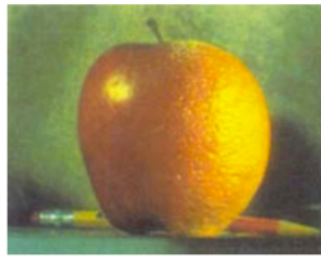


2. Image Formation



3. Image Processing



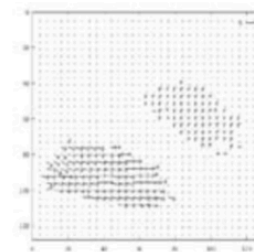
4. Features



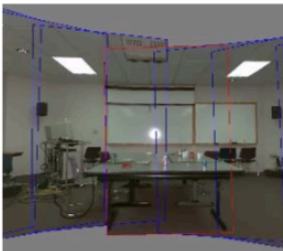
5. Segmentation



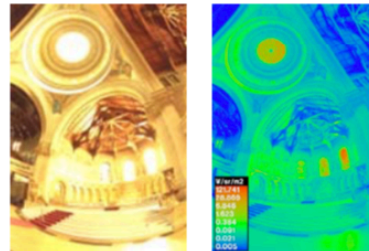
6-7. Structure from Motion



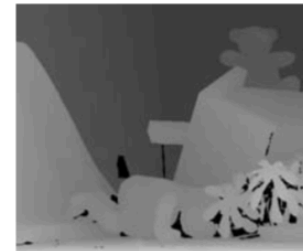
8. Motion



9. Stitching



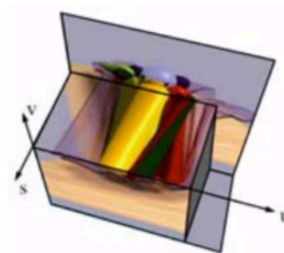
10. Computational Photography



11. Stereo



12. 3D Shape

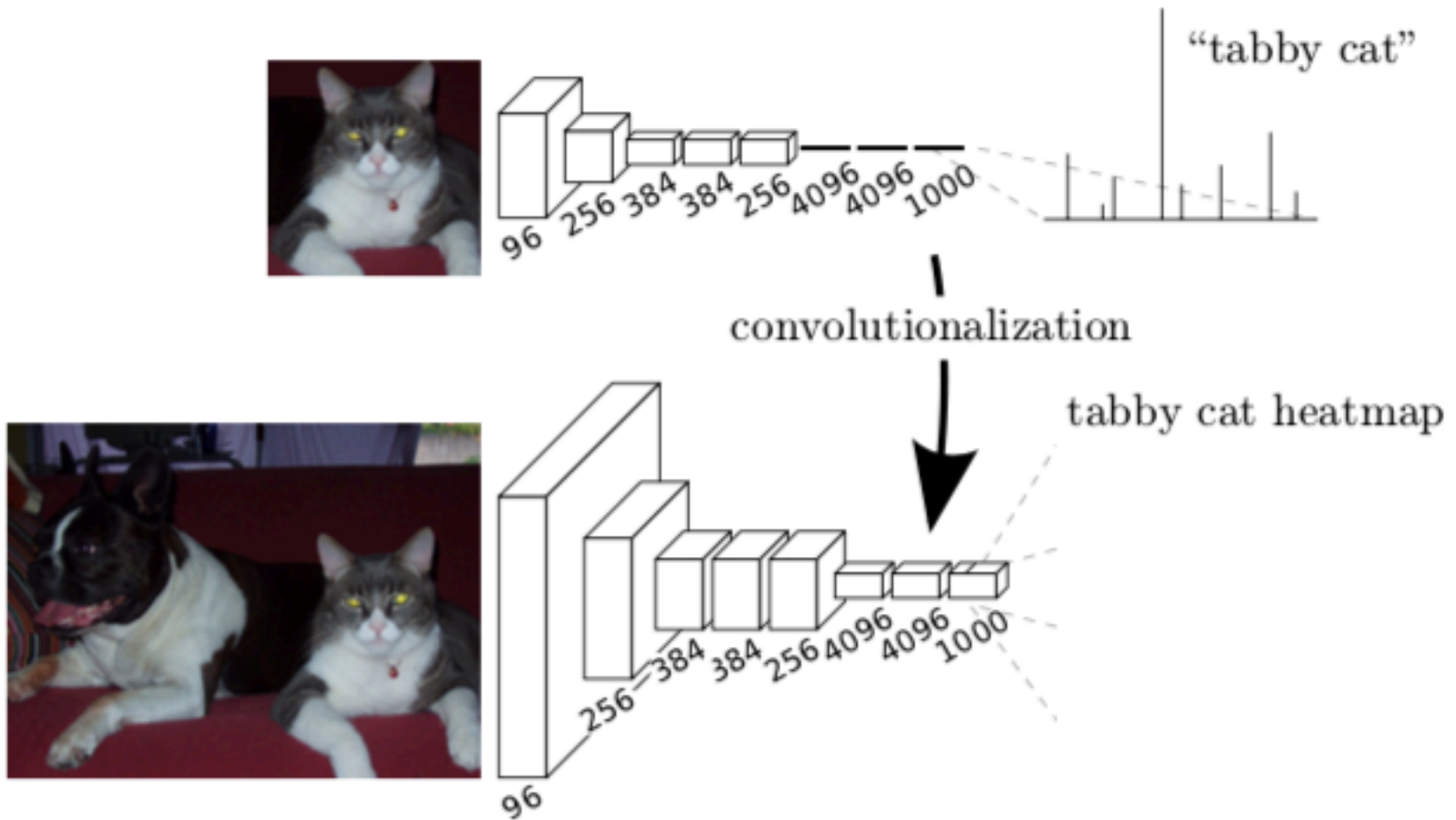


13. Image-based Rendering



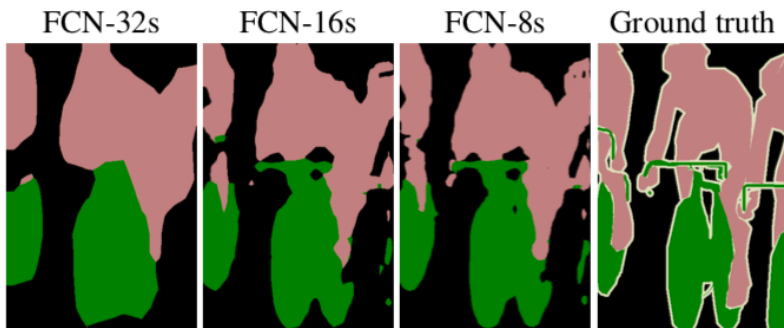
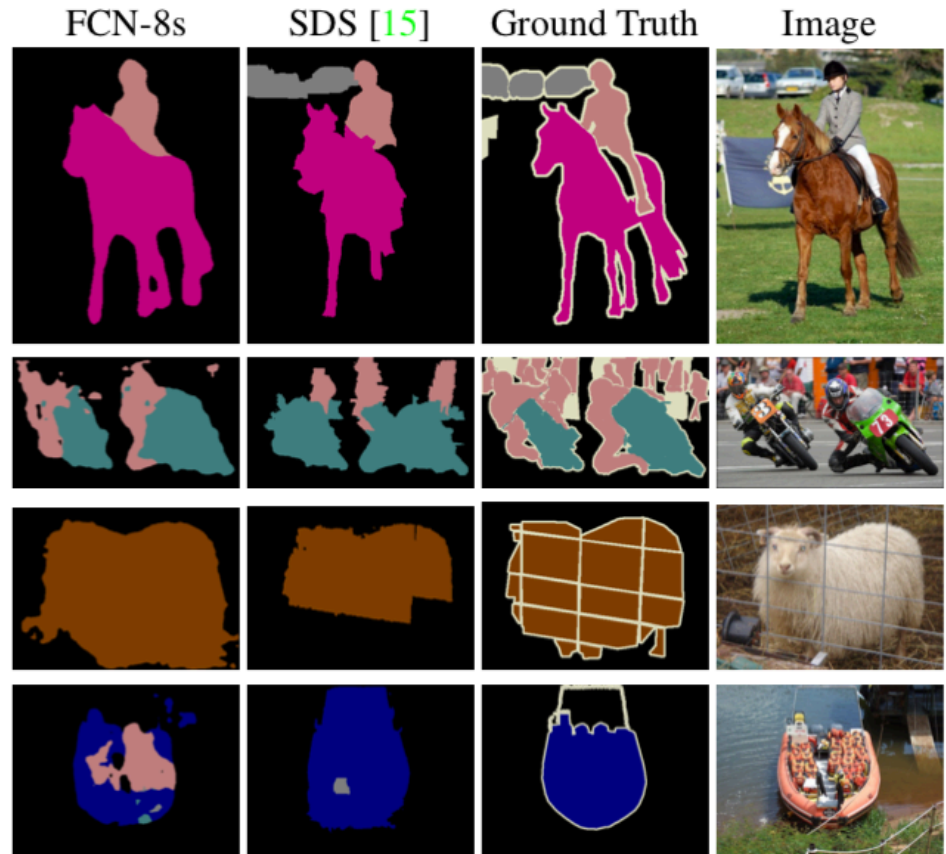
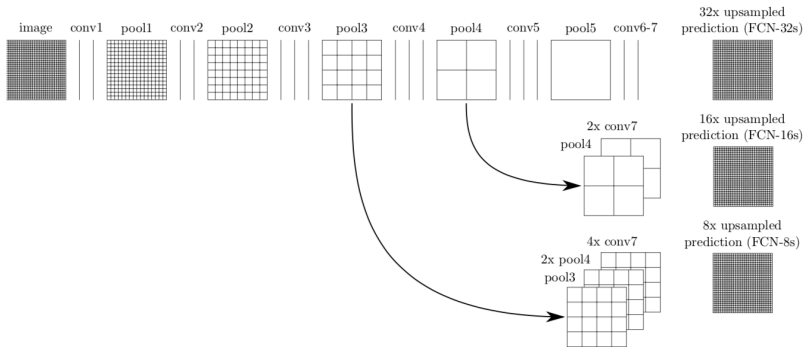
14. Recognition

# Fully convolutional nets...



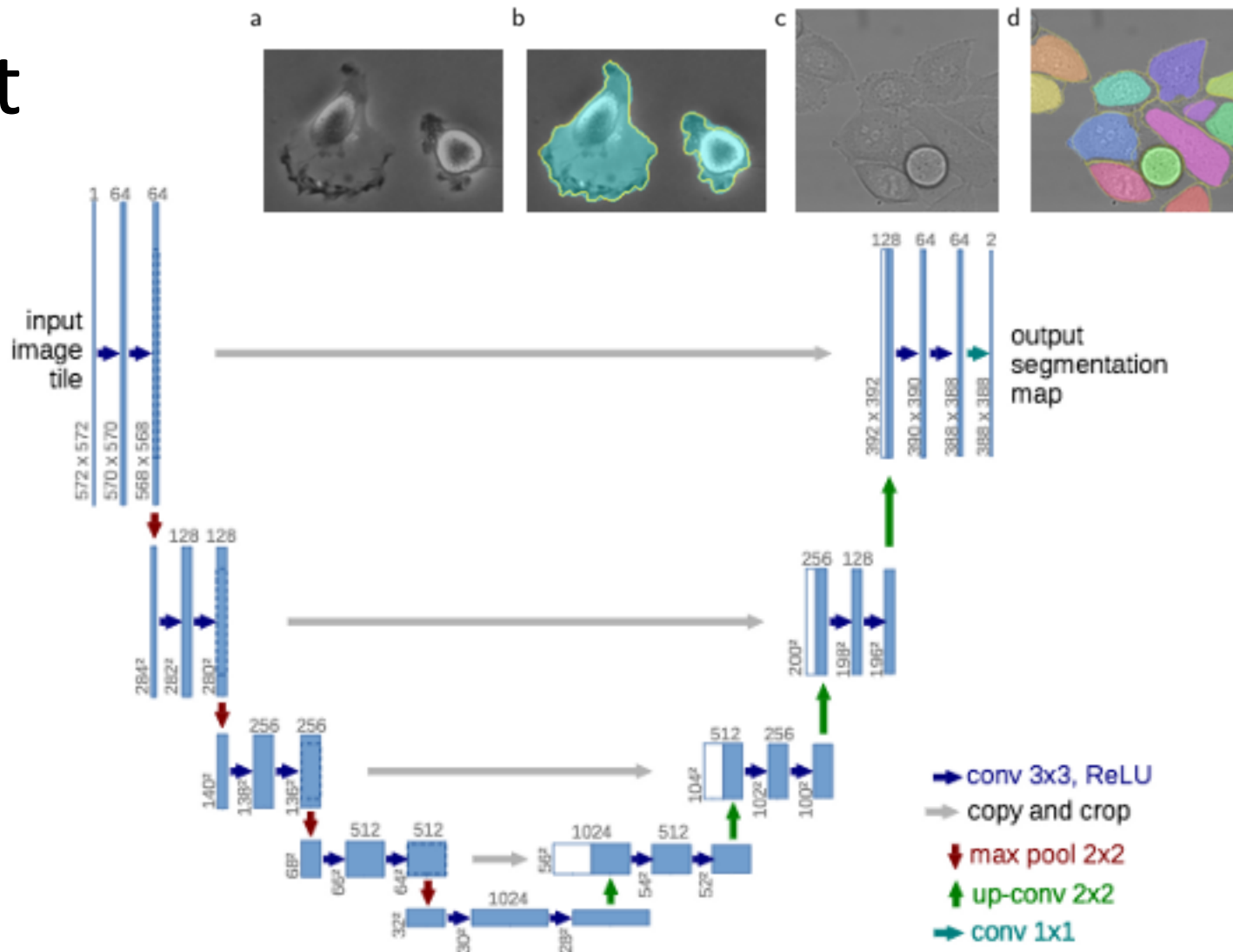
- "Expand" trained network to any size

# ...for segmentation



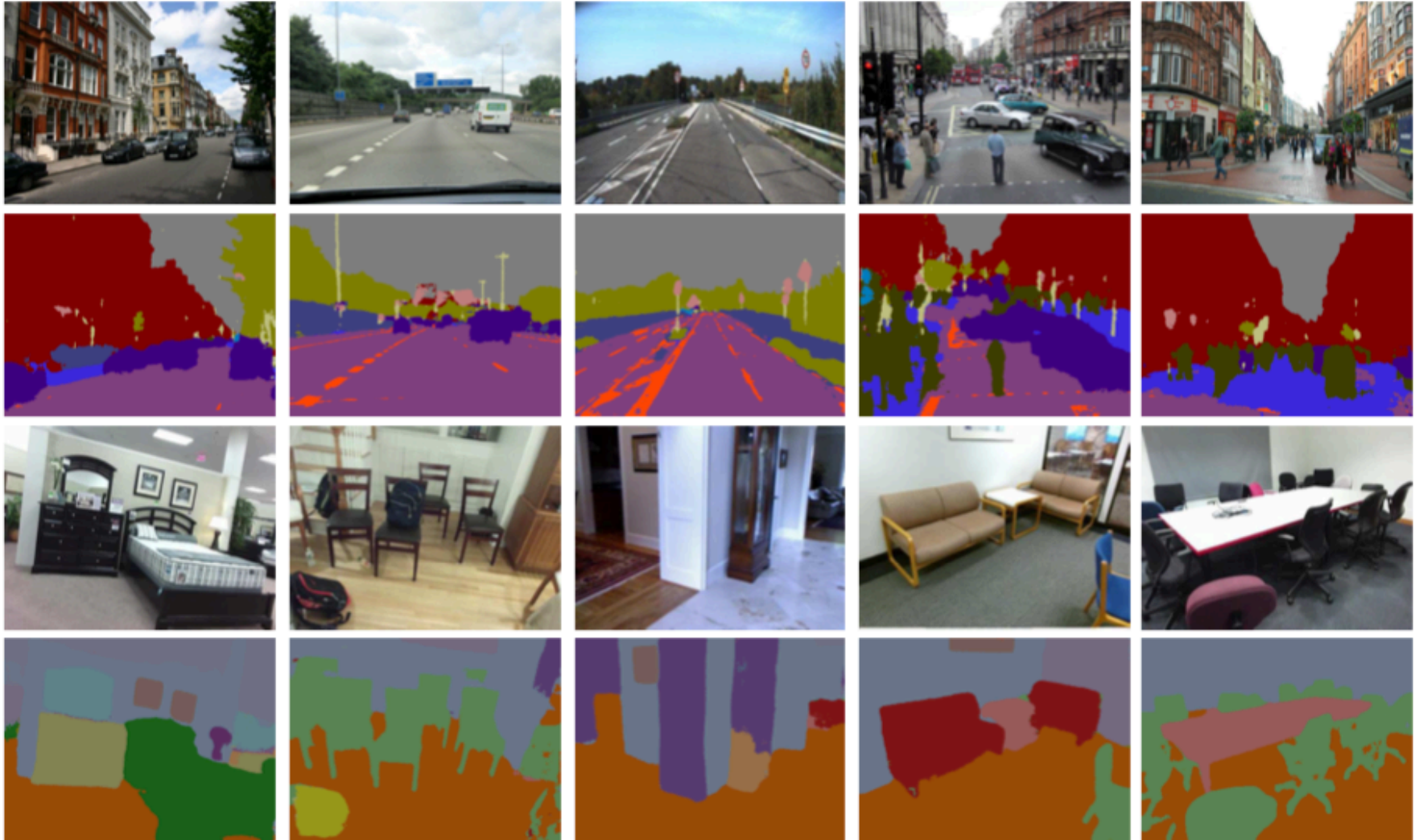
- Complicated upsampling strategies...
- Results not yet great

# U-Net

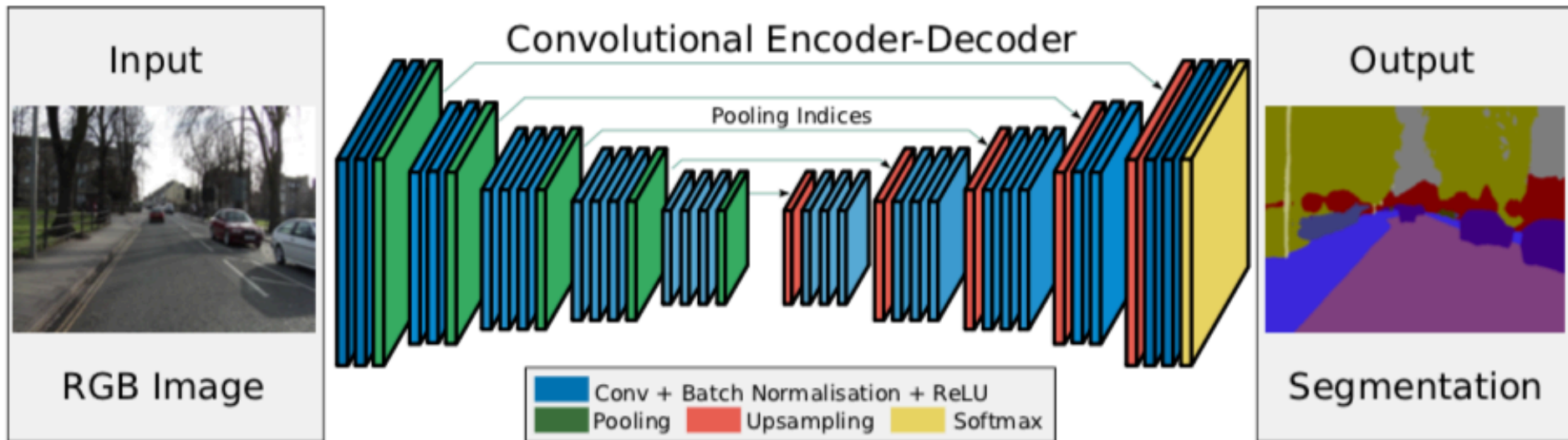


- Builds on FCN, Contract-expand with skip...
- Almost symmetric, many channels at bottom!

# Segnet



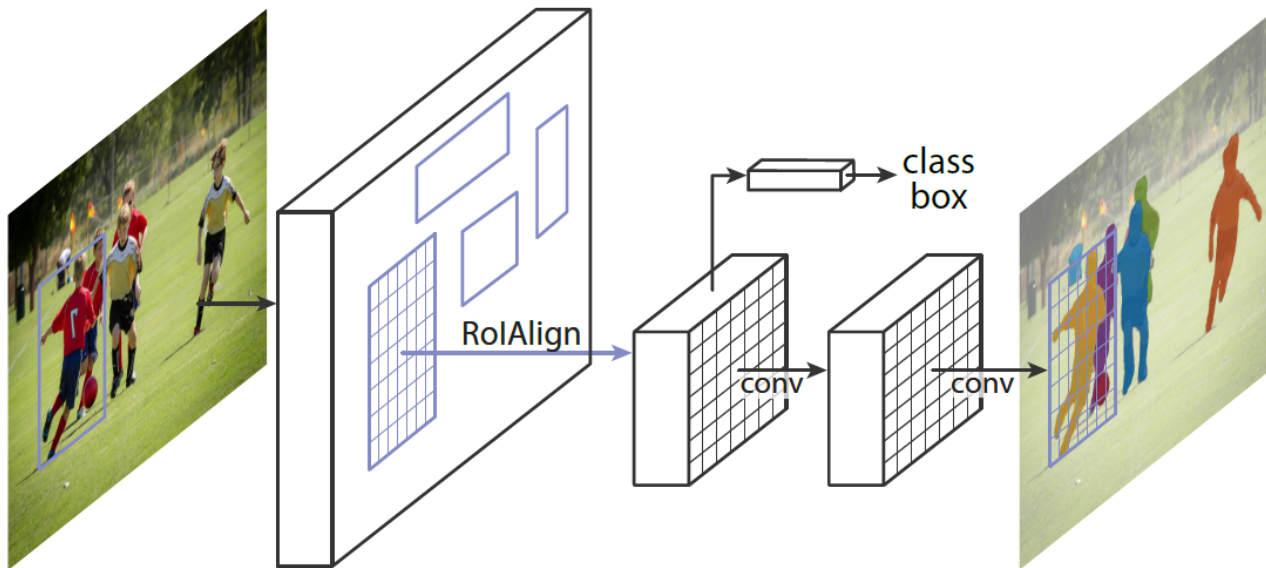
# Segnet



- Eliminates need to learn the upsampling

# Mask-RCNN...

- Neural networks to learn both local feature affinities and top-down context



- He et al., [“Mask R-CNN,”](#) ICCV 2017 (Best paper)

# Mask-RCNN...

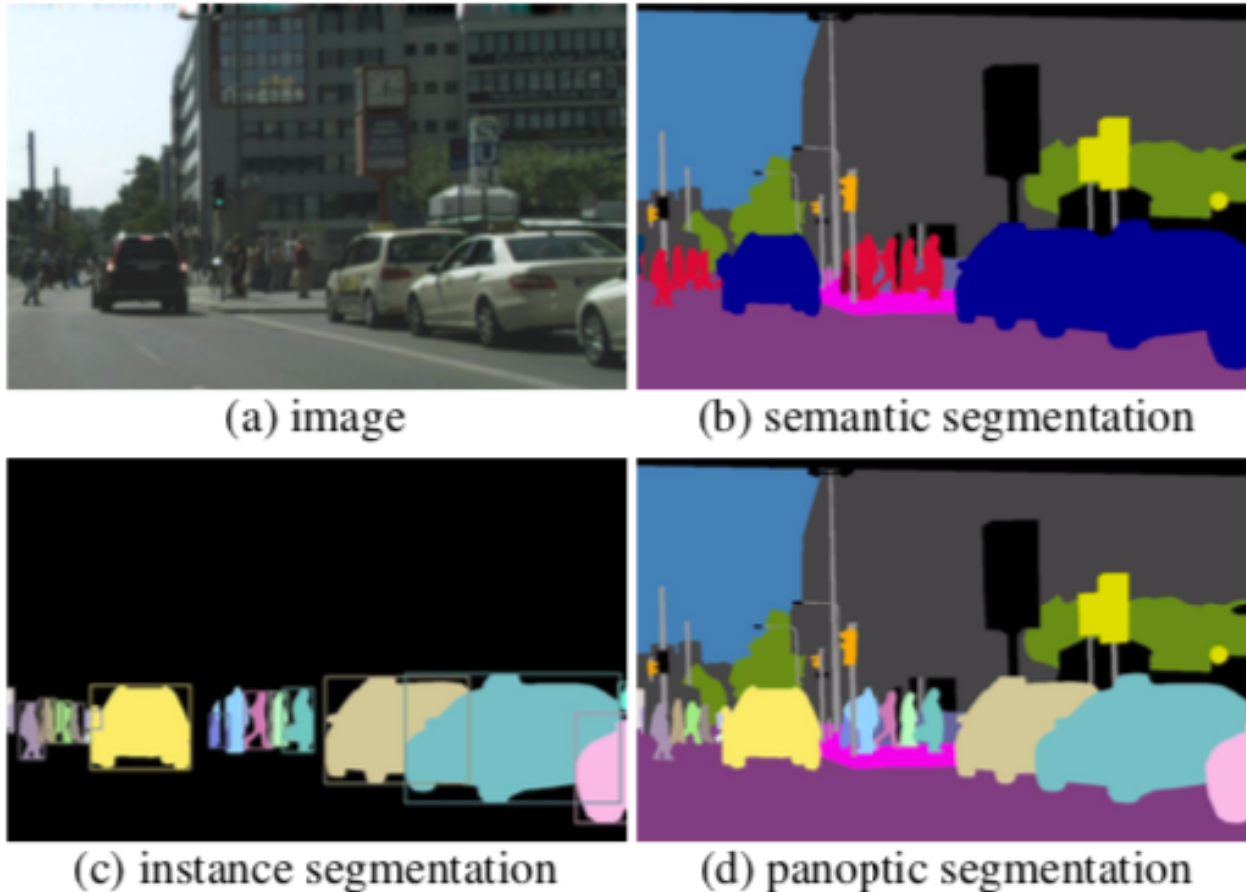
- Results



- He et al., [“Mask R-CNN,”](#) ICCV 2017 (Best paper)



# “Panoptic” Segmentation



- Segnet = semantic segmentation (every pixel)
- Mask-RCNN = instance segmentation (objects)
- Panoptic = combined

# Panoptic Feature Pyramid Networks



- Uses FPN architecture
- 2 heads

