

Weekly Report

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1 The tasks I have finished this week

This week I mainly focus on the implementation of Faster R-CNN and Mask R-CNN. I have completely understood every single detail of Faster R-CNN, done a report about the technique difficulties of implementation and draw a flow chart. I find that the source code of Faster R-CNN has been highly industrialized and is of value reading, so I plan to study from the source code and make it the foundation of my model.

- [1] Bin Dong. PDE-NET: LEARNING PDES FROM DATA. pages 1–15.

2 The tasks I plan to do next week

Next week I will still focus on the implementation and hope to transfer the model into our medical image dataset, which no one has done before.

And recently Stanford begins a course about the mathematical theory of deep learning, referring to cohomology theory, PDE, Probabilistic Theory(Random Matrix and Kernel Based Methods for Hypothesis Testing) for deep learning, on which I want to spend some time. I also notice that the paper about mathematic theory for deep learning has increased a lot on arxiv, and many have been submitted to ICLR (such as Bindong's PDE-Net[1], he uses PDE theory to design a precise network which only uses half depth and 1/3 parameters of Resnet but achieve the same performance as ResNet)