



THE WEIZMANN INSTITUTE OF SCIENCE
FACULTY OF MATHEMATICS AND COMPUTER SCIENCE

Vision and Robotics Seminar

Room 1 ,Ziskind Building
on Thursday, Dec 26, 2019
at 12:15

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Pixel Consensus Voting for Panoptic Segmentation

Abstract:

I will present a new approach for image parsing, Pixel Consensus Voting (PCV). The core of PCV is a framework for instance segmentation based on the Generalized Hough transform. Pixels cast discretized, probabilistic votes for the likely regions that contain instance centroids. At the detected peaks that emerge in the voting heatmap, backprojection is applied to collect pixels and produce instance masks. Unlike a sliding window detector that densely enumerates object proposals, our method detects instances as a result of the consensus among pixel-wise votes. We implement vote aggregation and backprojection using native operators of a convolutional neural network. The discretization of centroid voting reduces the training of instance segmentation to pixel labeling, analogous and complementary to fully convolutional network-style semantic segmentation, leading to an efficient and unified architecture that jointly models things and stuff. We demonstrate the effectiveness of our pipeline on COCO and Cityscapes Panoptic Segmentation and obtain competitive results. This joint work with Haochen Wang (TTIC/CMU), Ruotian Luo (TTIC), Michael Maire (TTIC/Uchicago) received an Innovation Award at the COCO/Mapillary workshop at ICCV 2019.