

Proofpoint Logo Detection & Classification

End of Semester Presentation

Altamash Rafiq, Varun Prasad, Vishaal Venkatesh

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Context - Phishing

- Fraudulent impersonation of legitimate source
- Highly common and dangerous
 - 93% of breaches occurred through phishing in 2017
- Logos increase legitimacy
 - May be slightly distorted or modified
 - Brand impersonation and misuse



Standard Phishing/Spam Email

ACCOUNT CLOSURE



Microsoft.com TM <lindashinn@hotmail.com>

Tuesday, November 27, 2018 at 4:57 PM

Show Details

Dear User,

We noticed that you have been ignoring update messages sent to your email, so your E-mail will be shutdown on 30-11-2018.

To continue using all our services kindly update your E-mail now, ignoring this message will lead to complete shut down of Mailbox.

[Continue](#)

Thank You for Being A Loyal Mail User
We hope you enjoy the newest version .
Security Service @teams

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Phishing Emails with Logos

Felicidades! Ya tienes 6 meses gratis, tu correo ha sido registrado exitosamente - Mozilla Firefox 7/10/20, 3:28 PM

From Netflix - Mexico <admin@sabacloud.com>☆
Subject: Felicidades! Ya tienes 6 meses gratis, tu correo ha sido registrado exitosamente

Tu periodo de prueba gratis de Netflix empieza hoy.

NETFLIX Netflix Mexico

Felicidades! Con tu prueba GRATIS de Netflix, el correo registrado es .ahora puedes disfrutar lo mejor del entretenimiento.

Tu membresía incluye:

- Disfruta miles de películas y series de TV
- Hasta 4 pantallas resolución 4K

Inicia sesión y acepta los términos del servicio para empezar a disfrutar 6 meses gratis de tu membresía.

<https://onlinevr99.netflix.com.mx/>

Disfruta Netflix,

Al ingresar en tu correo electrónico, saldrá un recordatorio de los términos que debes aceptar para hacer uso de este servicio.

TU MEMBRESIA

Membresía	Netflix Periodo de prueba de 6 Meses
Tipo de Plan	Semestral
Pago Actual	\$0.00

Toma en cuenta que el precio y la disponibilidad de los productos están sujetos a cambios sin previo aviso. El precio y la disponibilidad de los productos se encontraban vigentes en la fecha en que esta comunicación fue enviada; sin embargo, podrían diferir de aquellos que ves cuando visites el sitio de Netflix.

Se activó una oferta para 6 meses gratis! - Mozilla Thunderbird

From Amazon-Prime <admin@compuzone.co.kr>☆
Subject: Se activó una oferta para 6 meses gratis!

To [REDACTED]

Tu periodo de prueba gratis de Amazon Prime empieza hoy.

amazon prime Amazon Mexico

Felicidades! Con tu prueba GRATIS de Amazon Prime, el correo registrado es .ahora puedes disfrutar lo mejor del entretenimiento.

Tu membresía incluye:

- Disfruta miles de películas y series de TV con Prime Video.
- Escucha 2 millones de canciones sin anuncios en todos tus dispositivos con Prime Music.

Inicia sesión y acepta los términos del servicio para empezar a disfrutar 6 meses gratis de tu membresía.

<https://registro.amazon.com.mx/>

Disfruta Prime,

Al ingresar en tu correo electrónico, saldrá un recordatorio de los términos que debes aceptar para hacer uso de este servicio.

TU MEMBRESIA

Membresía	Amazon Prime Periodo de prueba de 6 Meses
Tipo de Plan	Semestral
Pago Actual	\$0.00

Toma en cuenta que el precio y la disponibilidad de los productos están sujetos a cambios sin previo aviso. El precio y la disponibilidad de los productos se encontraban vigentes en la fecha en que esta comunicación fue enviada; sin embargo, podrían diferir de aquellos que ves cuando visites el sitio de Amazon.com.mx.

Amazon.com.mx y Amazon México son nombres comerciales de Servicios Comerciales Amazon S. de R. L. de C.V. con domicilio en Juan Salvador Agraz No. 73, Piso 7 Colonia Lomas de Santa Fe, Delegación Cuajimalpa de Morelos, C.P. 05346, Ciudad de México.

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Phishing at Duke

🔒 <https://shib.oit.duke.edu/idp/authn/external?conversation=e1s1>



Duke Log In

You are on the correct Duke login page if the above begins with: <https://shib.oit.duke.edu>.

NetID
Current students, faculty, staff, sponsored guests

NetID

Password

[Forgot your password?](#)

Multi-factor Authentication

Use Duo Push (phone)
 Call phone (phone)
 Send SMS codes (phone)

Or, enter pass code/YubiKey®:
 [What are pass codes?](#)

Remember device for 72 hours [?](#)

[Forgot your device?](#) [Have a new device?](#)

Log In

For assistance, please visit [oit.duke.edu/help](#) or [dhts.duke.edu](#).



ray-kimono.jp/duke.edu/

Duke Log In

NetID
Current students, faculty, staff, sponsored guests

NetID

Password

[Forgot your password?](#)

Multi-factor Authentication

Pass codes have been sent to your phone.
Enter pass code/Yubikey®:
 [What are pass codes?](#)

Remember device for 72 hours [?](#)

[Forgot your device?](#) [Have a new device?](#)

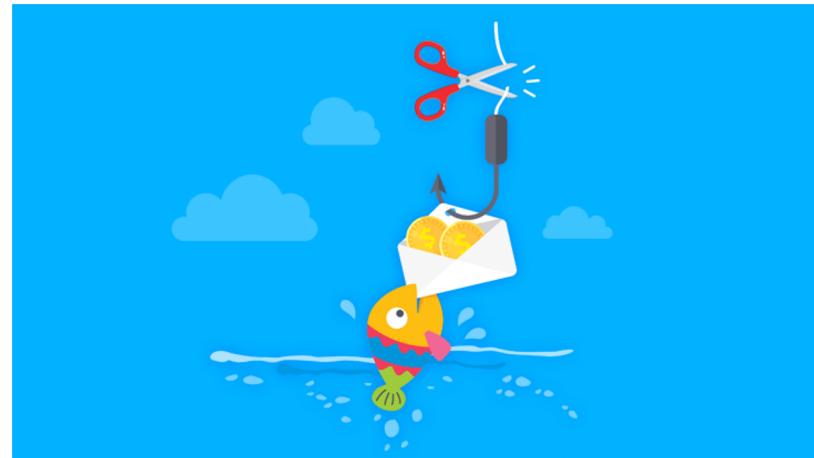
Log In

For assistance, please visit [oit.duke.edu/help](#) or [dhts.duke.edu](#).

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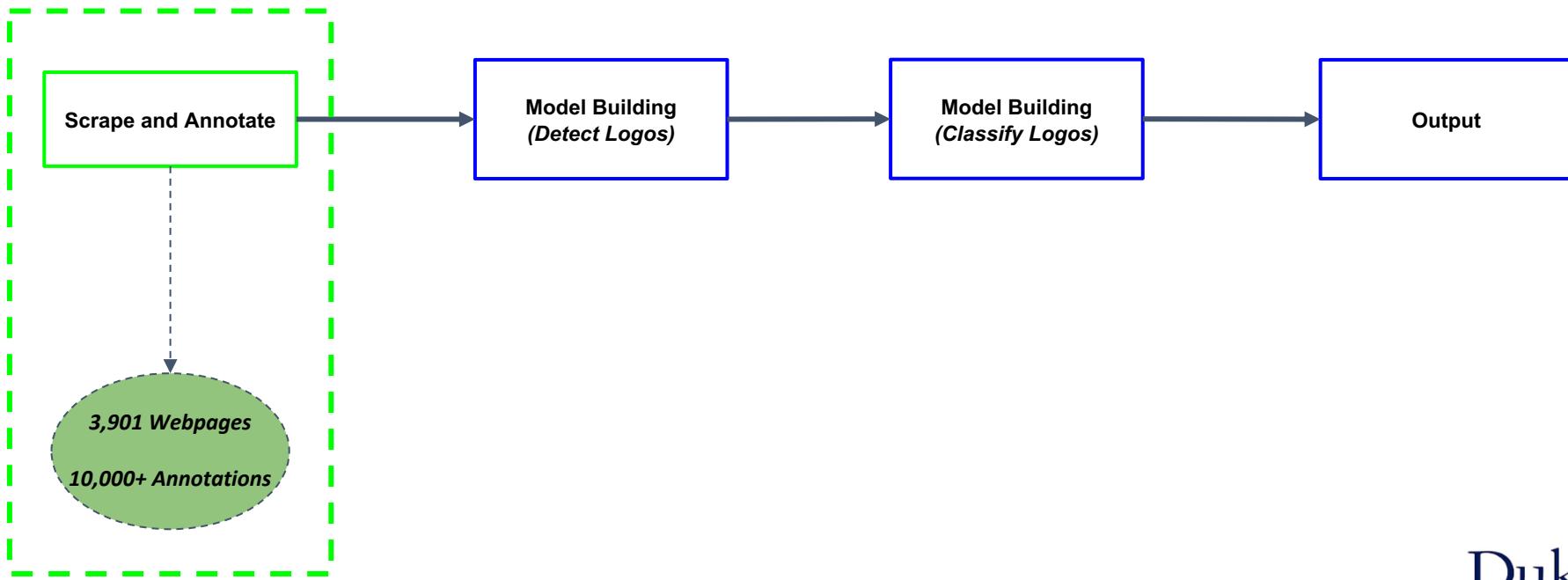
Project Goals

- Curate well-annotated database of website, email, document screenshots
- Develop robust logo detection and classification models
- Well-documented codebase
- Combat brand impersonation and misuse



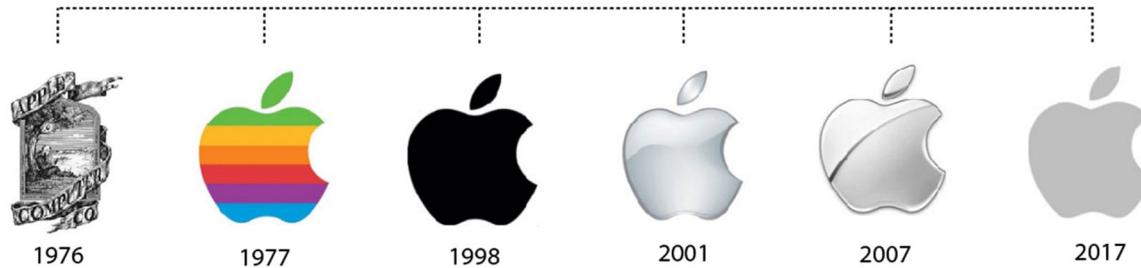
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Pipeline

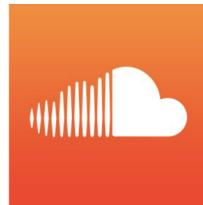


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Clean Logo Collection - 1000logos.com



Apple Logo History



SoundCloud

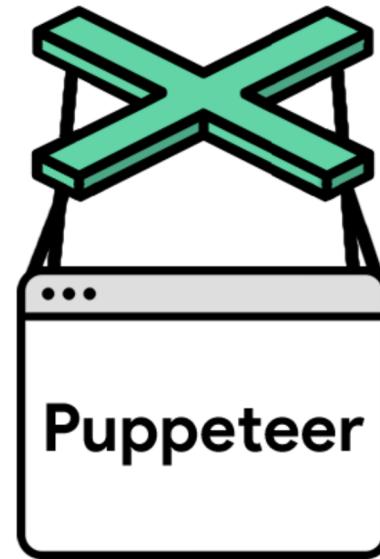


3DPrinterOS

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S&P 500 Screenshot Collection

- Scraped 3,901 from web pages using **Puppeteer (Puppeteer's Python API)**.
- Resolution: **1440x2560**.



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Variety Among Screenshots



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Size Variety Among Logos

This website uses cookies. If you continue without changing your settings, we'll assume that you are happy to receive all cookies on the vanillaplus.com website. [Dismiss](#)

The screenshot shows the homepage of vanillaplus.com. At the top, there's a dark banner for the "IoT GLOBAL AWARDS 2020" with a "ENTER NOW" button and a "SPONSOR" logo. Below this is a pink header with the "Vanilla+" logo, the text "THE GLOBAL VOICE OF TELECOMS IT", and a search bar. The main navigation menu includes Home, News, Verticals, Digital Edition, Events, Videos, VP Featured, Directory, Tech Trends, and Subscribe. A sub-navigation bar shows "You are here: Home > News Ericsson, RED Technologies and Qualcomm Inc. conduct the first Licensed Shared Access (LSA) pilot in France > Qualcomm-Logo.8.15". The main content area features a large image of the Qualcomm logo and a news article titled "Qualcomm-Logo.8.15" dated 08 January, 2016 at 8:39 AM. The article has social sharing icons. To the right is a sidebar with a "bics" logo and text about improving efficiency and throughput with seamless connectivity, along with a "DOWNLOAD case study" button. A vertical column on the far right contains social media links for Facebook, LinkedIn, YouTube, and Twitter, and a "SUBSCRIBE" button.

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You are here: Home > News Ericsson, RED Technologies and Qualcomm Inc. conduct the first Licensed Shared Access (LSA) pilot in France > Qualcomm-Logo.8.15

Qualcomm-Logo.8.15

08 January, 2016 at 8:39 AM

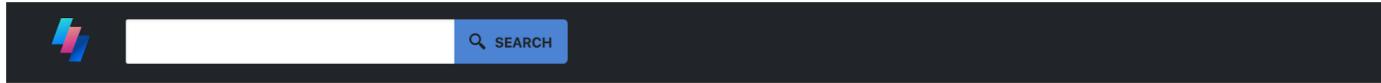
bics

Improve efficiency and throughput with seamless connectivity

DOWNLOAD case study

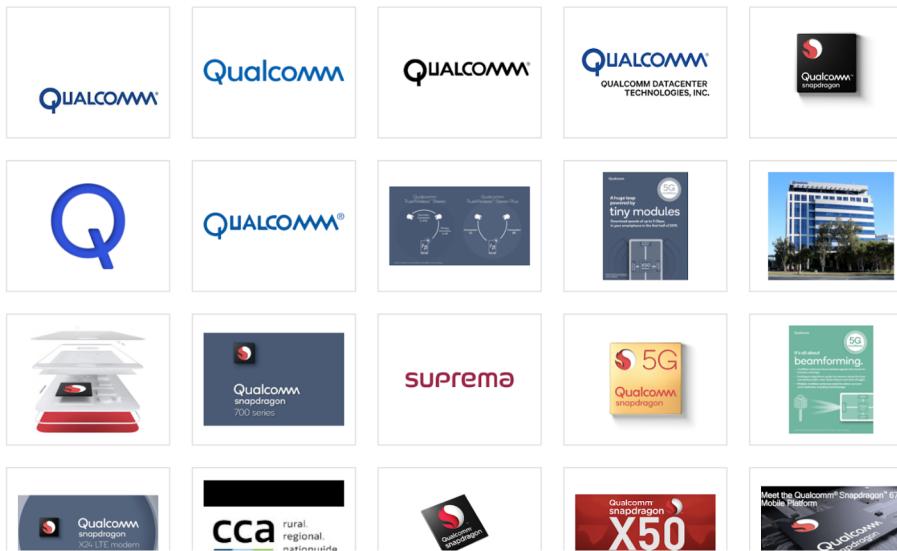
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Logo Count & Location Variety (~3.3 / Image)



Qualcomm Technologies Inc Logo

We have found 35 **Qualcomm Technologies Inc** logos. Do you have a better **Qualcomm Technologies Inc** logo file and want to share it? We are working on an upload feature to allow everyone to upload logos!



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Variety in Logo Density



Explore > Food and Drinks > Drinks > Non Alcoholic Drinks > **Monster Energy**



Article from [freelogovectors.net](#)

Monster Energy Logo Download Vector

Monster Energy Logo vector download, Monster Energy Logo 2020, Monster Energy Logo png hd, Monster Energy Logo svg cliparts



Article by **Nancy Anderson-Casey**

10

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People also love these ideas



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Darkened Logos

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GOT IT!

Creating Purposeful Leaders with Dentsply Sirona

INDUSTRY

Life Sciences

SOLUTION

Accelerating Purposeful Leadership

Dentsply Sirona

Dentsply and Sirona joined forces in 2016, to become

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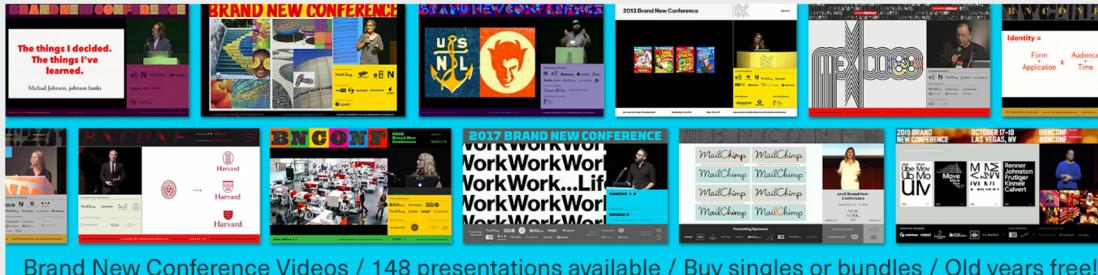


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New Name and Logo for Raytheon Technologies

Spotted

Raytheon



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No Logos - 375 Screenshots

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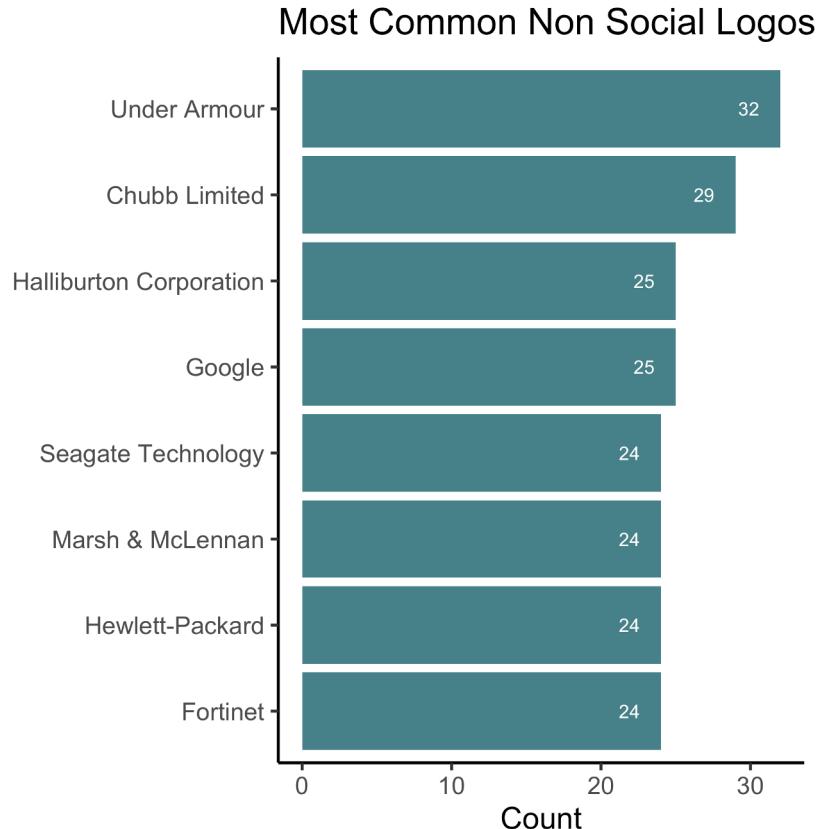
Strength and stability you can rely on.

You need rock-solid financial protection. With wise investments, solid ratings, and substantial reserves, we're your most reliable and resourceful partner yet.

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Image Annotation

- Undertaken using `labelImg`.
- Pascal VOC format used for annotation.
- Used consistent rules for labeling.
- Labeling inconsistencies resolved through an annotation *cleaning* script.



Sample Annotation

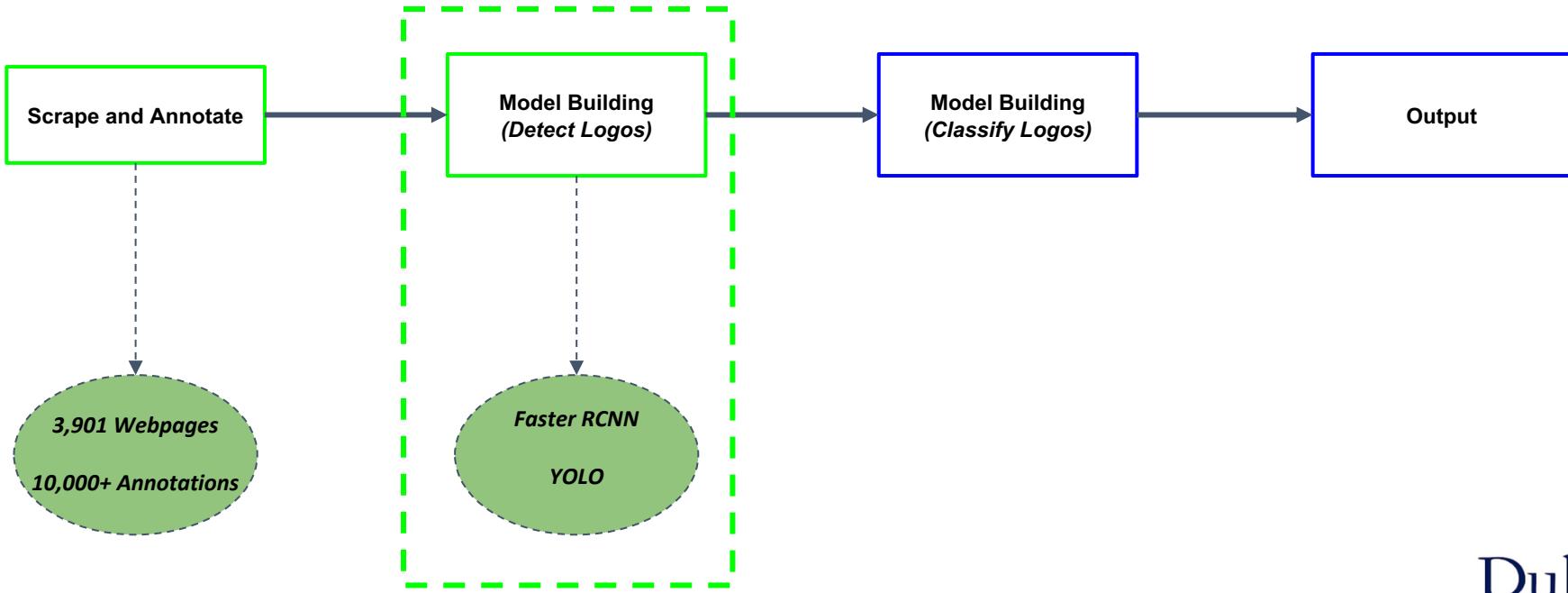
The screenshot shows the homepage of BraindNew, featuring a large "BraindNew" logo at the top left. The top right contains navigation links: Search, Submit Tips/Work, Log in, Browse, About, and a SUBSCRIBE button. Below the navigation is a grid of thumbnail images representing various Brand New Conference presentations. A blue banner at the bottom of the grid reads: "Brand New Conference Videos / 148 presentations available / Buy singles or bundles / Old years free!". Below the banner are social sharing icons for Facebook, Twitter, Email, Pinterest, and More, along with a "Share >" link. A "Spotted" section is visible on the right side.

New Name and Logo for Raytheon Technologies

The screenshot shows the Raytheon logo, which consists of the word "Raytheon" in a bold, red, sans-serif font. Below the logo is a stylized sunburst graphic made of red lines radiating from the bottom left. The entire logo is enclosed within a light gray rectangular frame with green corner markers.

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Pipeline



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Faster RCNN



Backbone:



Faster R-CNN: Towards Real-Time Object Detection with Region Proposal Networks

Shaoqing Ren, Kaiming He, Ross Girshick, and Jian Sun

Abstract—State-of-the-art object detection networks depend on region proposal algorithms to hypothesize object locations. Advances like SPPNet [1] and Fast R-CNN [2] have reduced the running time of these detection networks, exposing region proposal computation as a bottleneck. In this work, we introduce a *Region Proposal Network* (RPN) that shares full-image convolutional features with the detection network, thus enabling nearly cost-free region proposals. An RPN is a fully convolutional network that simultaneously predicts object bounds and objectness scores at each position. The RPN is trained end-to-end to generate highly accurate region proposals, which are used by Fast R-CNN for detection. We further show that Fast R-CNN can map a strong network by sharing the convolutional feature maps with the RPN. By combining the strengths of neural networks with “attention”, the RPN component tells the unified network where to look. For the very deep VGG-16 model [3], our detection system has a frame rate of 5fps (including all steps) on a GPU, while achieving state-of-the-art object detection accuracy on PASCAL VOC 2007, 2012, and MS COCO datasets with only 300 proposals per image. In ILSVRC and COCO 2015 competitions, Faster R-CNN and RPN are the foundations of the 1st-place winning entries in several tracks. Code has been made publicly available.

Index Terms—Object Detection, Region Proposal, Convolutional Neural Network.

1 INTRODUCTION

Recent advances in object detection are driven by the success of region proposal methods (e.g., [4]) and region-based convolutional neural networks (R-CNNs) [5]. Although region-based CNNs were computationally expensive as originally developed in [5], their cost has been drastically reduced thanks to sharing convolutions across proposals [1], [2]. The latest incarnation, Fast R-CNN [2], achieves near real-time rates using very deep networks [3], *when ignoring the time spent on region proposals*. Now, proposals are the test-time computational bottleneck in state-of-the-art detection systems.

Region proposal methods typically rely on inexpensive features and economical inference schemes. Selective Search [4], one of the most popular methods, greedily merges superpixels based on engineered low-level features. Yet when compared to efficient detection networks [2], Selective Search is an order of magnitude slower, at 2 seconds per image in a CPU implementation. EdgeBoxes [6] currently provides the best tradeoff between proposal quality and speed, at 0.2 seconds per image. Nevertheless, the region proposal step still consumes as much running time as the detection network.

• S. Ren is with University of Science and Technology of China, Hefei, China. This work was done when S. Ren was an intern at Microsoft Research. Email: sren@mail.ustc.edu.cn

• K. He and J. Sun are with Visual Computing Group, Microsoft Research. E-mail: {kaiminghe,jiansun}@microsoft.com

• R. Girshick is with Facebook AI Research. The majority of this work was done when R. Girshick was with Microsoft Research. E-mail: rbg@fb.com

One may note that fast region-based CNNs take advantage of GPUs, while the region proposal methods used in research are implemented on the CPU, making such runtime comparisons inequitable. An obvious way to accelerate proposal computation is to re-implement it for the GPU. This may be an effective engineering solution, but re-implementation ignores the down-stream detection network and therefore misses important opportunities for sharing computation.

In this paper, we show that an algorithmic change—computing proposals with a deep convolutional neural network—leads to an elegantly effective solution where proposal computation is nearly cost-free given the detection network’s computation. To this end, we introduce novel *Region Proposal Networks* (RPNs) that share convolutional layers with state-of-the-art object detection networks [1], [2]. By sharing convolutions at test-time, the marginal cost for computing proposals is small (e.g., 10ms per image).

Our observation is that the convolutional feature maps used by region-based detectors, like Fast R-CNN, can also be used for generating region proposals. On top of these convolutional features, we construct an RPN by adding a few additional convolutional layers that simultaneously regress region bounds and objectness scores at each location on a regular grid. The RPN is thus a kind of fully convolutional network (FCN) [7] and can be trained end-to-end specifically for the task of generating detection proposals.

RPNs are designed to efficiently predict region proposals with a wide range of scales and aspect ratios. In contrast to prevalent methods [8], [9], [1], [2] that use

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Equinix Expands Rio de Janeiro Data Center

New phase will nearly double the total capacity to meet customer demand for data center colocation



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Mar 31, 2015, 07:00 ET

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REDWOOD CITY, Calif. and RIO de JANEIRO, March 31, 2015 /PRNewswire/ -- [Equinix, Inc.](#) (Nasdaq: EQIX), the global interconnection and [data center company](#), today announced it is expanding its [Rio de Janeiro data center](#) known as RJ2. This new phase of expansion is scheduled to open in Q3 of this year and will enable Equinix to continue to meet



ZOETIS LOGO VECTOR

Zoetis vector logo - Free to download in EPS, SVG, PNG and JPG file formats



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How Restaurants are Using Modern
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vector



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for Nature logo
vector

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95%

Operations Update



YOLO v3



Backbone:

DarkNet 53

Redmon, Joseph, and Ali Farhadi. "Yolov3: An incremental improvement." *arXiv preprint arXiv:1804.02767* (2018).

YOLOv3: An Incremental Improvement

Joseph Redmon, Ali Farhadi
University of Washington

Abstract

We present some updates to YOLO! We made a bunch of little design changes to make it better. We also trained this new network that's pretty swell. It's a little bigger than last time but more accurate. It's still fast though, don't worry. At 320 × 320 YOLOv3 runs in 22 ms at 28.2 mAP, as accurate as SSD but three times faster. When we look at the old .5 IOU mAP detection metric YOLOv3 is quite good. It achieves 57.9 AP₅₀ in 51 ms on a Titan X, compared to 57.5 AP₅₀ in 198 ms on RetinaNet, similar performance but 3.8x faster. As always, all the code is online at <https://pjreddie.com/yolo/>.

1. Introduction

Sometimes you just kinda phone it in for a year, you know? I didn't do a whole lot of research this year. Spent a lot of time on Twitter. Played around with GANs a little. I had a little momentum left over from last year [12] [1]; I managed to make some improvements to YOLO. But, honestly, nothing like super interesting, just a bunch of small changes that make it better. I also helped out with other people's research a little.

Actually, that's what brings us here today. We have a camera-ready deadline [4] and we need to cite some of the random updates I made to YOLO but we don't have a source. So get ready for a TECH REPORT!

The great thing about tech reports is that they don't need intros, y'all know why we're here. So the end of this introduction will signpost for the rest of the paper. First we'll tell you what the deal is with YOLOv3. Then we'll tell you how we do. We'll also tell you about some things we tried that didn't work. Finally we'll contemplate what this all means.

2. The Deal

So here's the deal with YOLOv3: We mostly took good ideas from other people. We also trained a new classifier network that's better than the other ones. We'll just take you through the whole system from scratch so you can understand it all.

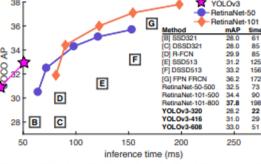


Figure 1. We adapt this figure from the Focal Loss paper [9]. YOLOv3 runs significantly faster than other detection methods with comparable performance. Times from either an M40 or Titan X, they are basically the same GPU.

2.1. Bounding Box Prediction

Following YOLO9000 our system predicts bounding boxes using dimension clusters as anchor boxes [15]. The network predicts 4 coordinates for each bounding box, t_x , t_y , t_w , t_h . If the cell is offset from the top left corner of the image by (c_x, c_y) and the bounding box prior has width and height p_w , p_h , then the predictions correspond to:

$$\begin{aligned} b_x &= \sigma(t_x) + c_x \\ b_y &= \sigma(t_y) + c_y \\ b_w &= p_w e^{t_w} \\ b_h &= p_h e^{t_h} \end{aligned}$$

During training we use sum of squared error loss. If the ground truth for some coordinate prediction is i_s our gradient is the ground truth value (computed from the ground truth box) minus our prediction: $i_s - t_s$. This ground truth value can be easily computed by inverting the equations above.

YOLOv3 predicts an objectness score for each bounding box using logistic regression. This should be 1 if the bounding box prior overlaps a ground truth object by more than any other bounding box prior. If the bounding box prior

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 OPEN

Hard Rock Rocksino - MGM Grand Logo MGM Resorts International Hotel



User [hemmmza](#) uploaded this Hard Rock Rocksino - MGM Grand Logo MGM Resorts International Hotel PNG image on May 22, 2019, 7:51 am. The resolution of this file is 850x385px and its file size is: 66.36 KB. The image can be used for Personal Use (non-commercial use) only. This PNG image is filed under the tags: [logo](#), [brand](#), [hotel](#), [las vegas](#), [mgm resorts international](#).

Daz 3D

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1,303 views

5 likes

66.36 KB

850x385

May 22, 2019

PNG (72dpi)

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 Take a closer look into 3D art

Daz 3D

The premier Free software for creating 3D Images. Create and animate with DAZ Studio



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OEM Snap On Tools Plastic Chrome Emblem Badge Logo

4.4 (7 votes)

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US \$10.69

US \$3.00

New user coupon on orders over US \$4.00

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Buyer Protection

 Money Back Guarantee Refund in 15 Days

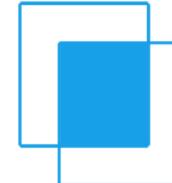
Results

Faster RCNN :

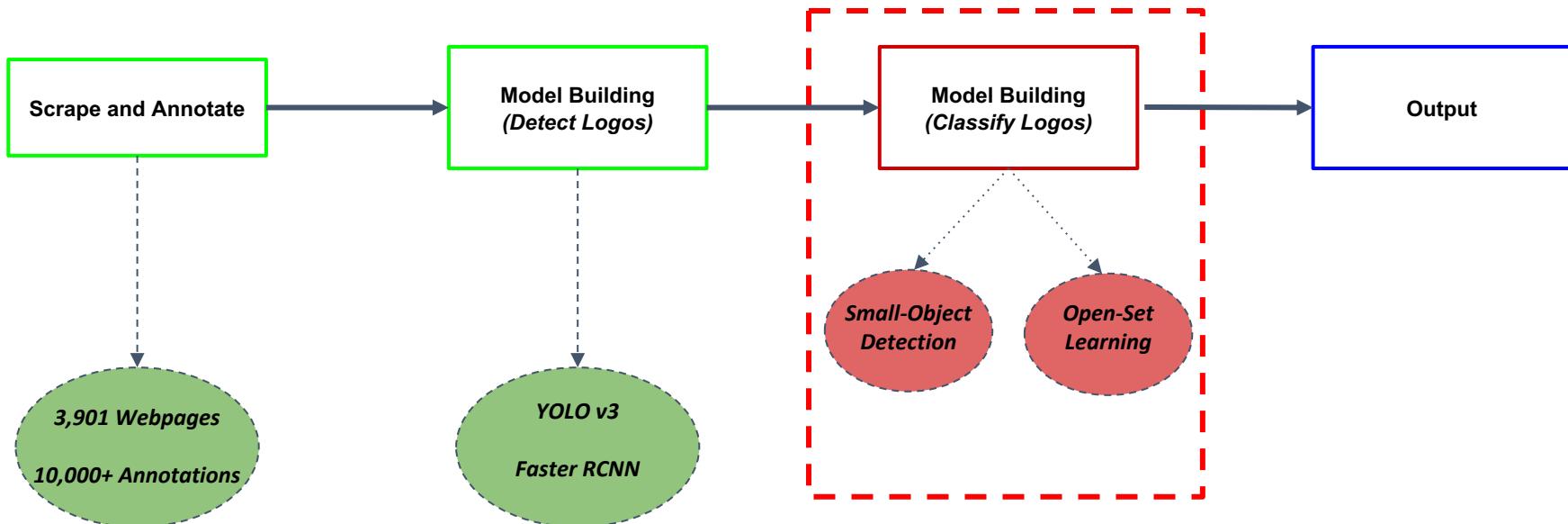
Intersection over Union (IoU)	Mean Average Precision (mAP %)
0.5	87.6%

YOLO v3 :

Intersection over Union (IoU)	Mean Average Precision (mAP %)
0.5	80.9%

$$\text{IoU} = \frac{\text{Area of Overlap}}{\text{Area of Union}}$$


Pipeline



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Open-Set Learning

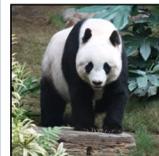
Train



Cat
(many-shot
class)



Fox
(medium-shot
class)



Panda
(few-shot
class)

Test



Cat
Fox
Panda



Cat
Fox
Panda

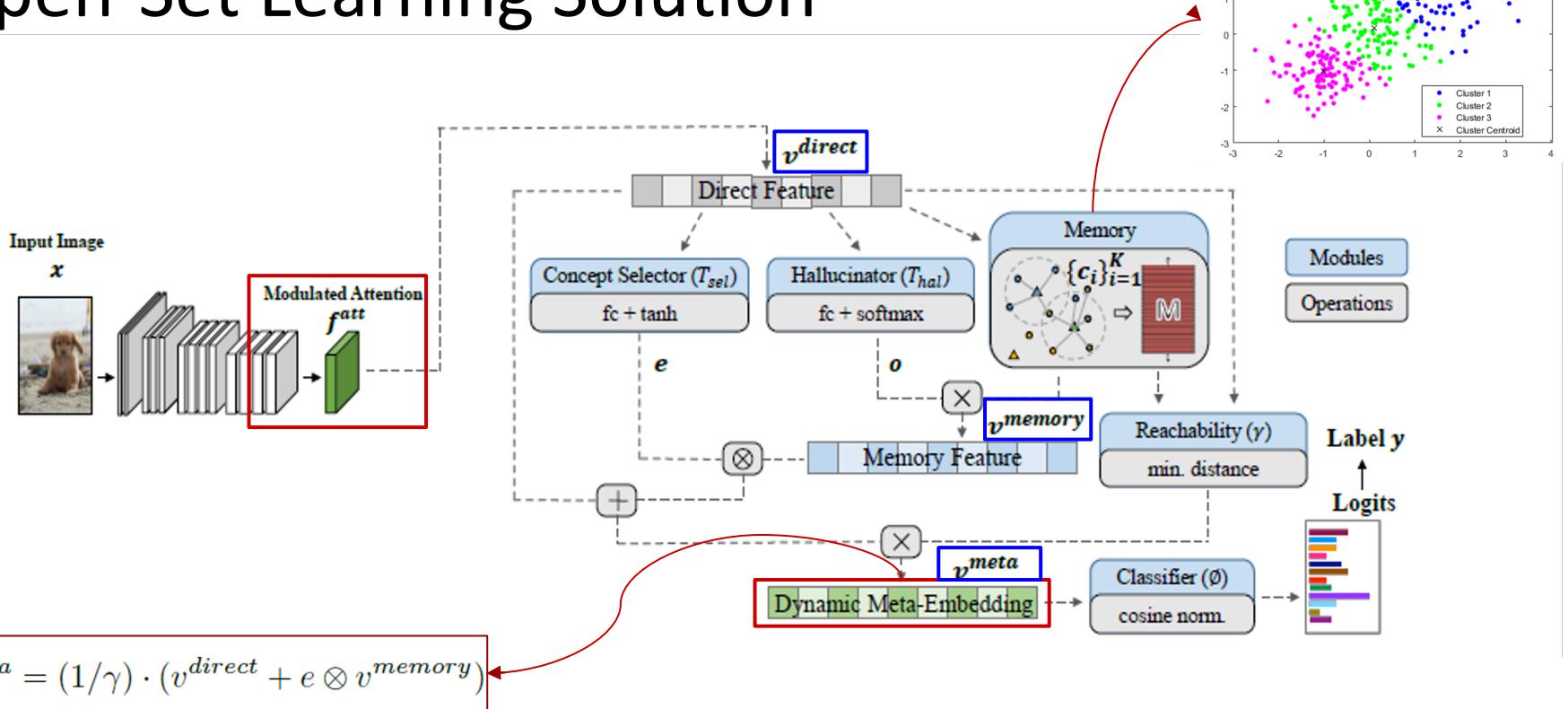


?

(open class)

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Open-Set Learning Solution



Small Object Detection

- Data Augmentation / Adaptive Zoom-In.
- Focal Loss.
- Use dilated convolutional layers i.e. expand the convolutional filters and use sparse parameters.

Documents/Emails

Form I-90

1 / 7

 Application to Replace Permanent Resident Card

Department of Homeland Security
U.S. Citizenship and Immigration Services

USCIS
Form I-90
OMB No. 1615-0082
Expires 07/31/2019

For USCIS Use Only	<input type="checkbox"/> Applicant Interviewed Date: _____	Receipt	Action Block
	Class of Admission		
	Remarks		

► START HERE - Type or print in black ink.

Part 1. Information About You

- Alien Registration Number (A-Number)
A-
- USCIS Online Account Number (if any)

Your Full Name

NOTE: Your card will be issued in this name.

- Family Name (Last Name)
- Given Name (First Name)
- Middle Name

- Has your name legally changed since the issuance of your Permanent Resident Card?

Mailing Address (USPS ZIP Code Lookup)

- In Care Of Name
- Street Number and Name
- Apt. Ste. Flr.
- City or Town
- State 6.f. ZIP Code
- Province
- Postal Code
- Country



Acknowledgements



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