Tarefa Supervisionada

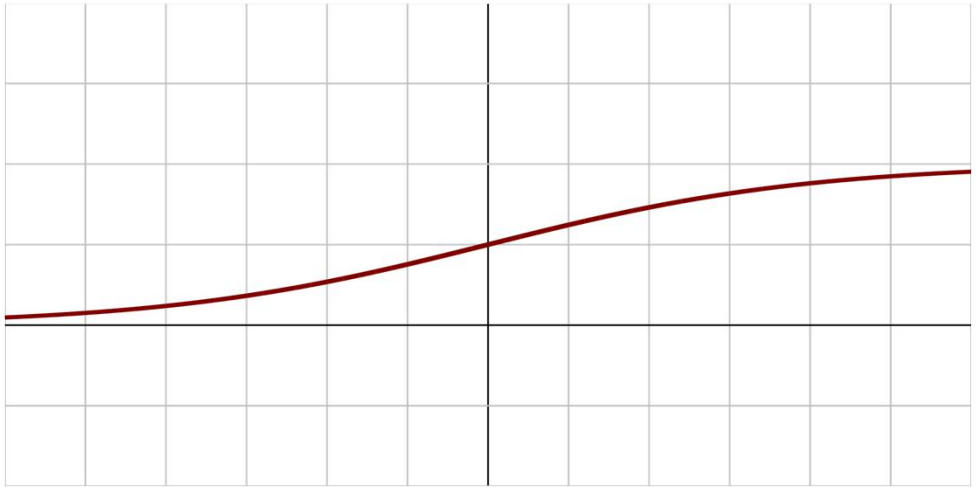
- Dados Rotulados

Airline sentiments: tweets de várias empresas aéreas

airline_sentiment	text
neutral	@VirginAmerica What @dhepburn said.
positive	@VirginAmerica plus you've added commercials to the experience... tacky.
neutral	@VirginAmerica I didn't today... Must mean I need to take another trip!
negative	@VirginAmerica it's really aggressive to blast obnoxious "entertainment" in your guests' faces & they have little recourse
negative	@VirginAmerica and it's a really big bad thing about it
negative	@VirginAmerica seriously would pay $30 a flight for seats that didn't have this playing.it's really the only bad thing about flying VA
positive	@VirginAmerica yes, nearly every time I fly VX this “ear worm” won’t go away :)
neutral	@VirginAmerica Really missed a prime opportunity for Men Without Hats parody, there. https://t.co/mWpG7grEZP
positive	@virginamerica Well, I didn't…but NOW I DO! :-D
positive	@VirginAmerica it was amazing, and arrived an hour early. You're too good to me.
neutral	@VirginAmerica did you know that suicide is the second leading cause of death among teens 10-24
positive	@VirginAmerica I <3 pretty graphics. so much better than minimal iconography. :D
positive	@VirginAmerica This is such a great deal! Already thinking about my 2nd trip to @Australia & I haven't even gone on my 1st trip yet! ;p
positive	@VirginAmerica @virginmedia I'm flying your #fabulous #Seductive skies again! U take all the #stress away from travel http://t.co/ahlXHhKiyn
positive	@VirginAmerica Thanks!
negative	@VirginAmerica SFO-PDX schedule is still MIA.
positive	@VirginAmerica So excited for my first cross country flight LAX to MCO I've heard nothing but great things about Virgin America. #29DaysToGo
negative	@VirginAmerica I flew from NYC to SFO last week and couldn't fully sit in my seat due to two large gentleman on either side of me. HELP!
positive	@VirginAmerica Moodlighting is the only way to fly! Best experience EVER! Cool and calming. 💜✈
positive	@VirginAmerica @freddieawards Done and done! Best airline around, hands down!
neutral	@VirginAmerica when can I book my flight to Hawaii??
negative	@VirginAmerica Your chat support is not working on your site: http://t.co/vhp2GtDWPk
positive	@VirginAmerica View of downtown Los Angeles, the Hollywood Sign, and beyond that rain in the mountains! http://t.co/Dw5nf0ibtr
negative	@VirginAmerica Hey, first time flyer next week - excited! But I'm having a hard time getting my flights added to my Elevate account. Help?
neutral	@VirginAmerica plz help me win my bid upgrade for my flight 2/27 LAX--->SEA!!! 💁👍👆✈
neutral	@VirginAmerica I have an unused ticket but moved to a new city where you don't fly. How can I fly with you before it expires? #travelhelp

Classificação Binária

- Ham / Spam: Classificação Binária
- `modelo.add(Dense(units=1,activation="sigmoid"))`
- Saída é um único neurônio, informa a probabilidade de ser Ham/Spam ou 0/1



Multiclasse

- Neutral
- Positive
- Negative
- ~~`modelo.add(Dense(units=1,activation="sigmoid"))`~~

- Um neurónio só é capaz de produzi números
- Como representar três categorias com um único neurônio?

Multiclasse

- Camada de saída com três neurônios e função de ativação softmax
  - **Um neurônio para cada classe**
- **modelo.add(Dense(3,activation='softmax'))**
- **Como cada neurônio vai representar uma classe?**

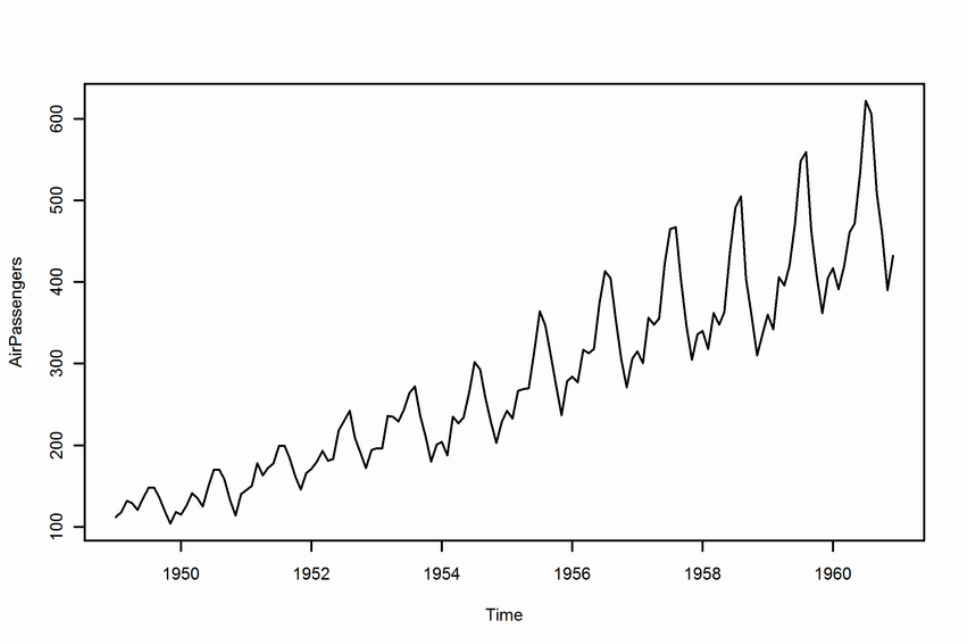
One Hot Encoding

Airline_sentiment	Neutral	Positive	Negative
neutral	1	0	0
positive	0	1	0
neutral	1	0	0
negative	0	0	1


```
[0.79449296 0.11315805 0.09234896]
```

Alguns tipos de dados dependem de ordem!

- Séries Temporais



Alguns tipos de dados dependem de ordem!

- Texto
  - Fernando é uma pessoa **nova**
  - Fernando é uma **nova** pessoa

Rede Neural MLP

- Fernando é uma pessoa **nova**
- Fernando é uma **nova** pessoa
- É uma **nova** pessoa Fernando
- Pessoa Fernando é **nova** uma

RNN

- Consideram ordem
- Mas tem dificuldade de manter a informação das etapas iniciais

LSTM

- **Tipo de RNN**
- **Possui mecanismos chamados “gates” que aprendem quais dados devem ser mantidos ou não**

LSTM

- **É uma camada que será “empilhada” na topologia da nossa rede**
- **Demais etapas são semelhantes**
- **Custo computacional alto**
- **Capaz de “tirar proveito” de NVIDIA CUDA**