Speak-it

A sneakers recognizer app
by Jeremy Gozlan

Motivation

- Sneakers are everywhere but not that many sneaker addict.
- Who never wanted to ask a stranger in a street about his sneaker?
- This problem got me into sneakers.
- How can machine learning improve people lives in this context?

Is it possible to recognize a sneakers just with one street picture?

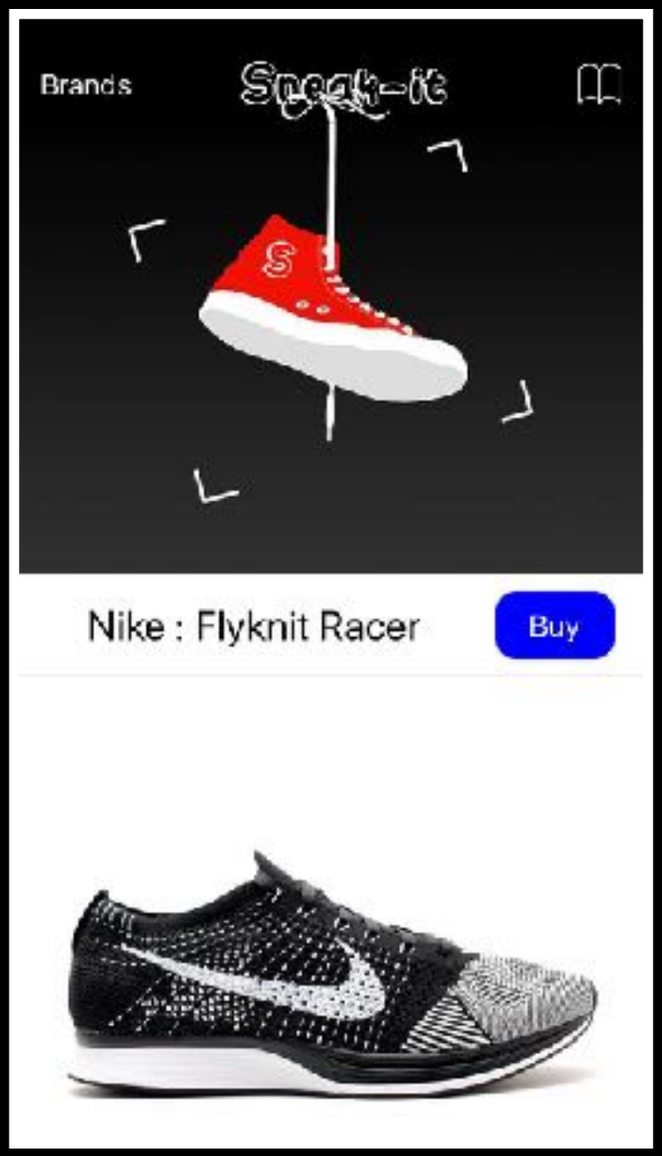
Of course it is .

Can we make easy for everyone to use

Well, it seems so thanks to Apple.

What was required ?

- Lots of sneaker images.
- Convolutional Neural networks
- An easy access smartphone application



Collecting Data

How to get data ?

- Scrapping google images using product ids

How much data ?

- After manual filtering, each color way scrap yields around 200 images.
- I decided to go with 2000 images for each model so around 10 color ways.

Can it recognize every model?

- In theory it can.
- For a starting point, I decided to go with 4 brands with approximately 3 models each.

Modelling

I used convolutional neural networks using Keras.

Because of the nature of my data and the goal I had, I decided to use the VGG-16 architecture using imagenet weights.

To get my model to learn about this new data, I had to remove the top layer and freeze some extras layers.

Starting point :

- I decided to go with one model running all models not techniques into account brands.
- Overall testing accuracy 93 % .
- Problems :
    1. As the the model number increased the accuracy went down.
    2. Not able to categorize unclassified model. (At least getting the brand)

What I ended with :

- One model categorizing brands which will then redirect the image to the associated neural networks categorizing models within the brand.
- An overall testing accuracy of 94.5 % with flexibility (predicting brand if not classified)

App

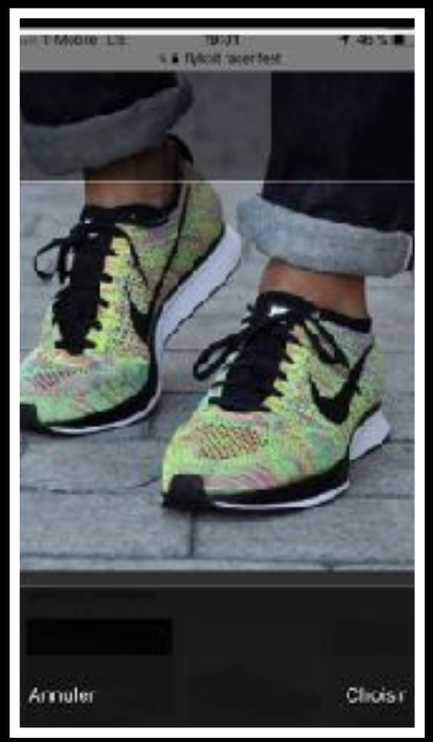
Machine learning on a smartphone?

- In June 2017, Apple announced iOS 11, Xcode 9 and MacOS High Sierra integrating the new MLCore Library.
- In addition, Swift 4 was also released to support Xcode 9.

What can this app do :

- Take a picture from the camera or library and predict the shoe model as well as its brand
- History
- Information page for all model
- An easy, fast way to find online a sneaker on giant websites.

The App


Annuler
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Brands
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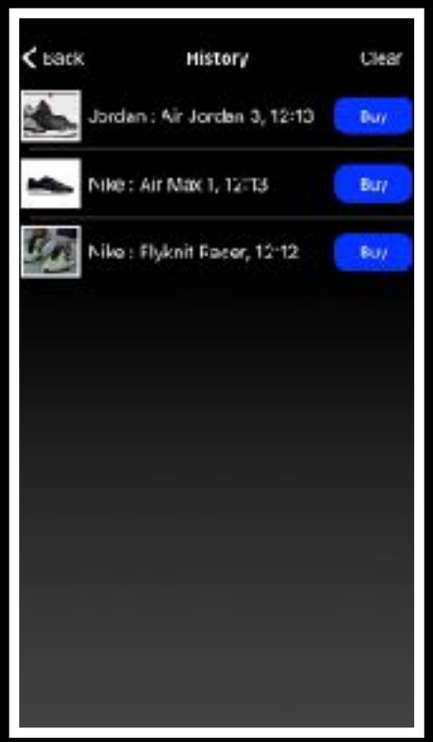
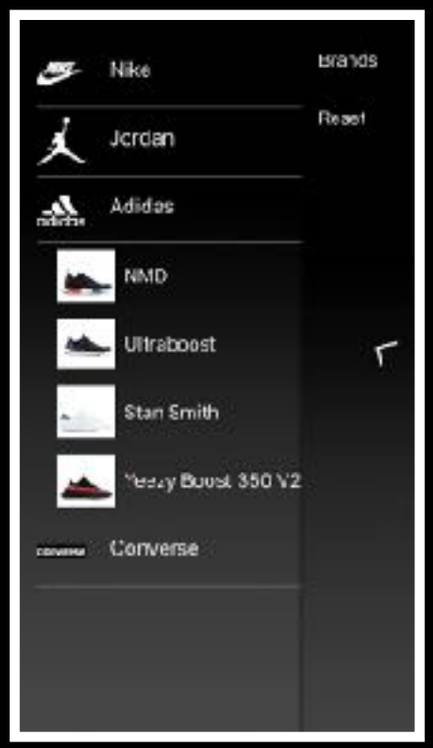
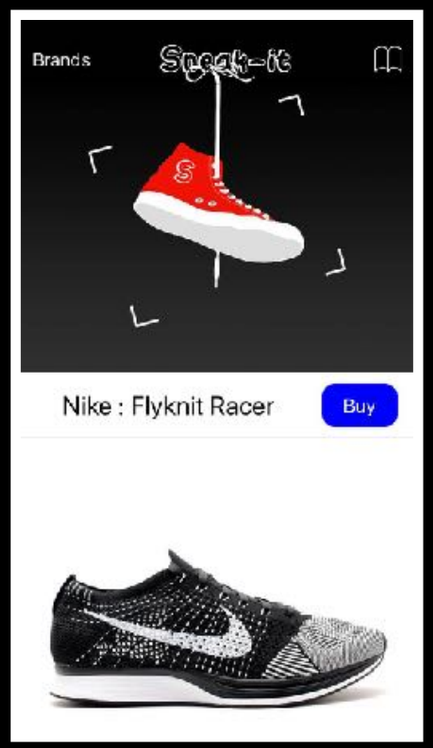

back
History
Clear
Jordan : Air Jordan 3, 12:13
Buy
Nike : Air Max 1, 12:13
Buy
Nike : Flyknit Racer, 12:12
Buy


Nike
Brands
Jordan
Reset
Adidas
NMD
Ultraboost
Stan Smith
Yeezy Boost 350 V2
Converse


Brands
Sneak-it
Nike : Flyknit Racer
Buy


back
Find it
Flyknit Racer
Select Size
10 us
Shops
Purchase
Purchase
Purchase

Demo time

What next?

- Add more sneakers
- Affine my models
- Implement new app functionalities

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