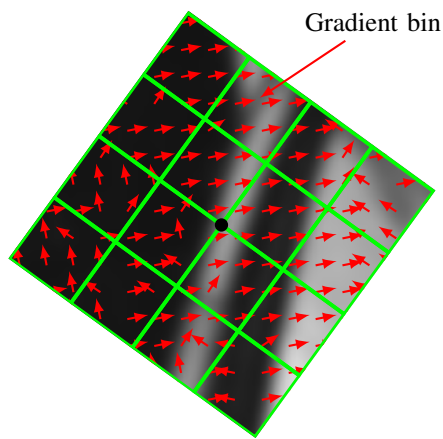
(1.c) 16 Keypoint neigbhorhood gradient bins

16×8 entries

(1.d) Histogram of gradient orientations descriptor