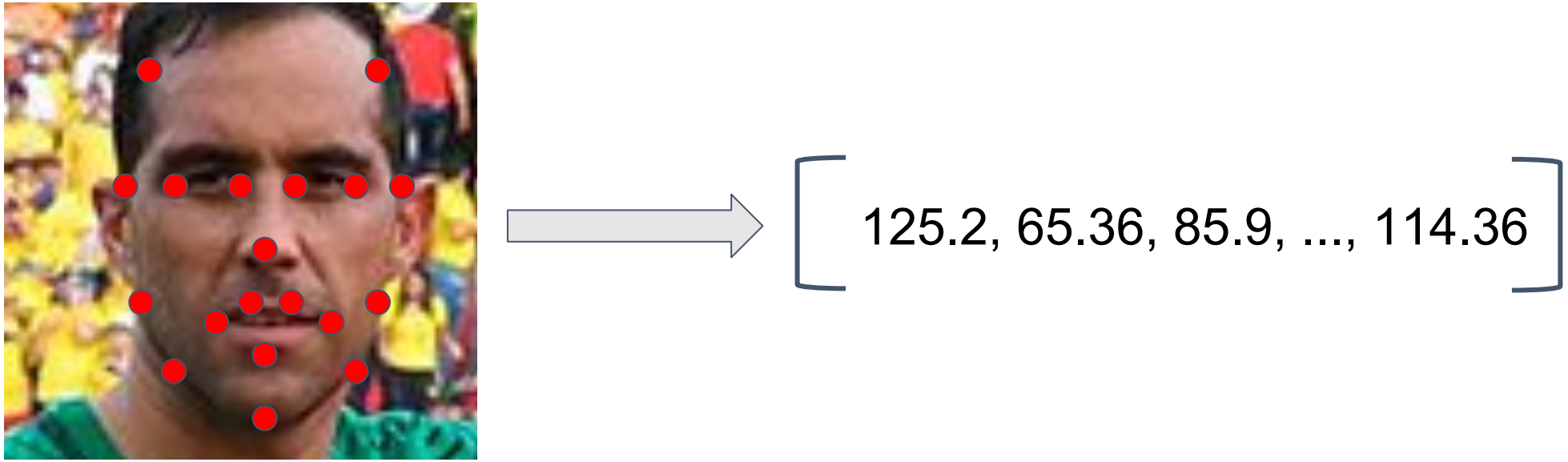
Inteligencia Artificial y Aprendizaje de Máquina

Proyecto apoyado por
CORFO Incuba UC

Como se arma un producto con ML, DL:

Como se arma un producto con ML, DL:

Como se arma un producto con ML, DL:



Como se arma un producto con ML, DL:

[125.2, 65.36, 85.9, ..., 114.36]

[126.2, 64.56, 82.7, ..., 116.18]

CLAUDIO BRAVO

...

[136.2, 45.56, 98.8, ..., 69.45]

Jon Snow

Como se arma un producto con ML, DL:

[125.2, 65.36, 85.9, ..., 114.36]

[126.2, 64.56, 82.7, ..., 116.18]

CLAUDIO BRAVO

...

[136.2, 45.56, 98.8, ..., 69.45]

Jon Snow

Como se arma un producto con ML, DL:

http://lmgtfy.com/?q=face+detector

Como se arma un producto con ML, DL:

Google

github "face detection"

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Cerca de 167.000 resultados (0,31 segundos)

GitHub - ageitgey/face_recognition: The world's simplest facial ...
https://github.com/ageitgey/face_recognition ▾ Traducir esta página
You can also opt-in to a somewhat more accurate deep-learning-based **face detection** model. Note: GPU acceleration (via nvidia's CUDA library) is required for ...
Face_recognition ... · Face_distance.py · Dlib and face_recognition on ... · Examples

GitHub - davidsandberg/facenet: Face recognition using Tensorflow
https://github.com/davidsandberg/facenet ▾ Traducir esta página
This training set consists of total of 453 453 images over 10 575 identities after **face detection**. Some performance improvement has been seen if the dataset has ...

GitHub - informramiz/Face-Detection-OpenCV: Face detection using ...
https://github.com/informramiz/Face-Detection-OpenCV ▾ Traducir esta página
README.md. **Face Detection** In Python Using OpenCV. OpenCV. OpenCV is an open so computer vision and machine learning software library.

Topic: face-detection · GitHub
https://github.com/topics/face-detection ▾ Traducir esta página
Golang implementation of Pico **face detection** library. **face-detection** ... Simple Node.js p robust **face detection** and face recognition. JavaScript and ...

GitHub - opencv-java/face-detection: Face detection with OpenC
https://github.com/opencv-java/face-detection ▾ Traducir esta página
GitHub is where people build software. More than 28 million people use **GitHub** to discove contribute to over 85 million projects.

GitHub - ipazc/mtcnn: MTCNN face detection implementation for
https://github.com/ipazc/mtcnn ▾ Traducir esta página
GitHub is where people build software. More than 28 million people use **GitHub** to discove contribute to over 85 million projects.

GitHub - yeephycho/tensorflow-face-detection: A mobilenet SSD
https://github.com/yeephycho/tensorflow-face-detection ▾ Traducir esta página
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Face Detection · GitHub
https://github.com/FaceDetect ▾ Traducir esta página
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GitHub - RedApparat/FaceDetector: Face detection for your Andr
https://github.com/RedApparat/FaceDetector ▾ Traducir esta página
GitHub is where people build software. More than 28 million people use **GitHub** to discove contribute to over 85 million projects.

OpenFace - GitHub Pages
https://cmusatyalab.github.io/openface/ ▾ Traducir esta página
The code is available on **GitHub** at cmusatyalab/openface. API Documentation ... Davis K library for **face detection** and alignment. The **GitHub** issue and ...

Cornell University Library

arXiv.org > cs > arXiv:1604.02878

Computer Science > Computer Vision and Pattern Recognition

Joint Face Detection and Alignment using Multi-task Cascaded Co

Kaipeng Zhang, Zhanpeng Zhang, Zhifeng Li, Yu Qiao

(Submitted on 11 Apr 2016)

Face detection and alignment in unconstrained environment are challenging due to various poses, illuminations and between them to boost up their performance. In particular, our framework adopts a cascaded structure with three sta improve the performance automatically without manual sample selection. Our method achieves superior accuracy ov

README.md

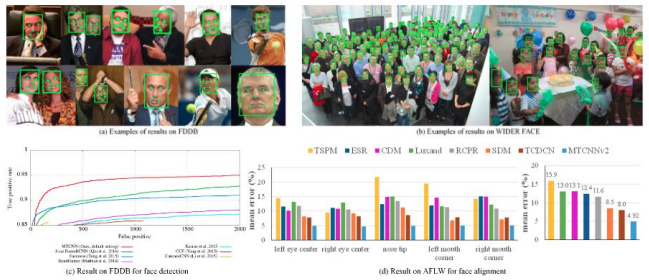
MTCNN_face_detection_alignment

Joint Face Detection and Alignment using Multi-task Cascaded Convolutional Neural Networks

Requirement

1. Caffe: Linux OS: https://github.com/BVLC/caffe. Windows OS: https://github.com/BVLC/caffe/tree/windows or https://github.com/happynear/caffe-windows
2. Pdollar toolbox: https://github.com/pdollar/toolbox
3. Matlab 2014b or later
4. Cuda (if use nvidia gpu)

Results



Other implementation

C++ & caffe (strongly recommend)
Python & mxnet
Python & caffe

Joint Face Detection and Alignment using Multi-task Cascaded Convolutional Networks

Kaipeng Zhang, Zhanpeng Zhang, Zhifeng Li, *Senior Member, IEEE*, and Yu Qiao, *Senior Member, IEEE*

***Abstract*—Face detection and alignment in unconstrained environment are challenging due to various poses, illuminations and occlusions. Recent studies show that deep learning approaches can achieve impressive performance on these two tasks. In this paper, we propose a deep cascaded multi-task framework which exploits the inherent correlation between them to boost up their performance. In particular, our framework adopts a cascaded structure with three stages of carefully designed deep convolutional networks that predict face and landmark location in a coarse-to-fine manner. In addition, in the learning process, we propose a new online hard sample mining strategy that can improve the performance automatically without manual sample selection. Our method achieves superior accuracy over the state-of-the-art techniques on the challenging FDDB and WIDER FACE benchmark for face detection, and AFLW benchmark for face alignment, while keeps real time performance.**

***Index Terms*—Face detection, face alignment, cascaded convolutional neural network**

I. Introduction

FACE detection and alignment are essential to many face applications, such as face recognition and facial expression analysis. However, the large visual variations of faces, such as occlusions, large pose variations and extreme lightings, impose great challenges for these tasks in real world applications.

The cascade face detector proposed by Viola and Jones [2] utilizes Haar-Like features and AdaBoost to train cascaded classifiers, which achieve good performance with real-time efficiency. However, quite a few works [1, 3, 4] indicate that this detector may degrade significantly in real-world applications with larger visual variations of human faces even with more advanced features and classifiers. Besides the cascade structure, [5, 6, 7] introduce deformable part models (DPM) for face detection and achieve remarkable performance. However, they need high computational expense and may usually require expensive annotation in the training stage. Recently, convolutional neural networks (CNNs) achieve remarkable progresses in a variety of computer vision tasks, such as image classification [9] and face recognition [10]. Inspired by the good performance of CNNs in computer vision tasks, some of the CNNs based face detection approaches have been proposed in recent years. Yang *et al*. [11] train deep convolution neural networks for facial attribute recognition to obtain high response in face regions which further yield candidate windows of faces. However, due to its complex CNN structure, this approach is time costly in practice. Li *et al*. [19] use cascaded CNNs for face detection, but it requires bounding box calibration from face detection with extra computational expense and ignores the inherent correlation between facial landmarks localization and bounding box regression.

Face alignment also attracts extensive interests. Regression-based methods [12, 13, 16] and template fitting approaches [14, 15, 7] are two popular categories. Recently, Zhang *et al*. [22] proposed to use facial attribute recognition as an auxiliary task to enhance face alignment performance using deep convolutional neural network.

However, most of the available face detection and face alignment methods ignore the inherent correlation between these two tasks. Though there exist several works attempt to jointly solve them, there are still limitations in these works. For example, Chen *et al*. [18] jointly conduct alignment and detection with random forest using features of pixel value difference. But, the handcraft features used limits its performance. Zhang *et al*. [20] use multi-task CNN to improve the accuracy of multi-view face detection, but the detection accuracy is limited by the initial detection windows produced by a weak face detector.

On the other hand, in the training process, mining hard samples in training is critical to strengthen the power of detector. However, traditional hard sample mining usually performs an offline manner, which significantly increases the manual operations. It is desirable to design an online hard sample mining method for face detection and alignment, which is adaptive to the current training process automatically.

In this paper, we propose a new framework to integrate these two tasks using unified cascaded CNNs by multi-task learning. The proposed CNNs consist of three stages. In the first stage, it produces candidate windows quickly through a shallow CNN. Then, it refines the windows to reject a large number of non-faces windows through a more complex CNN. Finally, it uses a more powerful CNN to refine the result and output facial landmarks positions. Thanks to this multi-task learning framework, the performance of the algorithm can be notably improved. The major contributions of this paper are summarized as follows: (1) We propose a new cascaded CNNs based framework for joint face detection and alignment, and carefully

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Z.-P. Zhang is with the Department of Information Engineering, The Chinese University of Hong Kong, Hong Kong. E-mail: zz013@ie.cuhk.edu.hk

Proyecto apoyado por
CORFO Incuba UC
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Como se arma un producto con ML, DL:

Detección de caras	Características Faciales	Búsqueda y match
• MTCNN • DLIB facial landmarks • OPENCV Haar Cascades	• FACENET • OPENFACE • DLIB Resnet 54	• Distancia Euclidiana?

99,9999% en LFW!!!!!

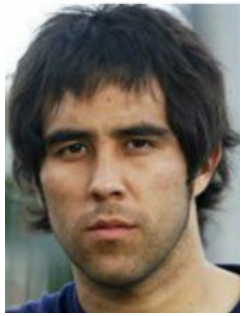
Positive Pairs in LFW

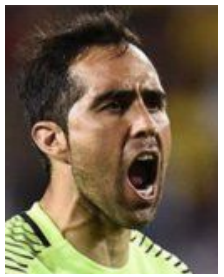
Negtive pairs in LFW

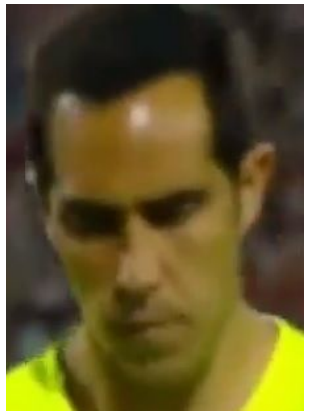
Pero en la realidad... 80% :(?



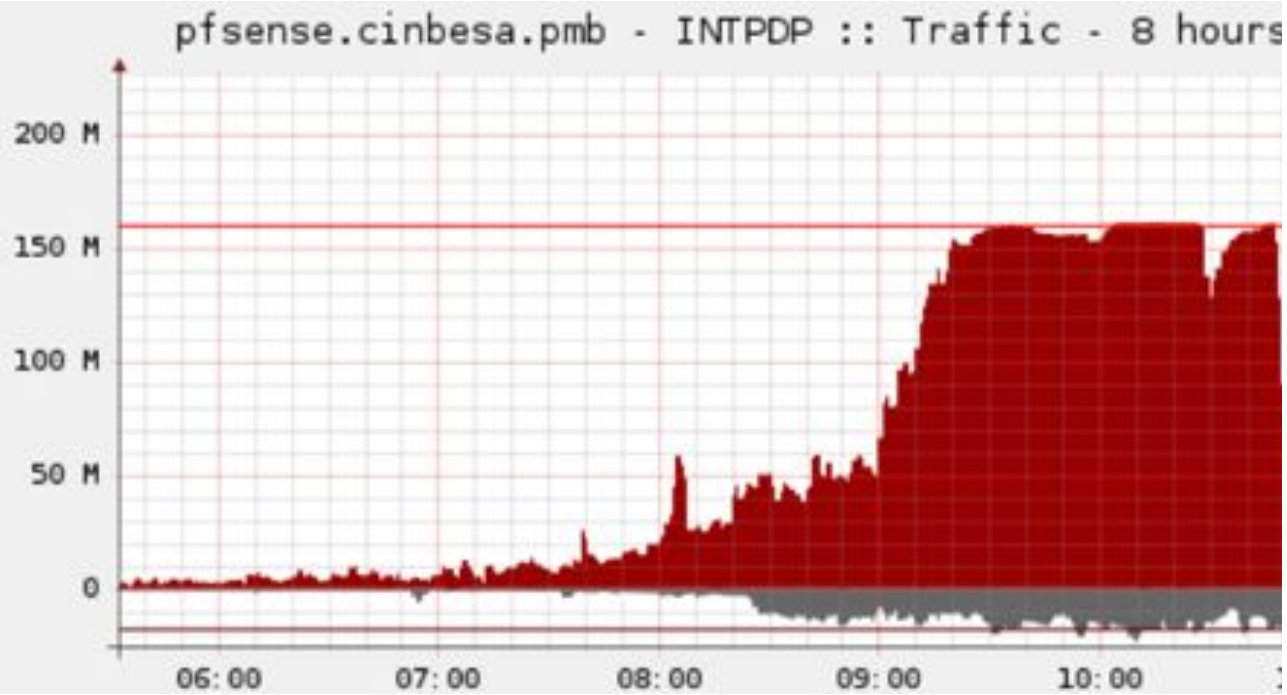


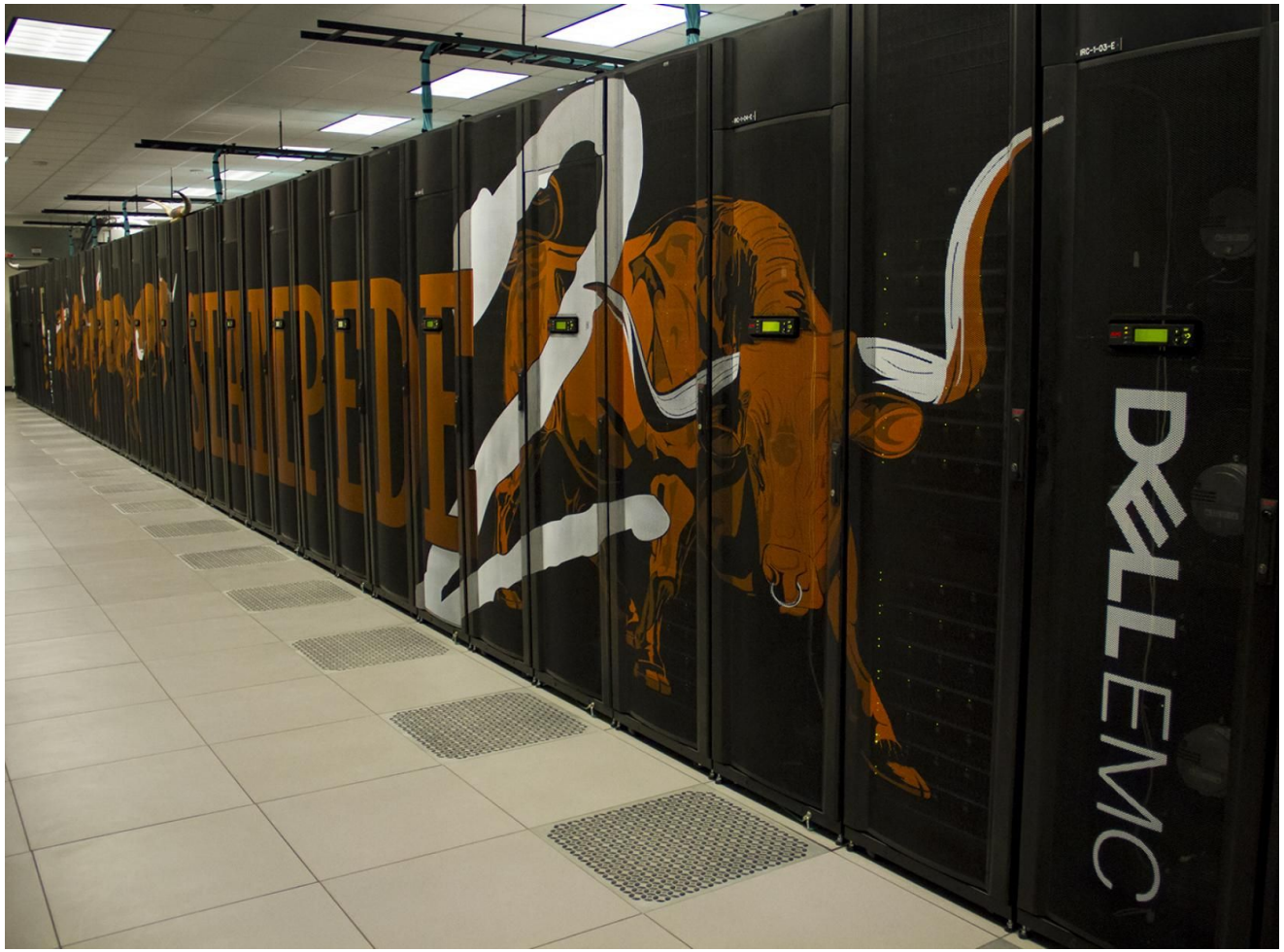




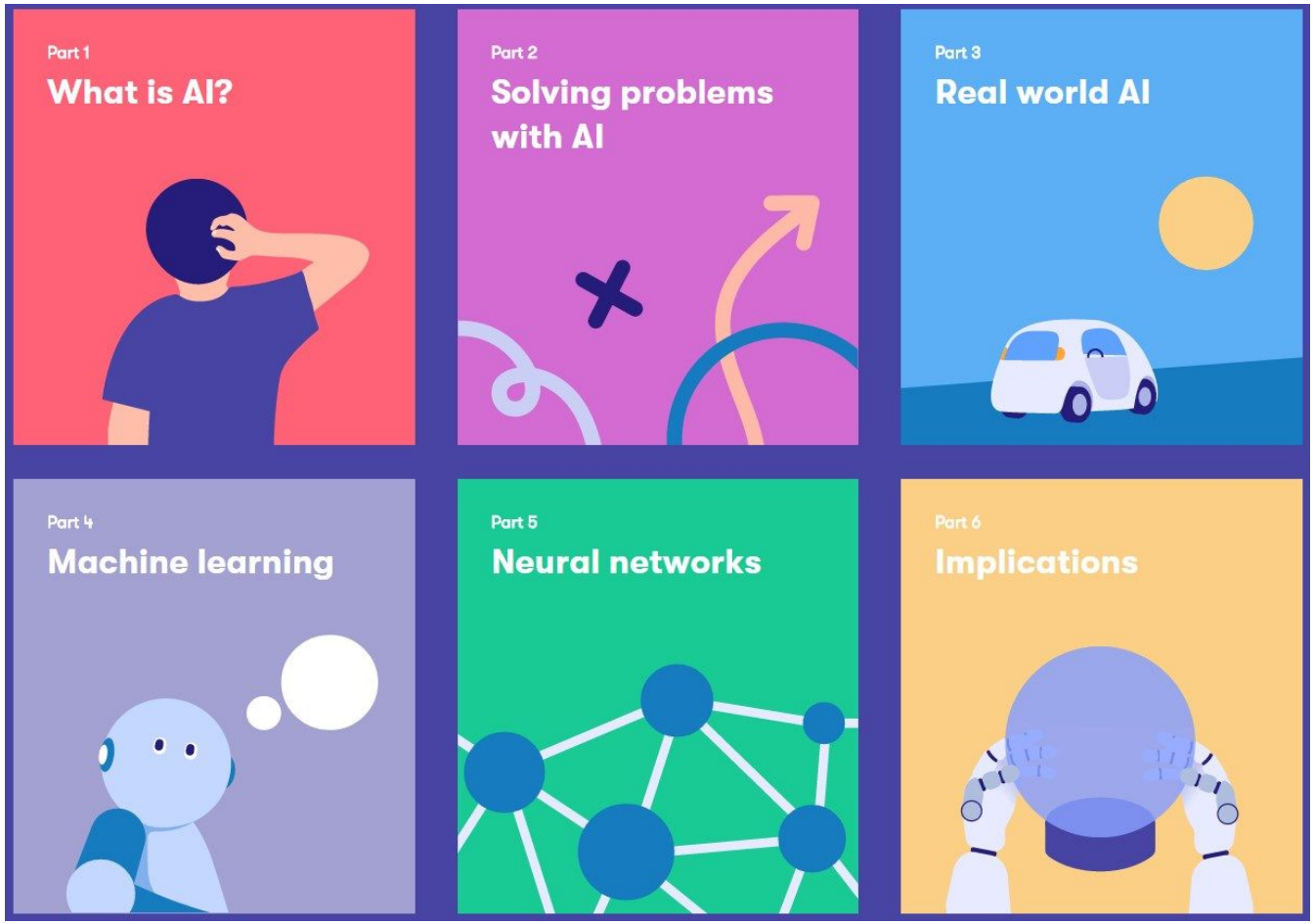
Pero en la realidad... Me comí todo el ancho de banda?



Pero en la realidad... Necesito un supercomputador?



¿Están Listos Para trabajar con Inteligencia Artificial?



Gracias!

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sergio@namku.cl