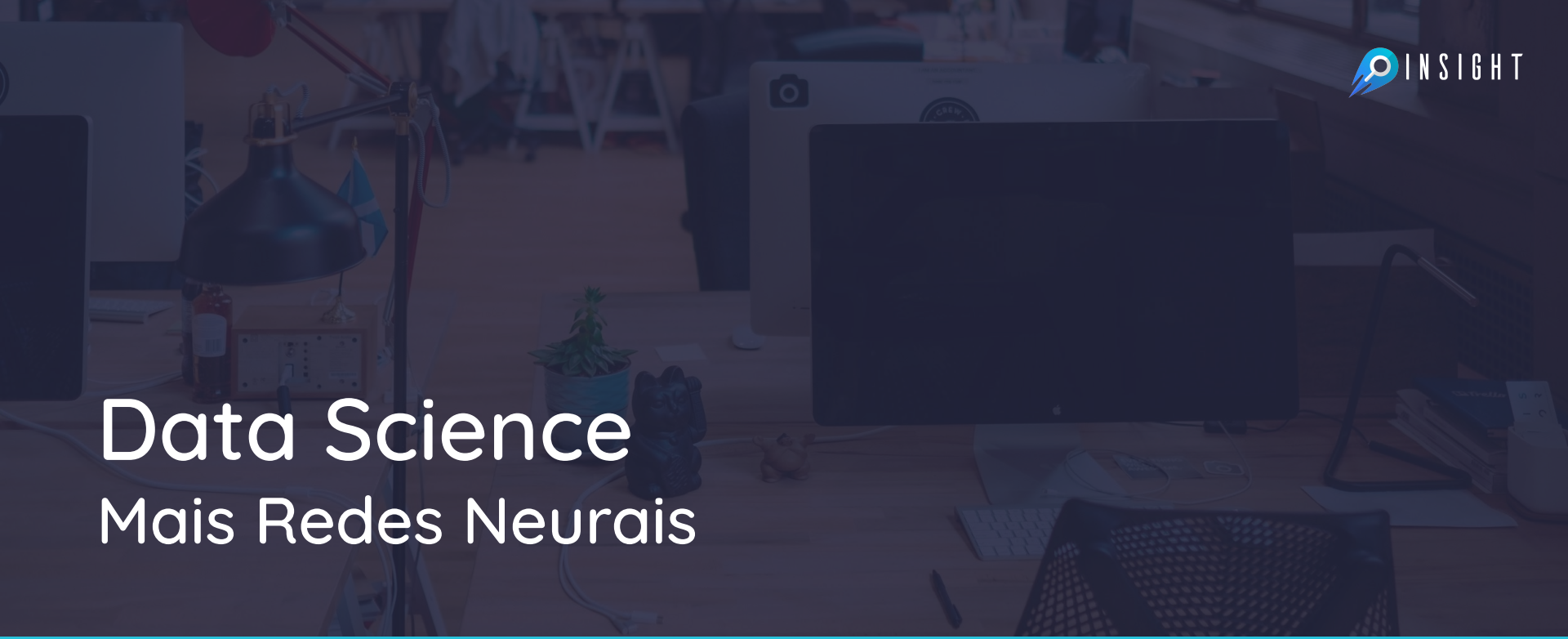

INSIGHT
Data Science Laboratory
Federal University of Ceará



Data Science

Mais Redes Neurais

INSIGHT

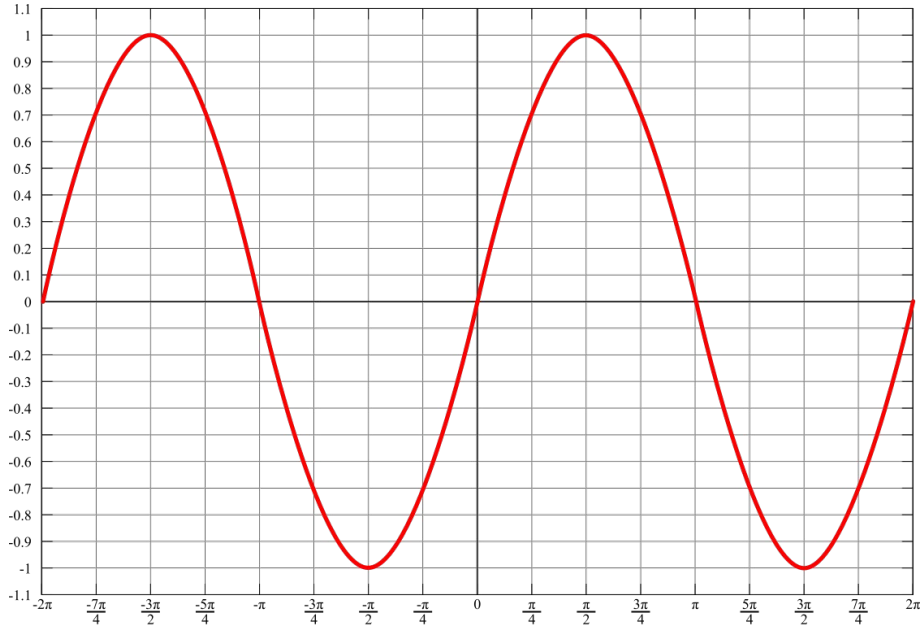
DEPARTAMENTO DE COMPUTAÇÃO

UNIVERSIDADE FEDERAL DO CEARÁ

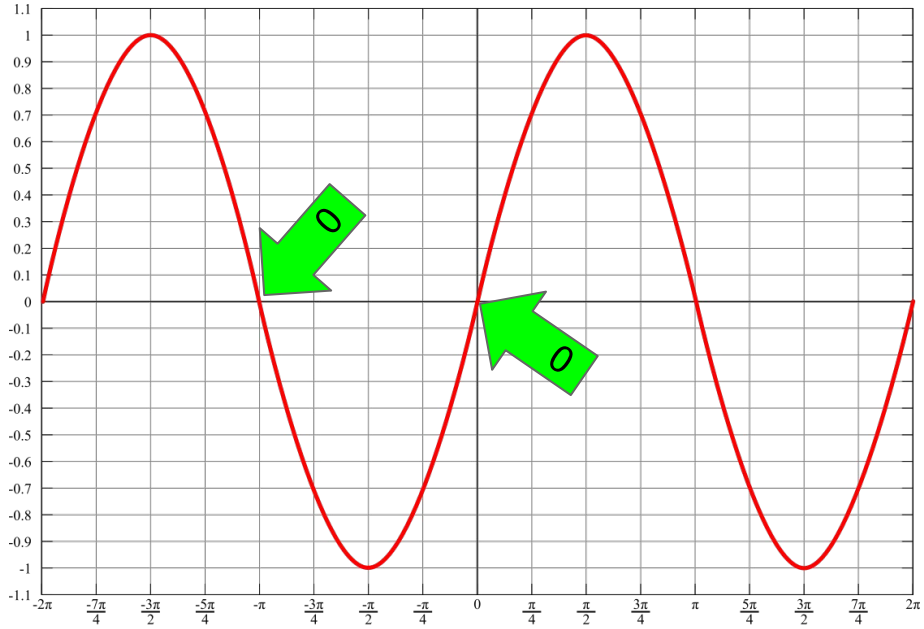
Limitações dos perceptrons

- Outputs 0 ou 1
- Não possuem noção de sequência de inputs
- Não leva os vizinhos do input em consideração

Noção de sequência

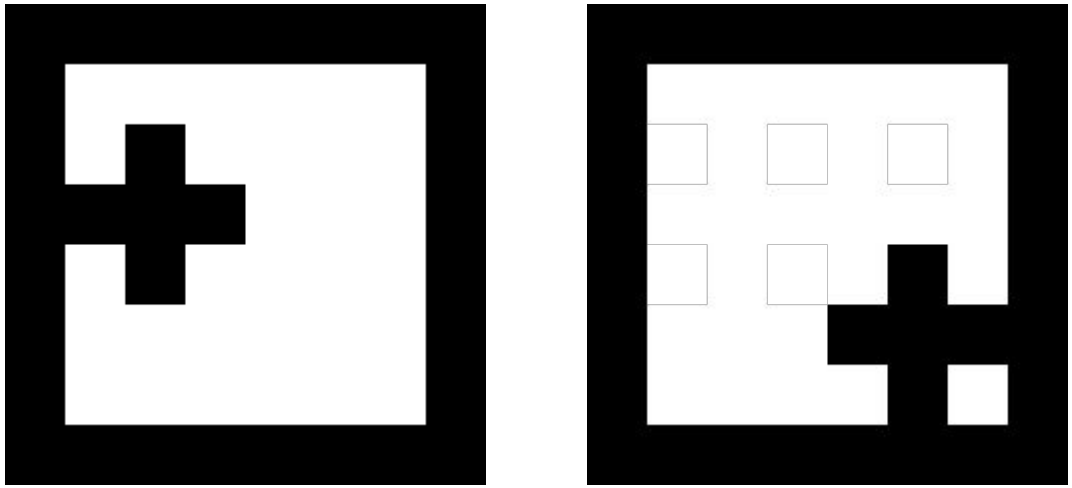


Noção de sequência



Qual o próximo?

Noção de Vizinhança



O MLP vai receber apenas um array achatado dos pixels

A noção dos pontos próximos em uma matrix se perde

Outros Tipos de Redes Neurais

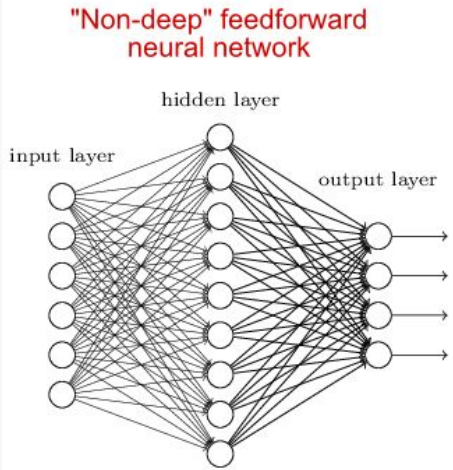
Tipos de redes neurais

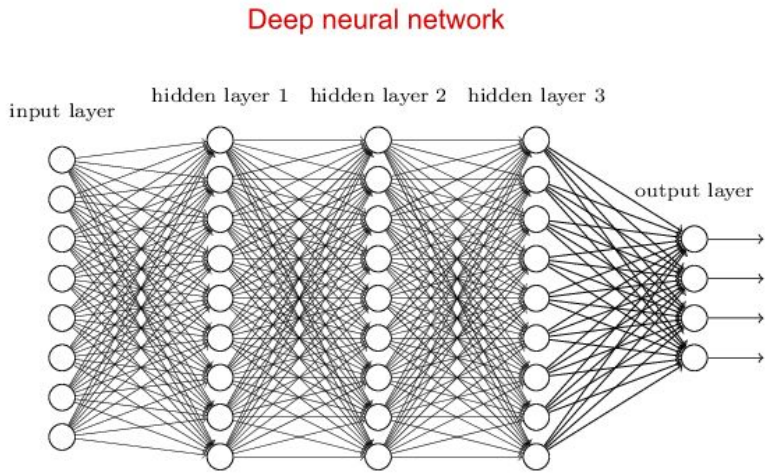
- Deep Neural Network
- Recurrent Neural Network (RNN)
- LSTM
- Convolutional Neural Network (CNN)

Deep Neural Network

Perigo de overfitting em problemas simples

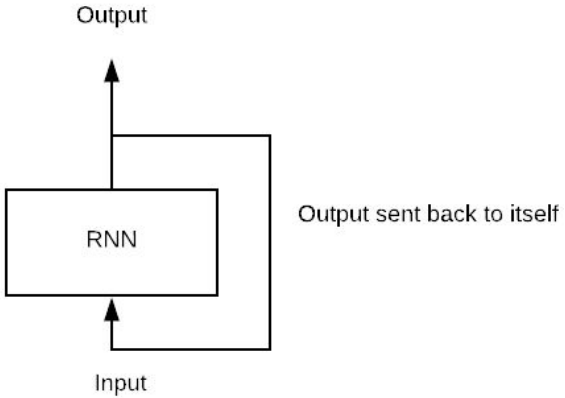
Necessário em problemas complexos

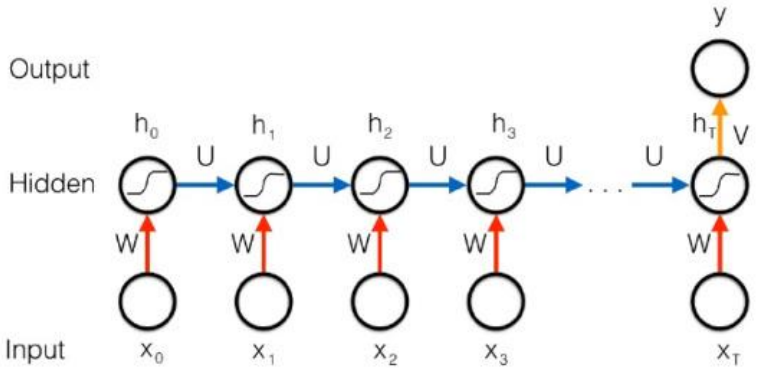




Recurrent Neural Network

Utiliza o output anterior como um dos inputs da camada oculta

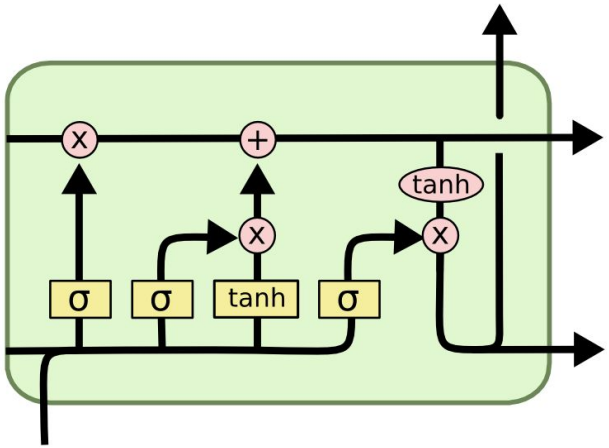




LSTM

Versão melhorada do RNN

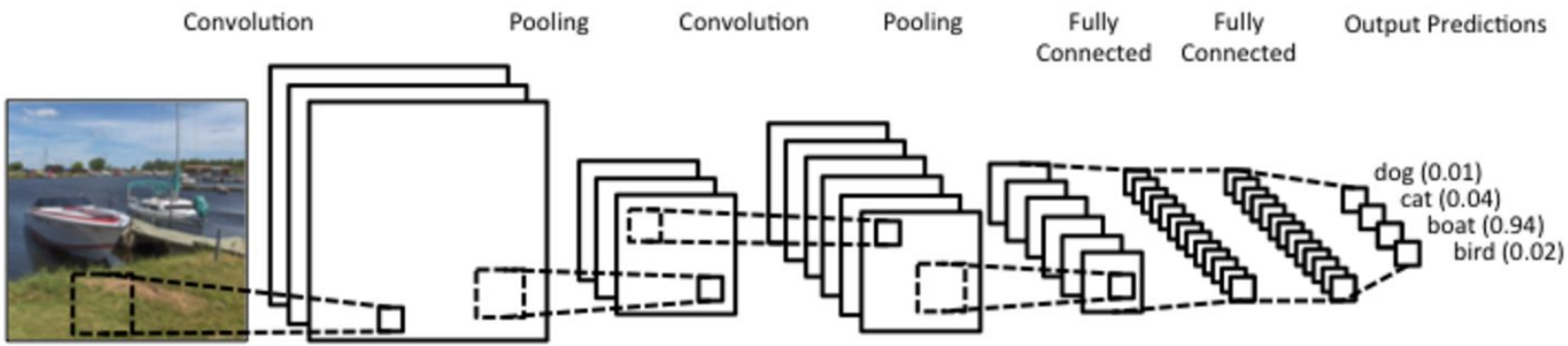
Trata melhor eventos mais distantes no passado



Não precisa tentar entender, já tem tudo pronto nas bibliotecas!

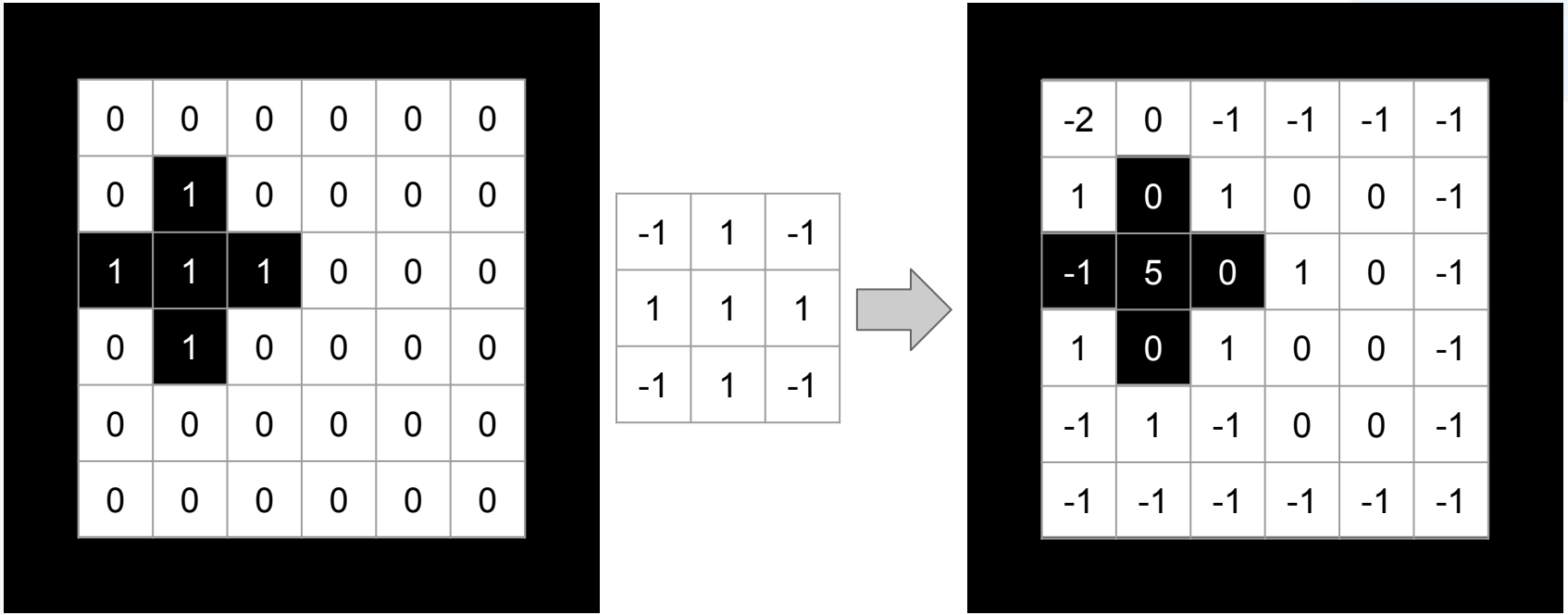
Convolutional Neural Network

Utiliza um conjunto de filtros para descobrir padrões baseando-se na vizinhança



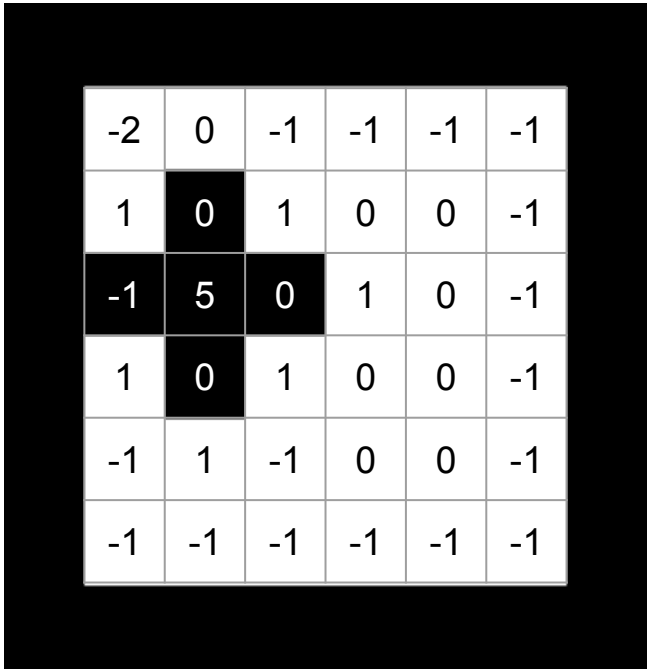
Convolutional Neural Network

Convolução



Convolutional Neural Network

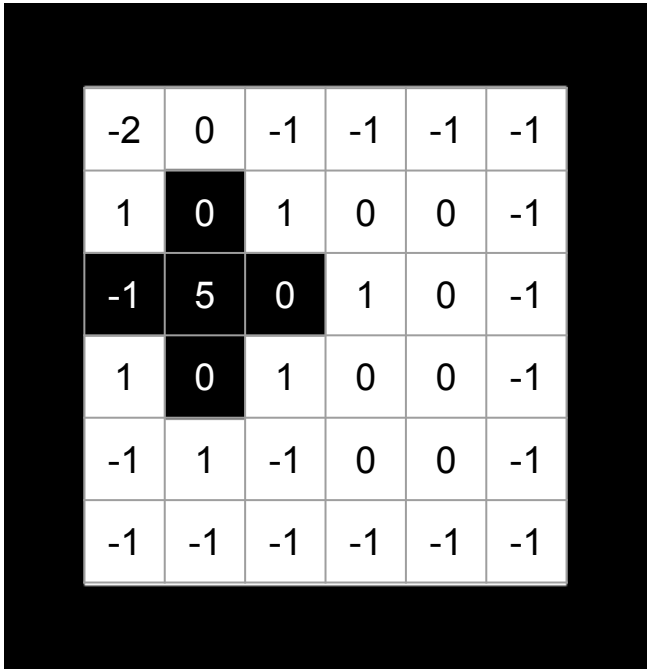
Max Pooling



1	1	0
5	1	0
1	0	0

Convolutional Neural Network

Max Pooling




Mãos à obra!