Oberseminar Bildverarbeitung, Computersehen und Computergrafik

Albert-Ludwigs-Universität Freiburg
Institut für Informatik

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Am Donnerstag, 10.01.2019, 13:00 hst, berichtet Herr Jan Bechtold über die Ergebnisse seiner Masterarbeit:

3D Object Detection using Tangent Convolutions

Abstract: Object detection is one of the classic computer vision tasks. It requires localizing individual objects in visual data and determining their type. State of the art methods for 2D object detection use convolutional neural networks (CNNs), which can be efficiently applied to a dense grid of information, like images. In contrast to images, applying CNNs to 3D data is not straightforward because 3D grid convolution is inefficient for large scenes.
In this work we build an object detection framework for 3D point clouds. It is based on Tangent Convolutions and follows the Faster R-CNN architecture. Tangent Convolutions efficiently implement a CNN for analyzing 3D point clouds, by convolving local approximations of a 3D structure with a 2D kernel.
Our object detector is efficient and scales to large scenes with hundreds of thousands of points, due to the use of tangent convolutions. We evaluate our method on two indoor datasets: ScanNet and Stanford Large-Scale 3D Indoor Spaces Dataset (S3DIS). The proposed method is generic and can be applied to both indoor datasets without any changes. Experimental results show that our object detector is able to detect objects of various sizes and shapes, ranging from a small sink to a large couch. A comparison of our ScanNet benchmark score to other groups on the leader board shows that our method is competitive with other approaches.

Zeit: Donnerstag, 10.01.2019, 13:00 hst
Ort: Geb. 052, SR 01-033

Interessenten sind herzlich eingeladen. Weitere Informationen bei:
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