Centro Brasileiro de Pesquisas Físicas

Redes Neurais profundas e aplicações Deep Learning

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CBPF

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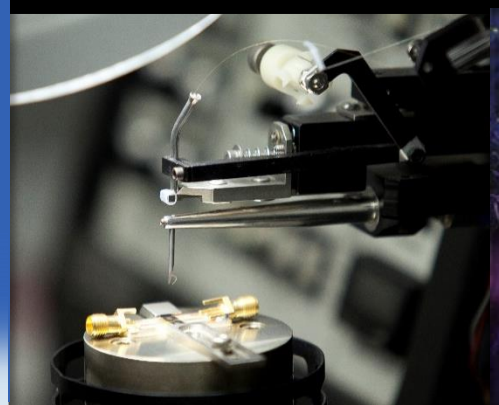
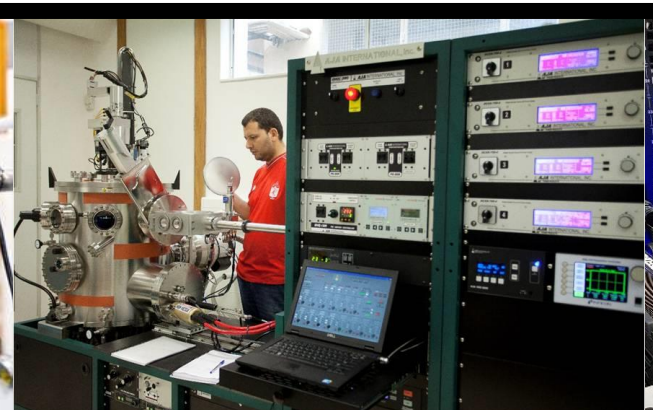
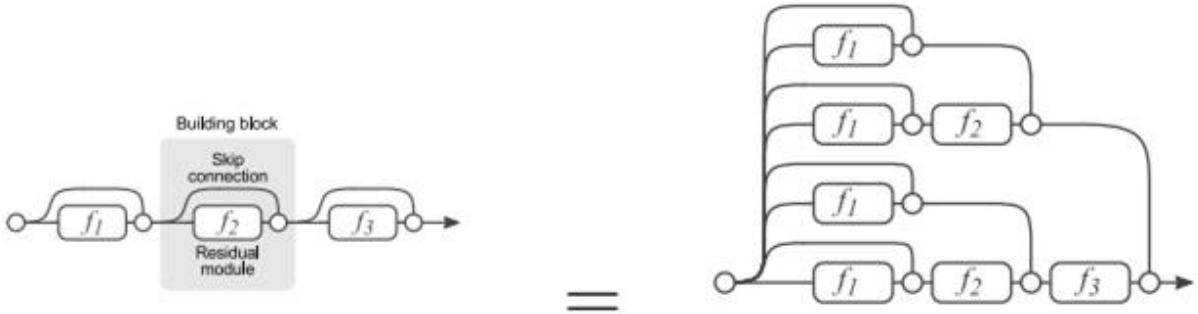


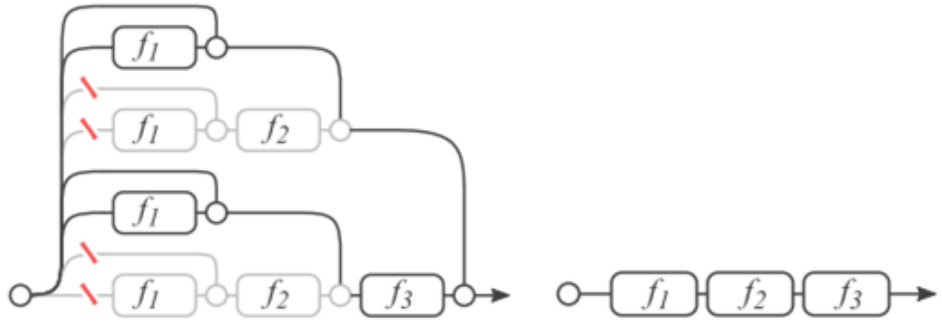


ResNet as an Emsemble of shallow nets



(a) Conventional 3-block residual network (b) Unraveled view of (a)

Figure 1: Residual Networks are conventionally shown as (a), which is a natural representation of Equation (1). When we expand this formulation to Equation (6), we obtain an *unraveled view* of a 3-block residual network (b). Circular nodes represent additions. From this view, it is apparent that residual networks have $O(2^n)$ implicit paths
doubles the number of paths.



(a) Deleting f_2 from unraveled view (b) Ordinary feedforward network

Figure 2: Deleting a layer in residual networks at test time (a) is equivalent to zeroing half of the paths. In ordinary feed-forward networks (b) such as VGG or AlexNet, deleting individual layers alters the only viable path from input to output.

A. Veit, M. Wilber and S. Belongie. Residual Networks Behave Like Ensembles of Relatively Shallow Networks. arXiv:1605.06431v2,2016.

ResNet as an Emsemble of shallow nets

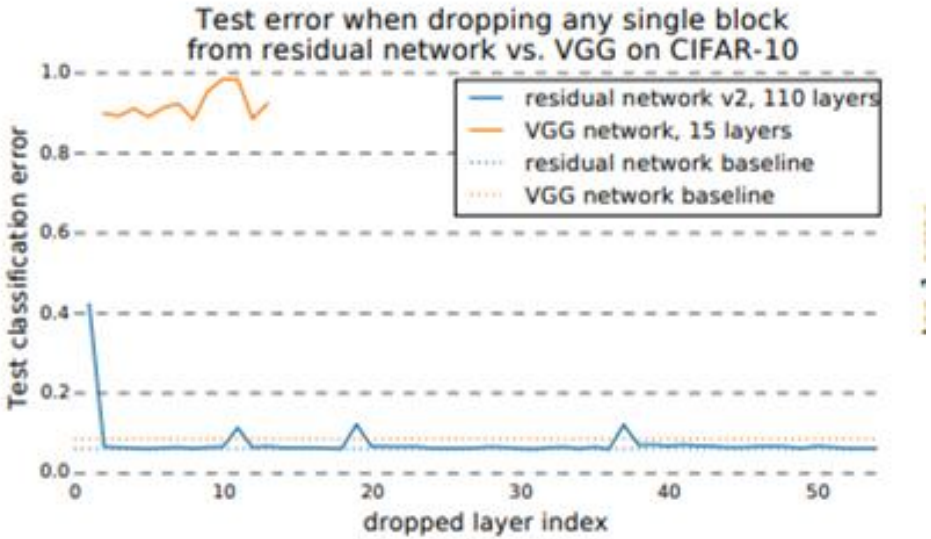
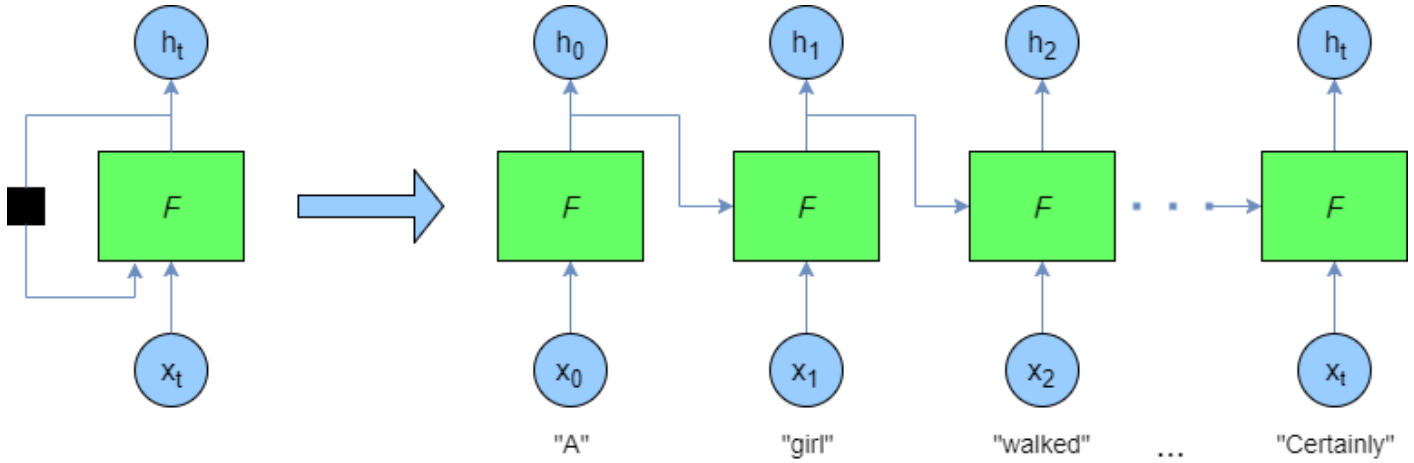


Figure 3: Deleting individual layers from VGG and a residual network on CIFAR-10. VGG performance drops to random chance when any one of its layers is deleted, but deleting individual modules from residual networks has a minimal impact on performance. Removing downsampling modules has a slightly higher impact.

A. Veit, M. Wilber and S. Belongie. Residual Networks Behave Like Ensembles of Relatively Shallow Networks. arXiv:1605.06431v2,2016.

Recurrent Neural Nets

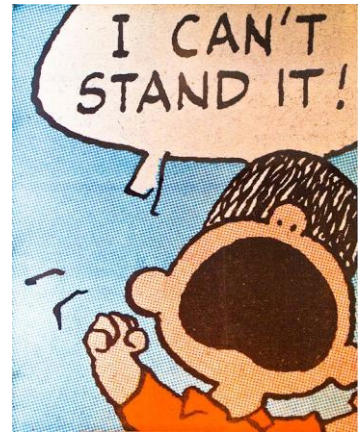


But .. there is the gradient vanishing problem ….

Long term correlations ….

Brazil is a great _____

“I have been staying in Brazil for the last 20 years. I can speak fluent _____.”



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Publishers withdraw more than 120 gibberish papers

Conference proceedings removed from subscription databases after scientist reveals that they were computer-generated.

Richard Van Noorden

24 February 2014 | Updated: 25 February 2014

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The publishers Springer and IEEE are removing more than 120 papers from their subscription services after a French researcher discovered that the works were computer-generated nonsense.

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Recurrent Neural Nets

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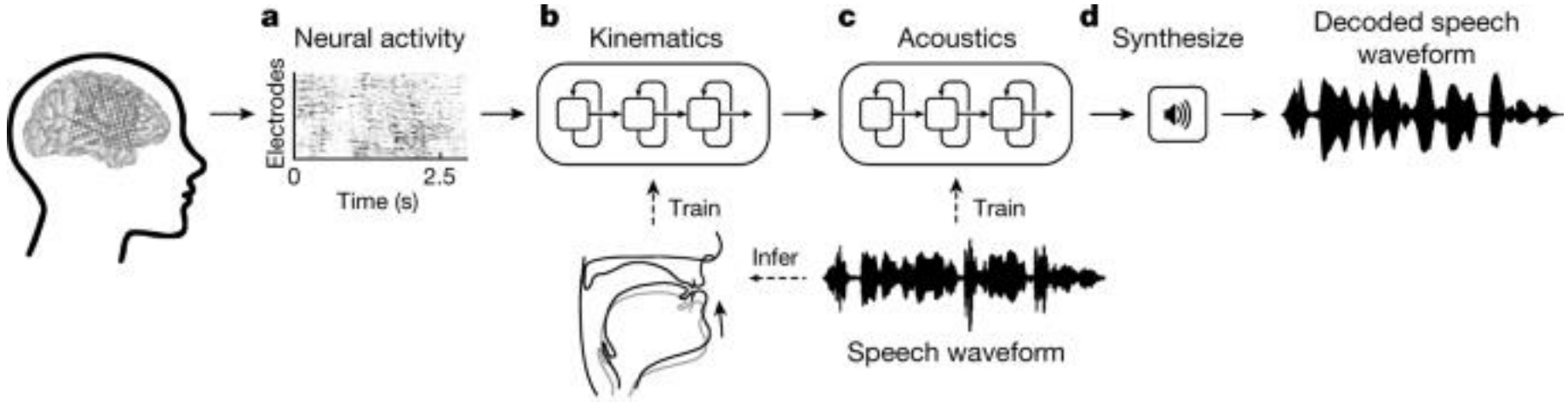
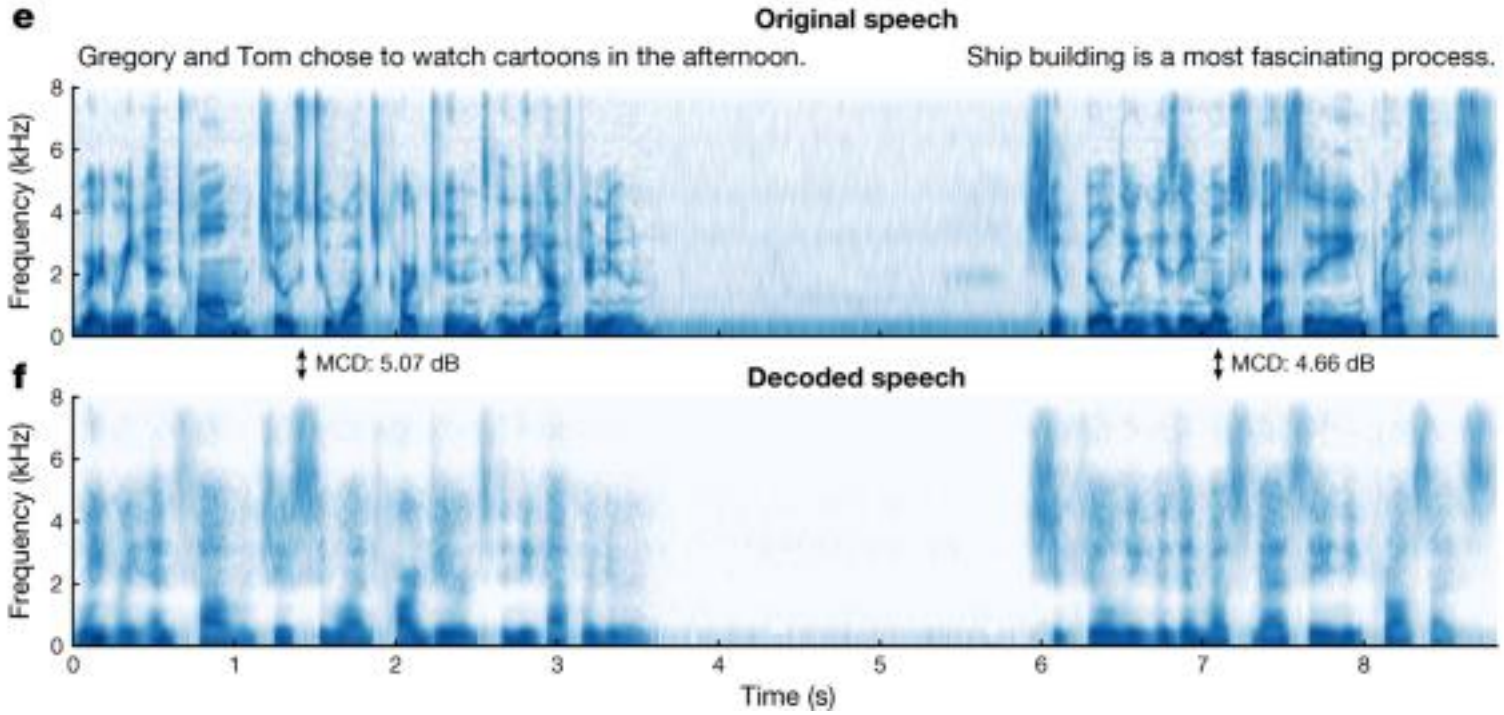
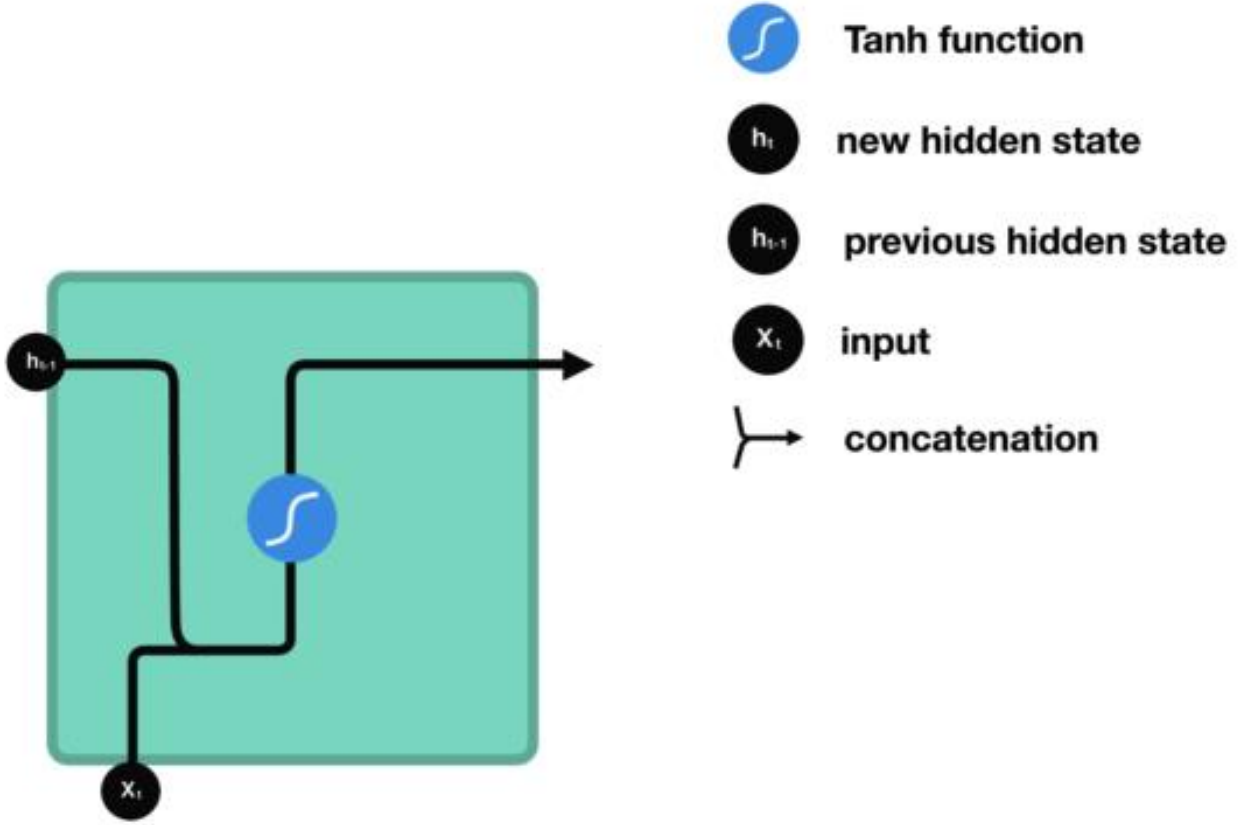
Acima de tudo, é fundamental ressaltar que a percepção das dificuldades deve passar por modificações independentemente dos níveis de motivação departamental.

Speech Synthesis





Recurrent Neural Nets



https://towardsdatascience.com/illustrated-guide-to-recurrent-neural-networks-79e5eb8049c9

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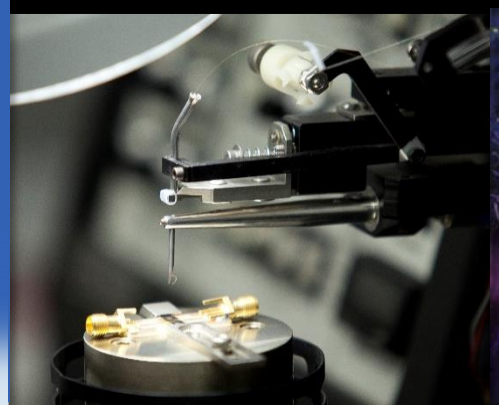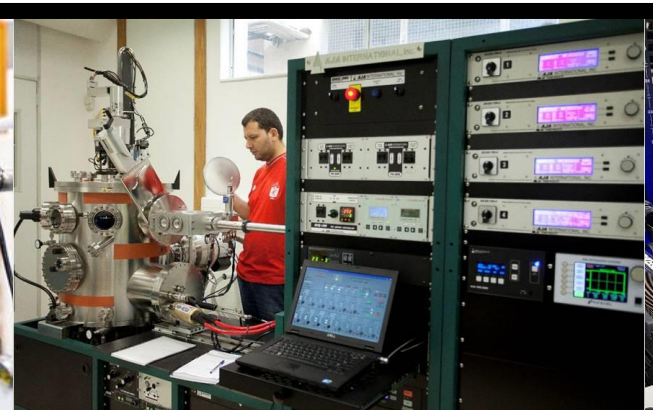
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