**INTRODUCTION**

The social media era is well and truly underway and photo sharing app Instagram is one of the biggest hot topic social platforms.

**Instagram is essentially a camera smartphone app with a social community built behind it for sharing images. The app was purchased from its creators in 2012 by none other than the world’s leading social media network, Facebook.**

**Instagram was designed to capitalise on the ever improving technology crossover between smartphones and photography. Year on year new mobile devices focus on their built-in camera functions as a key selling point, mostly due to the increasing photo and short video-led world of social sharing**

**Right now it is a great time to be a brand on**[**Instagram.**](http://instagram.com/) **Better than Facebook, and better than twitter in terms of audience engagement, Instagram is generating a lot of interest from marketing experts. In fact, according to a recent Forrester report, top brands Instagram posts were generating a per-follower engagement rate of 4.21%, 58 times more engagement per follower than Facebook, and 120 times more engagement per follower than twitter.  
   
Instagram is currently the social media darling for brands and businesses to reach their customer base. For a start, Instagram is growing, in May 2014 Instagram announced that it had reached 200 million monthly users and 60 million photos worldwide are updated daily. The Instagram platform lends itself well.**

**WORKING OF INSTAGRAM**

**Creating your account:**

**Because Instagram is primarily a mobile app, you'll have to download it to your mobile device before you can sign up for an account. Instagram is free in both the Apple App Store and the Google Play store**

**Navigating the app:**

**Navigating the Instagram app is fairly simple. Across the bottom of the app, you'll see five buttons that will take you to where you need to go. From left to right, you'll see the Home tab, a Search tab, a camera button (which is where you'll go to create a new post), an Activity tab and your Profile tab.**

**Creating content:**

**Instagram allows users to post two different types of content: photos and videos. To post a new photo or video to Instagram, tap the camera button on the bottom of your screen. This will open your phone's camera, and you can choose to either take a new photo or video, or select one from your camera roll. You then tap the Next button, and you can start editing.**

**Web access:**

**Instagram is accessible on the Web, but it has very limited functions. On the Web, you can log in and view your timeline and profile as well as other users' profiles, and you can like and comment on photos.**

**INSTAGRAM TECHNOLOGIES**

**The descriptionbellow shows how the system has evolved in the just-over-1-year that have been live, and while there are parts always re-working, this is a glimpse of how a startup with a small engineering team can scale to our 14 million+ users in a little over a year.**

**Instagram core principles when choosing a system are:**

* **Keep it very simple**
* **Don’t re-invent the wheel**
* **Go with proven and solid technologies when you can**

## OS / Hosting:

## **They run Ubuntu Linux 11.04 (“Natty Narwhal”) on Amazon EC2. They found previous versions of Ubuntu had all sorts of unpredictable freezing episodes on EC2 under high traffic, but Natty has been solid. They only got 3 engineers, and our needs are still evolving, so self-hosting isn’t an option we’ve explored too deeply yet, though is something we may revisit in the future given the unparalleled growth in usage.**

## Load Balancing:

## **Every request to Instagram servers goes through load balancing machines; we used to run 2**[**nginx**](http://nginx.org/)**machines and DNS Round-Robin between them. The downside of this approach is the time it takes for DNS to update in case one of the machines needs to get decomissioned. Recently, we moved to using Amazon’s Elastic Load Balancer, with 3 NGINX instances behind it that can be swapped in and out (and are automatically taken out of rotation if they fail a health check). We also terminate our SSL at the ELB level, which lessens the CPU load on nginx. We use Amazon’s Route53 for DNS, which they’ve recently added a pretty good GUI tool for in the AWS console.**

**Application Servers:**

**Next up comes the application servers that handle our requests. We run**[**Django**](https://www.djangoproject.com/)**on Amazon High-CPU Extra-Large machines, and as our usage grows we’ve gone from just a few of these machines to over 25 of them (luckily, this is one area that’s easy to horizontally scale as they are stateless). We’ve found that our particular work-load is very CPU-bound rather than memory-bound. They use**[**http://gunicorn/**](http://gunicorn/)[**Python WSGI HTTP Server for UNIX**](http://gunicorn.org/)**as our WSGI server; we used to use mod\_wsgi and Apache, but found Gunicorn was much easier to configure, and less CPU-intensive. To run commands on many instances at once (like deploying code), we use**[**Fabric**](http://fabric.readthedocs.org/en/1.3.3/index.html)**, which recently added a useful parallel mode so that deploys take a matter of seconds.**

**Data storage:**

**Most of our data (users, photo metadata, tags, etc) lives in PostgreSQL.**

**Our main shard cluster involves 12 Quadruple Extra-Large memory instances (and twelve replicas in a different zone.**

**They havefound that vmtouch is a fantastic tool for managing what data is in memory, especially when failing over from one machine to another where there is no active memory profile already.**

**They use to parse the output of a vmtouch run on one machine and print out the corresponding vmtouch command to run on another system to match its current memory status.**

**The photos themselves go straight to Amazon S3, which currently stores several terabytes of photo data for us. They use Amazon CloudFront as our CDN, which helps with image load times from users around the world.  
  
We also use**[**Redis**](http://redis.io/)**extensively; it powers our main feed, our activity feed, our session, and other related systems.**

**Task Queue & Push Notifications:**

**When a user decides to share out an Instagram photo to Twitter or Facebook, or when we need to notify one of our**[**Real-time subscribers**](http://instagram.com/developer/realtime/)**of a new photo posted, we push that task into**[**Gearman**](http://gearman.org/)**, a task queue system originally written at Danga. Doing it asynchronously through the task queue means that media uploads can finish quickly, while the ‘heavy lifting’ can run in the background. We have about 200 workers (all written in Python) consuming the task queue at any given time, split between the services we share to. We also do our feed fan-out in Gearman, so posting is as responsive for a new user as it is for a user with many followers.**

**Monitoring:**

With 100+ instances, it’s important to keep on top of what’s going on across the board. We use [Munin](http://munin-monitoring.org/) to graph metrics across all of our system, and also alert us if anything is outside of its normal range. We write a lot of custom Munin plugins, building on top of [Python-Munin](http://samuelks.com/python-munin/), to graph metrics that aren’t system-level .

They use [Pingdom](http://pingdom.com/) for external monitoring of the service. For Python error reporting, we use [Sentry](http://pypi.python.org/pypi/django-sentry), an awesome open-source Django app written by the folks at Disqus. At any given time, we can sign-on and see what errors are happening across our system, in real time.

**FLOW OF DATA**

The following steps are used for the flow of data in instagram:

1. Downloading the app
2. Launch the app
3. Create the app
4. Follow Friends
5. Use the tabs of instagram
6. View the news and updates
7. Like and comment other people photo
8. View your own profile
9. Adding your photos
10. Apply filters
11. Share photos
12. Complete the process

**FEATURES OF INSTAGRAM**

## 1. Manage your filters

**#nofilter is always the way to go. Okay, if you still love the filters (there are now 40 of them!), you don't need them all clogging up your filter strip, forcing you to scroll through all of them. You can actually pick which filters you want to appear and sort them in the order you want them to appear.**

## 2. Send posts in your feed to friends

**Did you know that Instagram has a built-in messaging system called Instagram Direct? Well, it does — it's the box icon in the top right corner. Instagram Direct's main purpose is to let you send private photos (with accompanying text) to friends or groups, but you can also use it to send photos you see in your Instagram feed to your friends.**

**To send a photo from your feed to your friend, tap the right arrow icon below a 'gram and it'll bring up a "SEND TO" list, and from there just select the person you want to send it to.**

## 3. Straighten, adjust perspective, and rotate photos

**This only works if your photo is cropped to post as a square (1:1) and not any other aspect ratio. To access the straighten and adjust perspective tools, first make sure your photo is a square. Then tap the wrench icon and then tap "Adjust" (it won't appear if your photo is not a square).**

**From there, straightening a photo is as easy as swiping left and right on the slider to adjust the degree. The same thing goes for the tweaking the vertical and horizontal perspective. You can also rotate a photo by hitting the rotate icon in the upper right corner.**

## 4. Link more social network accounts

**Facebook and Twitter are the two most popular social networks for sharing Instagrams, but there are a handful more that can be linked. Tumblr, Flickr, Swarm, Weibo, Ameba, ミクシィ/Mixi, and VKontakte are also supported**.

## 5. Use Instagram apps

**Instagram is more than just the Instagram app. The company actually has three standalone apps that are pretty useful in aiding your Instagramming.**

## 6. See the posts you've liked

**The whole Instagram economy revolves around liking people's photos and videos. But what if you want to see what you've actually liked or maybe go back and unlike them?**

**Instagram saves the 300 most recent 'grams you've liked. To see them, hit the gear icon from your profile, and under "ACCOUNT" tap on "Posts You've Liked." You can sort it in a grid or list view.**

## 7. See all the photos you're tagged in

**Hey Mr./Ms. Popular! Look, I'm not that cool, but maybe you are. Maybe you've got tons of people tagging you in their photos and you're too busy to track them down all on your own.To see all the photos (you can't be tagged in a video) you're tagged in, go to your profile and hit the person-in-a-tag icon.**

## 8. Edit captions

Made a typo in your caption and don't want to look like a complete idiot? Don't worry, you can fix it.

## 9. Use gestures

**The smallest things always go unnoticed. If for some reason you like using gestures, you can do so to switch between the Library, Photo and Video mode after you've hit the camera button on the bottom of the menu bar. To quickly switch between the three modes, swipe left and right.**

## 11. Speed up loading times (but just by smidge)

**By default, Instagram is set to "Use Less Data." The settings says "Using less cellular data may affect your experience on Instagram.**

**MINIMUM SDK VERSION**

**The minimum sdk version of instagram is 4.1(JellyBean, API 16)**

#### Instagram apk file Information:

**File name:  com.instagram.android\_v7.20.0-26875547\_Android-4.1.apk  
Version:  7.20.0 (26875547)  
Uploaded:  April 3, 2016 at 8:41PM GMT+00  
File size:  15.97MB (16,747,164 bytes)  
Minimum Android version:  Android 4.1+ (Jelly Bean, API 16)**

**CONCLUSION**

**This study on Instagram usage and DePaul students gives a closer look at how college students are using the photo-enhancing app and why they are choosing it as their go-to photo editor. As things are becoming increasingly mobile and efficient, an app like Instagram is the perfect way for people to edit their personal photos on the go. The social aspect of the app is another key feature that our target audience looks for, the sharing features on Instagram is the complete way to share your photos with your friends and family on your various social media sites. Our freeform questions in our survey led us to learn that the spread of Instagram use has been aided by people wanting to expand their photography skills and interact with their peers. Responses showed that Instagram allows its users to engage with other users and broadcast their exciting lifetime moments to the technological world. These two concepts are very important to today's youth.**

**In this study we were able to successfully draw connections between devices used to edit photos and the types of programs used for photo editing. We were able to find out the types of means students get from using Instagram, such as social engagement and event documentation, and we were able to see what kind of photos people are sharing, and with whom they're sharing with.**