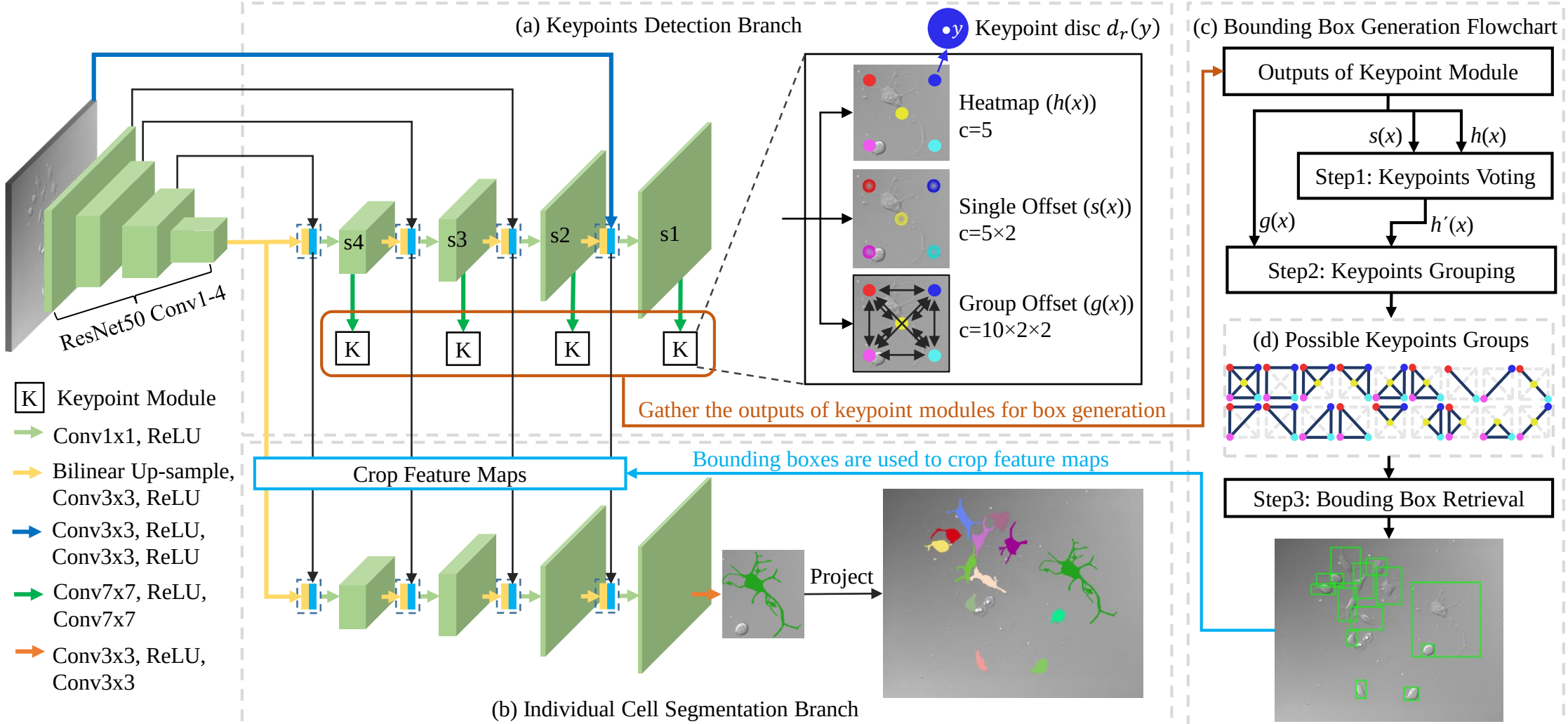
(a) Keypoints Detection Branch
Keypoint disc $d_r(y)$
Heatmap ($h(x)$)
c=5
Single Offset ($s(x)$)
c=5×2
Group Offset ($g(x)$)
c=10×2×2
ResNet50 Conv1-4
s4
s3
s2
s1
K
Gather the outputs of keypoint modules for box generation
K Keypoint Module
Conv1x1, ReLU
Bilinear Up-sample, Conv3x3, ReLU
Conv3x3, ReLU, Conv3x3, ReLU
Conv7x7, ReLU, Conv7x7
Conv3x3, ReLU, Conv3x3
Crop Feature Maps
Bounding boxes are used to crop feature maps
Project
(b) Individual Cell Segmentation Branch
(c) Bounding Box Generation Flowchart
Outputs of Keypoint Module
$s(x)$
$h(x)$
Step1: Keypoints Voting
$g(x)$
$h'(x)$
Step2: Keypoints Grouping
(d) Possible Keypoints Groups
Step3: Bouding Box Retrieval