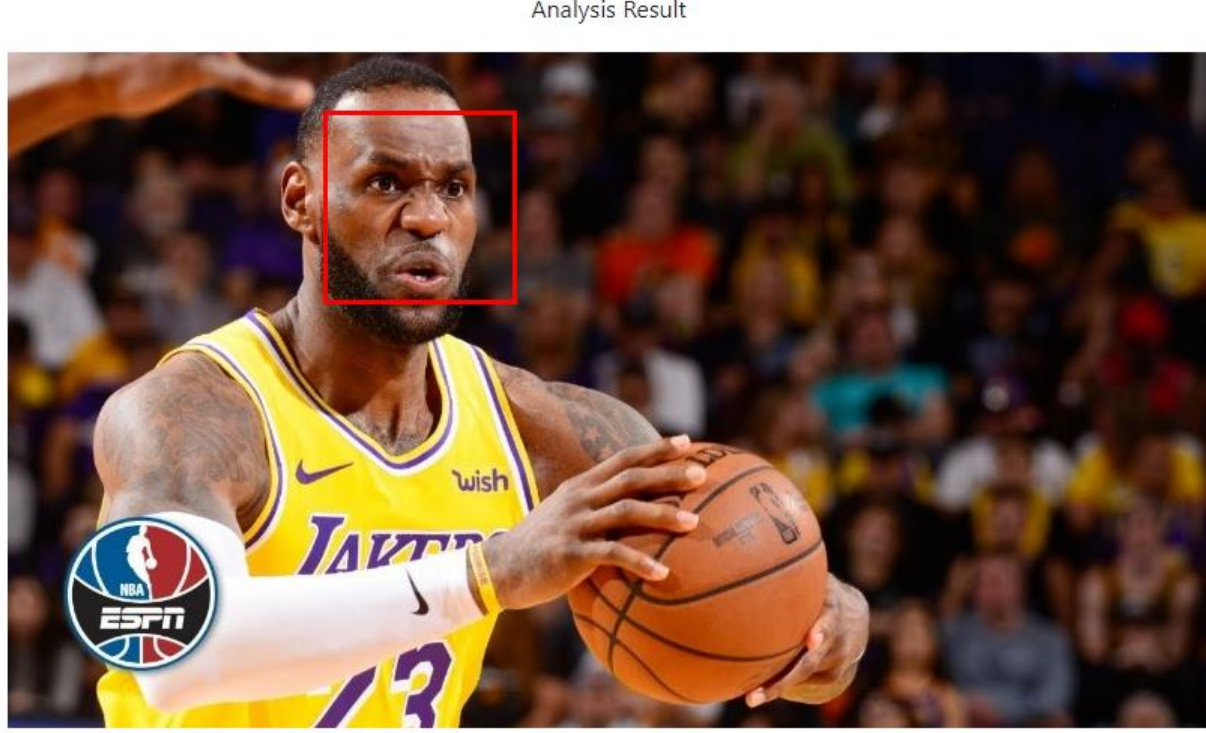


Which traits are learnable from face images?

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Introduction

- Given a face image, what can we tell about a person? How confident are we?



Black, Male, 35.56 years old

BMI is 24.12 (Normal)

Looks smarter than 79% of all people

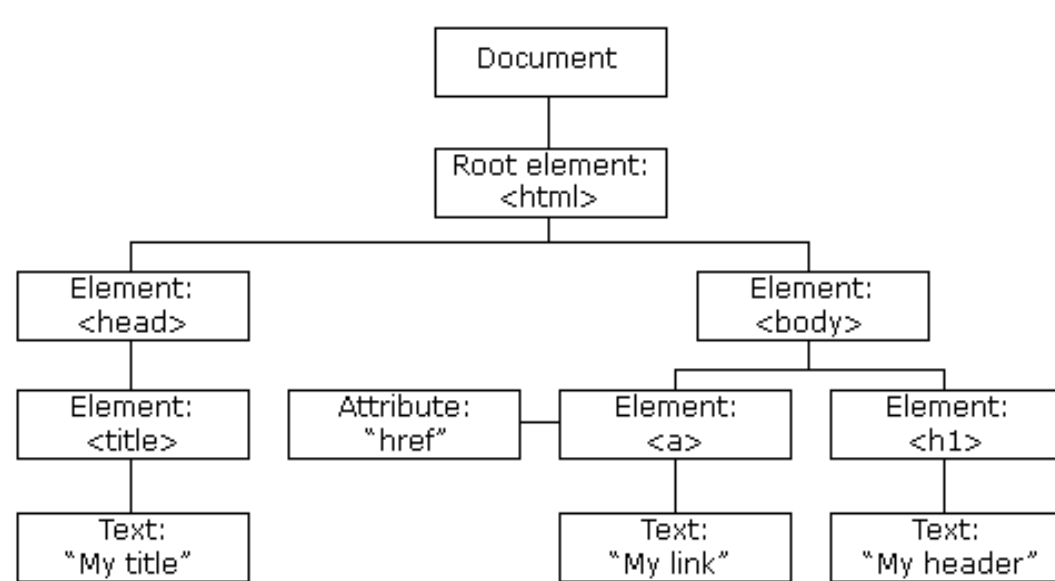
Goals

- Build an intelligent end-to-end system
- Real Images-not only images taken in a controlled environment
- As accurate estimation as possible per trait
- Check as many traits as possible: Sexual preference, BMI, intelligence etc.

Challenges

- For some traits, no previous dataset exists.
- For other traits previous datasets are relatively small.
- Different websites provide different labels
- Do we really need to retrain from scratch an algorithm for each trait?

Gathering data



- Web scraping many websites where a "profile" notion exists (where each profile belongs to one person)
- Used a smart filter based on a face recognition system (Facebook's OpenFace)- each person can post any sort of image (for example his pets or children) within his profile.

Our Data

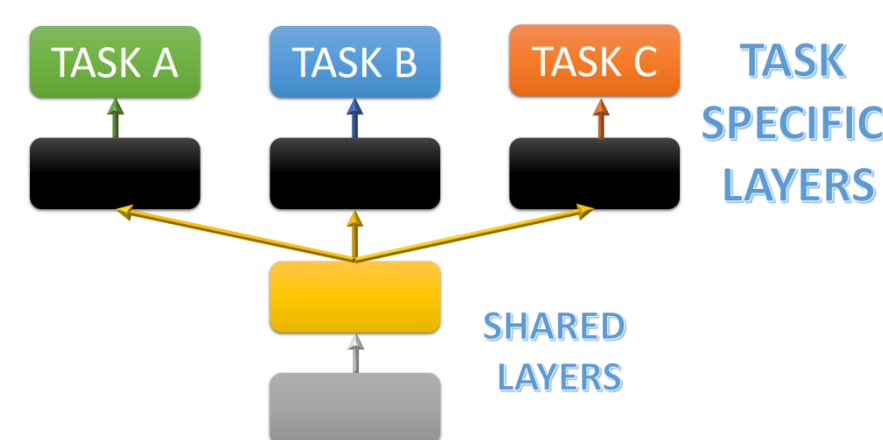
- I got over 45,000,000 labelled images (over 31,000,000 images remain after filtering)
- Over 1,000,000 images of children, over 500,000 images of teenagers and the rest are adults

Data-Comparison

Name	By	#Examples	#Labels/Example	Labelled by
ImageNet	Stanford	14,197,122	~1	Hand
COCO	Microsoft	~330,000	~5	Mixed
Open Images	Google	~9,000,000 URLs	~1.2	Auto (most)
Ours	Technion	31,295,221	>15	Hand*

- More data (in terms of #Images) than Stanford, Microsoft and Google. Combined.

Multi-task Learning



- Changed Pytorch's Resnet implementation so that it now supports **Multi-task Learning** (different tasks) with **missing labels** (not every label is given for every image).

Results- Part I

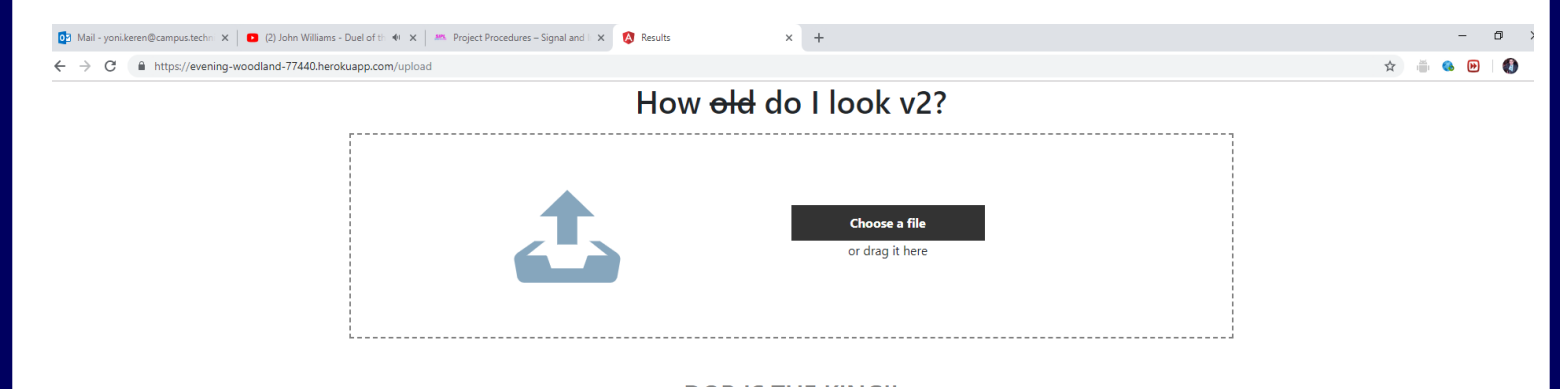
- Checked the traits: Intelligence, Zodiac sign, Sexual preference, BMI, Ethnicity.
- In a nutshell:
- BMI : Surpassed human performance as well as MIT's Face2BMI
- Intelligence is a learnable trait while zodiac sign is not. (at least currently)
- >30 pages of results summary can be found in my report!

Face API-industry

- Both Microsoft and Amazon have age&gender estimation service (they sell API access to that service).
- Microsoft's service can be experienced via <https://how-old.net>
- Amazon has a "Amazon Rekognition" service (the K is not a mistake 😊).

Website

- I decided to make my efforts accessible through a website



- www.how-look.com
- Drag&Drop or choose a file or take a selfie (works on any smartphone)

Results-Part II

- Surpassing most academia benchmarks(age)
- For example, over 10% improvement on Adience.
- Even more noteworthy, surpassing Microsoft and Amazon's AI face recognition services.
- This claim can be verified by anyone with internet access.

Conclusions

- Created one of the best face analysis computer vision systems in the world
- Uploaded my work to a website-accessible to anyone who wishes to get a feeling for my work
- Created one of the world's largest labeled images dataset
- Had a lot of fun 😊

To be continued....