OctNet: Learning Deep 3D Representations at High Resolutions

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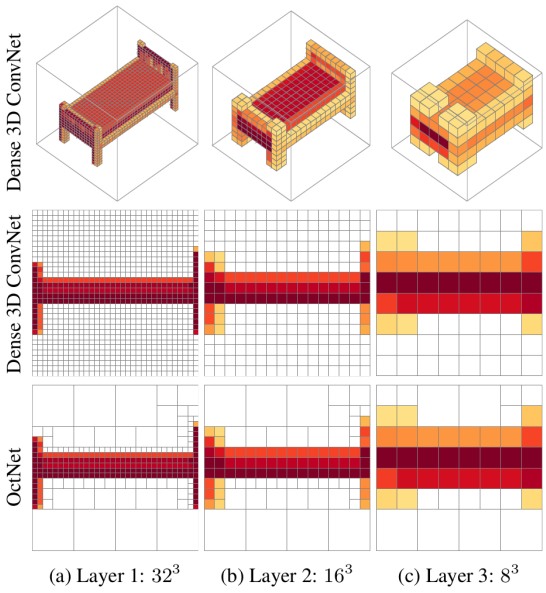

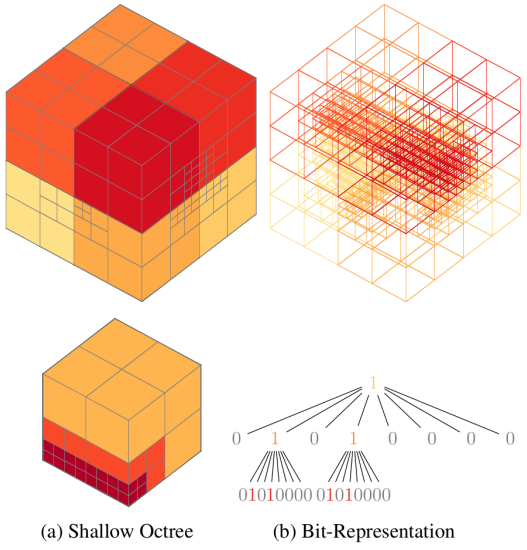

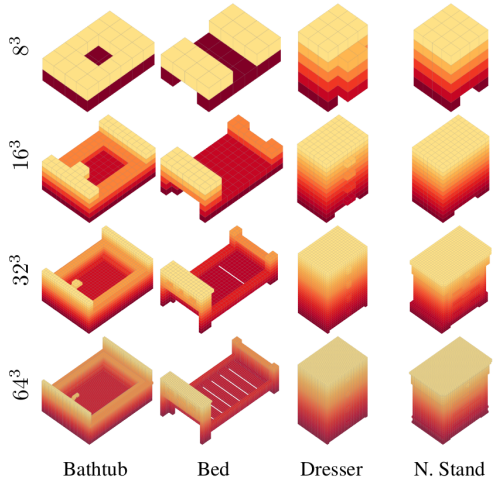

- Deep and high resolution 3D convolutional networks for 3D tasks including 3D object classification, orientation estimation, and point cloud labelling
- High activations only near the object boundaries
- More memory and computation on relevant dense regions by exploiting sparsity
- Hierarchically partitioning of the space using a set of unbalanced octrees
- Convolution, pooling, unpooling directly defined on this structure
- Higher input resolutions with significant speed-ups
  - Particularly beneficial for orientation estimation and semantic point cloud labelling
- Evaluated on ModelNet10, RueMonge2014