Camera Phone Photography for Social Media

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Abstract:
People use photography to capture feelings, events and personal experiences, and to communicate with others. The latest innovations not only support interactions of people with technology, but also facilitate new forms of interaction with others. Camera phones in particular are examples of such technology. In recent years their primary function has changed from being a medium of verbal or text communication to one that uses pictures to facilitate people's social life. Mobile phones with integrated camera and video features have changed the way people communicate, interact and shape their social activities.

But almost everyone makes excuses when publishing photos taken with a camera phone, because they are unacceptably blurry and show almost nothing but smeared lights and the camera's own noise. Image blur due to unsteady grip is a significant problem for camera phones. If we take pictures in daylight, we may be satisfied with the quality of mobile images. However, when we move to a less bright indoor environment, we start to notice the difference. Mobile images appear to have more noise, they are usually blurry and lack detail in shadows. Things change once we are under low luminance. Double-check the height and width of every image we post on our favorite channels and making sure these images look good in all possible formats is a time-consuming and frustrating process, especially since the content is accessible from a variety of devices.

The study is based on experimental researches on how to take high quality pictures with a camera phone and use them in social media channels

This study aims to get high quality pictures from camera phones, even in low light conditions and use these images in social media channels.

The study thus concludes that, the standard exposure did not achieve high quality results in low-light conditions, while using additional photographic techniques such as "Blurless Exposure" contributed to obtain high quality images even in low-light conditions.In addition to following the rules of camera phone photography, contributed to improving the quality of the image, it's extremely important that our content is high quality and not blurred, pixilated or otherwise deprecated in any way, social media channels compress the images and this affects badly on the image quality. We need to get our facts and figures straight. The use of images correctly in social media channels and following the official recommendations of each social media channel, contributes to post and use images correctly.

Introduction
Personal photography has been a part of the lives of many people for a long time. Photos not only present a documentary of someone's life, but are also of great sentimental value. People use photography to capture feelings, events and personal experiences, and to communicate with others. The latest innovations not only support interactions of people with technology, but also facilitate new forms of interaction with others. Camera phones in particular are examples of such technology. In recent years their primary function has changed from being a medium of verbal or text communication to one that uses pictures to facilitate people's social life. Mobile phones with integrated camera and video features have changed the way people communicate, interact and shape their social activities. With the rapid growth in the camera phone market and

Continued improvements in technical performance, picture quality, and so on, camera phones might supplant the use of digital cameras, in many everyday settings.

In recent years, there has been substantial interest in digital photography, with a particular focus on

how the digital medium facilitates sharing of images.

Some previous studies have addressed the subject of social uses of camera phones, In **2005**, Kindberg, T., Spasojevic, M., Fleck, R. & Sellen, A. Presented a study entitled "An in-depth study of camera phone use", and they investigated what people capture on mobile phones and what they do with these images. They presented a six-part taxonomy that describes the intentions behind the camera phone images. These encompass affective intentions enriching a mutual experience, communication with absent friends or family and personal reflection or reminiscing; and functional intentions supporting different tasks mutual, remote and personal. (Kindberg, Spasojevic, Fleck, & Sellen, 2005)

The relevance of social relations and uses of photographs was also identified by Van House, N., Davis, M., Ames, M., Finn, M. & Viswanathan, V. In **2005**. They presented a research entitled " The Uses of Personal Networked Digital Imaging: An Empirical Study of Camera phone Photos and Sharing.". In this study, they discovered five different sets of social uses of personal photos: creating and maintaining social relationships, constructing personal and group memory, self-expression, self-presentation, and functional communication with self and others (Van House, Davis, Ames, Finn & Viswanathan, 2005).

Nowadays, mobile phone cameras have enough megapixels. The phones have enough storage capacity. Even the lens quality is not as bad as before.

Compared to previous studies, this study will focus on camera phone image quality in addition to using these images in social media channels according to the official recommendations.

Almost everyone makes excuses when publishing photos taken with a camera phone, because they are unacceptably blurry and show almost nothing but smeared lights and the camera's own noise. Image blur due to unsteady grip is a significant problem for camera phones.

If we take pictures in daylight, we may be satisfied with the quality of mobile images. However, when we move to a less bright indoor environment, we start to notice the difference. Mobile images appear to have more noise, they are usually blurry and lack detail in shadows. Bright areas turn into pure-white spots. Faces seem unnaturally flat, especially when using a flash. Image blur does not appear in all shooting conditions. In fact, there is plenty of light reaching the sensor to get a perfect image in bright light / outdoor. Things change once we are under low luminance.

Some solutions were proposed to solve these problems such as **Blurless Exposure** technology developed by Almalence, Inc. that combines a special exposure mode and software post-processing to greatly reduce the blur effects due to hand shake and blur due to the motion of the objects in the scene and improve dynamic range. The majority of CMOS and CCD sensors available on the market can be "tricked" into this special exposure mode.

Another technology is **Multiple Shot Fusion Technique**, it might be possible to attain similar results as **Blurless Exposure** for hand shake blur and noise, but it will make blur induced by the motion of the objects in the scene more severe. On the contrary, the proposed solution **Blurless Exposure** brings reduction in both blur due to hand shake and blur due to the motion of the objects in the scene (Almalence, 2015).

For using images in social media channels, we generally benefit from photographic rules such as the rule of thirds. Consider the format of the cover image in Facebook Timeline. It's a long, rectangular space and lends itself to compositions that feel "widescreen" in nature. If we're shooting a series of images that we hope to use as cover photos on Facebook, we will definitely want to keep this in mind. But don't stop there. The cover image on Facebook is only one format and is a special bit of landscape.

The profile picture we maintain on social channels – Facebook, Twitter, YouTube, Foursquare and many others – are square and that same rule of thirds simply won't work. However, if we are shooting a series of photos that we hope to use for profile image, we frame it straight in the center of the photo and give it a lot of exposure for the photo. We have to remember that we're going to be cropping this image down to a square, so a photo that's longer than it is tall will ultimately mean our fans will see less of the subject in the tiny thumbnail.

Whether we are a social media expert, or a newbie in charge of managing content, we will always have to double-check the height and width of every image we post on our favorite channels. Making sure these images look good in all possible formats is a time-consuming and frustrating process, especially since the content is accessible from a variety of devices. We'll tackle this issue. We will look at some of the most popular social media sites, and take all the information we need in selecting the best sizes and dimensions of the images that we want to use their

(George, 2015)

This study aims to get high quality pictures from camera phones, even in low light conditions and use these images in social media channels.

Research Problem

§ How can we take high quality pictures with camera phones, even in low light conditions to be used in social media?

§ How do photography rules influence the use of images in social media channels?

§ How can we check the dimensions of the images posted on social media channels and be sure they look good?

Objectives:

§ Access photography techniques and rules by camera phone to get high quality pictures even in low light conditions that can be used in social media channels.

§ Take advantage of the photography rules when using these images in social media channels as cover photos, profile pictures, or sharing.

§ Selecting the best sizes and dimensions of the images that we want to use in social media, according to the official recommendations of each site.

Methodology:

The study is based on experimental researches on how to take high quality pictures with a camera phone and use them in social media channels.

Theoretical Framework

1. Social Uses of Camera phone

Consistent with previous studies, we found that people take photos for individual purposes, which are evocative of special events, trips, holidays, or beautiful landscapes. A general practice is to share them with friends and family, which establish their social interaction. Sharing digital photos is often done remotely via email or by posting them on the web. However, we observed three specific practices that occur between participants who are co-located. These are "sharing a moment now", "sharing a moment later" and "using photos to initiate social interaction with strangers" (Stelmaszewska, Fields & Blandford, 2006).

1.1 Social Interaction With People in Co-present

One of the practices of using a camera phone is taking a 'spur of the moment' photo or video and share it with people in co-present settings (i.e. Present at the scene). People reported having fun when taking photos or videos of their friends' behavior, and then viewing them collectively in-situ. This kind of behavior seems to motivate and shape social interaction (Stelmaszewska, Fields & Blandford, 2006).

1.2 Social Interaction to Document The Social Relationships

A social interaction at co-present settings were reported to be associated with the participants' experience when

Viewing pictures/videos stored on individuals' phones, but taken previously. The intention behind such activity was to share memories of special events, report on events to those who were absent at the time of events, create or share a documentary of a friendship or family life. People were more inclined to use photos for storytelling, which is in line with. However, since phone screens are fairly small (remarked upon by participants) it was common to use other media like computer or TV to display photos in order to improve visibility of pictures and enhance the experience of their viewers. Sharing photos at co-present settings proved to be a way of social interaction that brings fun and joy to people's lives (Stelmaszewska, Fields & Blandford, 2006).

1.3 Social Interaction for New Social Relationships

Social interaction can take different forms from text, graphics, to interactive games. All of them occur between friends or members of family sharing the same technology (i.e. Computer, digital camera or mobile/camera phone). The most striking findings were the camera phones being used as a new medium for initiating social interaction with strangers. It was conveyed that people take photos of others (who they Like) to show their interest, introduce themselves, or simply start a new social relationship. This kind of behavior typically occurred in public spaces such as clubs where people usually gather for social events and interaction with others is a part of the entertainment (Stelmaszewska, Fields & Blandford, 2006).

2. Camera phone Photographic Rules

For the best quality, camera phone users should follow the following rules

2.1 Keep The Lens Clean

Over time the camera lens can collect lint and create a blurred image. Just give it a good wipe with a clean cloth (Rowse, 2015).

2.2 Set The Camera to The Highest Resolution

The higher the resolution, the better. If we have a newer Smartphone with a higher quality lens, we're in good shape. But we can still take good pictures on a lesser quality one.

Most camera phones have a low, medium and high resolution setting (picture quality), so no matter what device we have, make sure the camera is set to the highest resolution possible, otherwise we'll lose some detail and come out with a muddy image. We may not be able to tell the difference on the phone's display, but we'll definitely see the improvements on a computer screen (Meyers,2013)

2.3 Lighting Subjects and Image Clarity

The better lit our subject is, the clearer our image is likely to be. If possible shoot outside or turn on lights when shooting inside. If we're turning on the lights in a room to add extra light to our shot we should be aware that artificial light impacts the color cast in our shots and we might want to experiment with white balance to fix it. Some cameras come with a built in flash or light – this can really lift a shot and add clarity to it, even if we're shooting outside (in a sense it becomes a fill flash). If our camera doesn't have a flash or light we should avoid shooting into bright lights as we'll end up with subjects that are silhouetted. Sunlight can be our friend and our enemy. Having a little sun shine down on our subject could illuminate it enough for a perfectly exposed picture, but having a sunbeam hit our model in the face isn't very attractive. An overcast day is perfect for a cool and happy image. But if the sun's shining bright, place or subject in the brightest shade possible—we don't want them in direct light or complete darkness. If shooting indoors, have the windows open or the lights on. In low light situations, our images will appear dark and grainy, so we should take advantage of our phone's built-in flash (if it has one). We can also use our flash as a fill light in other lighting situations (Meyers,2013). See figure (1)

Figure 1: Light affects the shot in the right image

We should pick our subject carefully, bearing in mind the usual limitations of camera phones:

§ Avoid subjects in low light, at least if we want them to be consistently lit. The small sensors in camera phones cannot run at high ISO speeds (i.e. High sensitivity to light, permitting indoor photos without a flash) without introducing large amounts of noise. In most circumstances, this precludes indoor photos other than in the best-lit places.

§ Avoid bright reflections, and other "hots pots". This will either force the camera to under-expose the rest of the shot, or cause the camera to blow out the highlights on the brightest parts of the shot. The latter is worse, since it is sometimes possible to extract details from parts of the image that are too dark, but impossible to recover blown highlights (since there is no detail therein to extract). On the other hand, this can be used to artistic ends, such as with bright light streaming through a window. People pictures will look best in diffuse lighting such as open shade, under a cloudy sky, or in bright artificial light. Try to include bright colors, which will show up well, rather than a range of light and dark areas (which will both lose detail).

2.4 Close-up photography

One of the most common mistakes with camera phone images is that their subject ends up being a tiny, unrecognizable object in the distance. Camera phone images tend to be small due to low resolution (although this is changing) – so fill up our view finder with our subject to save having to zoom in on the subject in editing it later (which decreases quality even more). However, getting too close on some model camera phones creates distortion and focusing issues (particularly if the camera phone doesn't have a macro or close focusing mode). See figure (2)

Figure 2: The upper image is good, but the lower one is better

We must follow the following observations:

§ Avoid anything that requires tight focusing. Due to their very short focal lengths (the distance between a camera's optical element

and the sensor, again, owing to their small sensors), camera phones excel at shots where nearly all of a scene is in focus. However, this (and their typically weak auto-focus mechanisms) usually precludes focusing on objects very close to the phone, or having a very shallow depth of field to get a blurred background effect (which can, with varying degrees of authenticity, be faked in software later anyway).

§ Avoid "mirror shots", as well as arm-length shots taken by ourselves. Aside from them being clichèd, they require taking photos indoors, and mirrors also often end up confusing auto-focus mechanisms. Get outside and get someone to take the photo for us. If we'd rather take the picture ourselves, most camera phones have an auto-timer feature so we can set the phone somewhere and get into the frame (Kodak, 2015).

2.5 Focus Lock

If our subject is not in the center of the picture, we need to lock the focus to create a sharp picture. Most auto-focus cameras focus on whatever is in the center of the picture. But to improve pictures, we will often want to move the subject away from the center of the picture. If we don't want a blurred picture, we'll need to first lock the focus with the subject in the middle and then recompose the picture so the subject is away from the middle.

Usually we can lock the focus in three steps. First, center the subject and press and hold the shutter button halfway down. Second, reposition your camera (while still holding the shutter button) so the subject is away from the center. And third, finish by pressing the shutter button all the way down to take the picture (Kodak, 2015). See figure (3)

Figure 3: The upper image shows that the Subject is not in focus and the lower one is better

2.6 Stabilize The Phone

To get the cleanest image possible from our camera phone, we should stabilize it. Jittery hands cause blurring. We have to keep in mind that many camera phones suffer from 'shutter lag' (is the time between when we press the shutter and when the camera takes the shot can be a second or so). This means we need to hold the camera still a little longer to ensure it doesn't take a shot as we're lowering it away from the subject.we shouldn't move our device after hitting the capture button, we have to give it a few seconds to process to make sure it captures the picture before we move and make sure we figure out the timing, so when something interesting happens, we'll have a good idea of when to point and press the shutter release. In low light situations, camera phones tend to slow down the shutter speed to let more light in, which means we have a longer opportunity to capture the moment. Obviously, a tripod would do wonders, but if we don't have one accessible (since it is a mobile phone), we can use both hands to keep it steady. Also, brace our upper arms against our body for more support (Meyers,2013). See figure (4)

Figure 4: Tripod for mobile phone

2.7 Photography With a Plain Background

A plain background shows off the subject we are photographing. When we look through the camera viewfinder, force ourselves to study the area surrounding our subject. We have to make sure no poles grow from the head of the person being photographed and that no cars seem to dangle from his ears (Kodak,2015). See figure (5)

Figure 5: A plain background shows off the subject we are photographing

2.8 The Rules of Composition

The rule of thirds is a basic photography rule, so make sure we have it down. Having our subject directly in the middle creates flat and boring photos. Using the rule of thirds will help bring life to our photos. When composing our picture,

imagine two horizontal lines splitting the frame into three equal parts. Then imagine the same thing with two vertical lines, so we have a nine-square grid. Place our horizon and other such fillers on the grid lines, leaving the intersecting points for the interesting subject matter. See figure (6)

Figure 6: The rule of thirds

But then also we have to remember that the beauty of a camera phone is its ability to break all conventions – some of the best shots around break all the rules. So shoot from the hip, the floor, up high, up close – anything goes (Rowse, 2015).

2.9 Eye Level Angle

When taking a picture of someone, we should hold the camera at the person's eye level. For children, that means stooping to their level, and our subject need not always stare at the camera. All by itself that eye level angle will create a personal and inviting feeling that pulls us into the picture (Kodak, 2015). See figure (7)

Figure 7: The picture on the left shows shooting at too high level and the picture on the right is better

2.10 Using Flash on Sunny Days

Bright sun can create unattractive deep facial shadows. Eliminate the shadows by using our flash to lighten the face. When taking people pictures on sunny days, we turn our flash on. We may have a choice of fill-flash mode or full-flash mode. If the person is within five feet, we use the fill-flash mode; beyond five feet, the full-power mode may be required.

On cloudy days, we use the camera's fill-flash mode if it has one. The flash will brighten up people's faces and make them stand out. Also, we may take a picture without the flash, because the soft light of overcast days, sometimes gives quite

pleasing results by itself (Kodak,2015). See figure (8)

Figure 8: The upper image is dark and the lower one is after using flash

2.11 The Camera's Flash Range

The number one flash mistake is taking pictures beyond the flash's range. Why is this a mistake? Because pictures taken beyond the maximum flash range will be too dark. For many cameras, the maximum flash range is less than fifteen feet—about five steps away. If we don't know our camera's flash range, we can position ourselves so subjects are no farther than ten feet away (Kodak,2015). See figure (9)

Figure 9: The upper image is without flash and the lower one is with flash

2.12 White Balance

An increasing number of camera phones come with adjustable white balance which allows us to modify the color balance in our images based on shooting conditions. Experiment with this feature to get a good feel for the impact that it has on our shots (Meyers, 2013)

2.13 Take More Pictures to Experiment

Professionals may want to get it right on the first try, but a camera as mobile as the one of our phone allows us to grab life's moments of

spontaneity, which means we might not have time to set up the shot perfectly. Taking as many pictures as we can will give us a better chance of coming out with a usable one we're proud of. Plus, it gives us a chance to experiment. Try new angles and different perspectives—try shooting down low, up high, close and far away, tilted, etc.(Meyers, 2013)

2.14 Display Images on a Computer Screen

We have to remember that on many phones the quality of the screen will not be as good as our computer's. So if possible hang onto our shots until we can get them on our PC. We might just find that they come alive on a quality monitor. We'll also find that even 'mistakes' and blurred shots can actually be quite usable.

2.15 Digital Zoom and the Image Quality

As tempting as it might be to zoom in on our subject when taking our picture (if we have a zoom feature on our camera phone), if the zoom is a 'digital zoom' it will decrease the quality of our shot to use it (we'll end up with a more pixilated shot). Plus, we can always edit our shot later using photo editing software on our computer. Of course, some camera phones are beginning to hit the market with 'optical zooms' – these are fine to use as they don't enlarge our subject by enlarging pixels.

2.16 Photography During "Magic Hour"

Magic hour pertains more to cinematography, whereas photographers know that special time of the day as golden hour — the first and last hour of sunlight during the day. The effect is always stunning and somewhat dreamy because of the colorful sky, and there's just enough light left to have good exposure (Meyers, 2013). See figure (10), (11)

Figure 10: The first magic hour

Figure 11: The last magic hour

2.17 Camera Panning

The technique is called panning, and it's a hard one to implement on camera phones, but not impossible. To take some really cool panning photos, we grip the camera securely with both hands for steadiness, and frame the moving subject matter on the LCD display. Then move the camera at a similar speed as the subject, causing the moving subject to appear still, while the background is blurred in motion (Meyers, 2013). See figure (12)

Figure 12: Motion photography

2.18 Monotone Images

Play around with the colors in front of us. The world's a vibrant place, and the second best place to see the beautiful colors besides the real world is in a photograph, but sometimes a richly textured photo could be too much for the eye, making it a perfect choice for the monotone option in our phone's settings (if there is one). Plus, it gives us the chance to develop our photographer's eye, letting us concentrate on the relationship between light and shadow, without having a bunch of distracting colors.

Figure 13: The upper image is traditional and the lower one is better

2.19 Picture Director

We take control of our picture-taking and watch our pictures dramatically improve. Become a picture director, not just a passive picture-taker. A

picture director takes charge. A picture director picks the location: "Everybody go outside to the backyard." A picture director adds props: "Girls, put on our pink sunglasses." A picture director arranges people: "Now move in close, and lean toward the camera.. See Figure (13)

2.20 Mobile Phone Filter Applications

There are many of mobile filter apps that can add some zest to our photos, either during the picture or after. There's FX Photo Studio, Hipstamatic and Camera plus Pro, to name a few (Meyers, 2013). See figure (14)

Figure 14: Using Filters

2.21 Editing Cameraphone Images

Whilst it can be fun to use our camera phone's inbuilt editing and effects, editing pictures later on our computer produces much better quality images. We take our shots in color at high resolution to keep our options open on how to treat it later.We can always make it black and white on our computer, but we can't make it colored if we take it in Black and White mode.

3. Using Images in Social Media

We usually digest visual information better than text-based content. When it comes to social media, there is no denying the fact that the images we use of our content can have a huge impact on how the content is perceived by the community.

3.1 The Importance of High Quality Images on Social Media

Images matter of social media. It's extremely important that our content is high quality and not blurred, pixilated or otherwise deprecated in any way. We need to get our facts and figures straight. Facebook cover photo that is blurry, pixilated, poorly crafted or poorly placed, can have a profoundly negative impact on our fans. We would expect a professional network like "LinkedIn" not to compress profile pictures, but apparently they do. A "LinkedIn" profile picture seemed so extremely pixilated, despite the original image's flawless quality (Blogger, 2014).

The Instagram application for Android has become one of the most popular social media platforms in the world today, but it fails short in doing a good job at the only thing it is supposed to do – sharing pretty pictures. While iOS users can share their creations and moments with high fidelity, Android users have been reporting extreme quality losses in their pictures for years now (Serrafero, 2015).

3.2 Social Media Image Size

Social media channels generally benefit from the photographic rules such as the rule of thirds. Consider the format of the cover image in Facebook Timeline. It's a long, rectangular space and lends itself to compositions that feel "widescreen" in nature. If we're shooting a series of images that we hope to use as cover photos on Facebook, we will definitely want to keep this in mind. But don't stop there. The cover image on Facebook is only one format and is a special bit of landscape.

The profile picture we maintain on social channels such as Facebook, Twitter, YouTube, Foursquare and many others are square and that same rule of thirds simply won't work.

However, if we are shooting a series of photos that we hope to use for profile image purposes, we should frame it straight in the center of the photo and give it a lot of exposure for the photo. We're going to be cropping this image down to a square, so a photo that's longer than it is tall will ultimately mean our fans will see less of the subject in the tiny thumbnail (Lemin, 2015).

Whether we are a social media expert, or a newbie in charge of managing content, we will always have to double-check the height and width of every image we post on our favorite channels. Making sure these images look good in all possible formats is a time-consuming and frustrating process, especially since the content is accessible from a variety of devices.

We'll tackle this issue. We will look at some of the most popular social media sites, and take all the information we need in selecting the best sizes and dimensions of the images that we want to use there (George, 2015).

3.2.1 Facebook Images Size Guide

Cover photos on Facebook are prime real estate for showcasing our brand.

The official recommendation is to use an image 851 pixels wide and 315 pixels tall. For profile photos, It's advised to be 180×180 images which will be displayed as a 160×160 (George, 2015).See figure (15)

Figure 15: Facebook images size

3.2.2 Twitter Images Size Guide

Twitter allows us to use post images as long as they're hosted on pic.twitter.com and are shown inline on users' feeds. They've also announced their support for GIFs, which is a great way to engage with our audience (George, 2015).See table (1)

Table 1: Twitter recommended upload size

Type	Recommended upload size (width x height in pixel)
Profile Pic	400x400
Cover Pic	1500x500
Post Images	880x440 Best use aspect ratio of 2:1, can't be over 3 MB or 1024x512
Supports: JPG, PNG & GIF	

3.2.3 Google+ Images Size Guide

We can use animated GIFs on Google+ which is awesome, and they're not just limited to post images, we can use them in our cover pics or as our profile pic (George, 2015). See table (2)

Table 2: Google+ recommended upload size

Type	Recommended upload size (width x height in pixel)
Profile Pic	205x250 Will be displayed as a circle
Post Images	Aspect ratio 1:1 so square image 620x620 PX
Cover Pic	1080x608 PX It's best to leave out 140 PX from the left & right, which will get cut off on some devices
We can use animated GIFs	

3.1.4 Instagram Images Size Guide

Instagram one of the top photo sharing social networks, is becoming quite popular with small businesses. It's helping them drive sales and develop their brand (George, 2015). See Table (3)

Table 3: Instagram recommended upload size

Type	Recommended upload size (width x height in pixel)
Profile Pic	161x161
Image Feed	640x640

4. Experimental Work

One of the most critical problems in camera phone photography is image blur due unsteady grip. Getting into a darker environment extends the gap, mobile images become unacceptably blurry and show almost nothing but smeared lights and the camera's own noise. So camera phone users are very sorry about the quality of the pictures. Almost everyone makes excuses when publishing a photo taken with a camera phone.

We ran a test to check image blur reduction by using **Blurless Exposure** technique developed by Amalence,Inc. This technique combines a special exposure mode and software post-processing to greatly reduce the blur effects and improve dynamic range, noise reduction, sharpening, etc. thereby reducing the overall image processing time. The majority of CMOS and CCD sensors available on the market can be "tricked" into this special exposure mode (Almalence, 2015).

This technique brings reduction in **both** blur due to **hand shake** and blur due to the **motion of the objects** in the scene, While other techniques such as Multiple Shot Fusion technique brings reduction in blur due to the motion of the objects in the scene only. **Blurless Exposure** is a technology that can be easily implemented in mobile devices with no changing the hardware or production processes. It provides full resolution image at 1.4 Sec/MP on OMAP3 platform (Nokia N900, iPhone 3Gs, Motorola Droid, Palm Pre) and most of the sensors available on the market are suitable for this solution.

4.1. Test Methodology

§ Lux measurements were obtained with a DT-1308 Light Meter.

§ Testing was performed using a Linux-based Motorola A1200 camera phone with 2 megapixel.

§ Around 50 images were taken at each luminosity level using both standard A1200 bundled camera application and **Blurless Exposure**.

§ Test chart.

4.2. Test Procedures

§ In order to objectively characterize imaging system performance in low light conditions, we

have to standardize the illuminance of the test scene.

§ Lux – SI unit of illuminance, used in photometry as a measure of the apparent intensity of light.

§ Low light conditions and reference illuminance are shown in table (4)

Table 4: Low light conditions and reference luminance

Luminance, lx	Typical Conditions
320	Recommended office lighting
50-100	Living room lighting
50	Typical cameraphone LED flash from 1m distance
10	Typical cameraphone LED flash from 2m distance

5. Results

Figures (16) and (17) show the results of the experimental procedures at 200 lux with camera shake.

Figure 16: Standard Exposure at 200 Lux

Figure 17: Blurless Exposure at 200 Lux

Even though average noise levels are similar, **Blurless Exposure** demonstrates a better result in shadows. An increase in dynamic range can also be seen by inspecting white tiles at the top and a dark area in the frame. Figures (18) and (19) show the results of the experimental procedures at 20 Lux when motion is present in the scene. **Blurless Exposure** is not only compensating for camera shake, but also, to some degree, for motion in the

scene. Better definition of the spokes is clearly visible.

Figure 18: Standard Exposure at 20 Lux, rotating wheel at 25 RPM.

Figure 19: Blurless Exposure at 20 Lux, rotating wheel at 25 RPM.

Figure (20) shows the comparison between the number of blurred images taken with the standard exposure method versus the number of blurred images taken with the **Blurless Exposure.**

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We can use animated GIFs	

3.1.4 Instagram Images Size Guide

Instagram one of the top photo sharing social networks, is becoming quite popular with small businesses. It's helping them drive sales and develop their brand (George, 2015). See Table (3)

Table 3: Instagram recommended upload size

Type	Recommended upload size (width x height in pixel)
Profile Pic	161x161
Image Feed	640x640

4. Experimental Work

One of the most critical problems in camera phone photography is image blur due unsteady grip. Getting into a darker environment extends the gap, mobile images become unacceptably blurry and show almost nothing but smeared lights and the camera's own noise. So camera phone users are very sorry about the quality of the pictures. Almost everyone makes excuses when publishing a photo taken with a camera phone.

We ran a test to check image blur reduction by using **Blurless Exposure** technique developed by Amalence,Inc. This technique combines a special exposure mode and software post-processing to greatly reduce the blur effects and improve dynamic range, noise reduction, sharpening, etc. thereby reducing the overall image processing time. The majority of CMOS and CCD sensors available on the market can be "tricked" into this special exposure mode (Almalence, 2015).

This technique brings reduction in **both** blur due to **hand shake** and blur due to the **motion of the objects** in the scene, While other techniques such as Multiple Shot Fusion technique brings reduction in blur due to the motion of the objects in the scene only. **Blurless Exposure** is a technology that can be easily implemented in mobile devices with no changing the hardware or production processes. It provides full resolution image at 1.4 Sec/MP on OMAP3 platform (Nokia N900, iPhone 3Gs, Motorola Droid, Palm Pre) and most of the sensors available on the market are suitable for this solution.

4.1. Test Methodology

§ Lux measurements were obtained with a DT-1308 Light Meter.
§ Testing was performed using a Linux-based Motorola A1200 camera phone with 2 megapixel.
§ Around 50 images were taken at each luminosity level using both standard A1200 bundled camera application and **Blurless Exposure**.

§ Test chart.

4.2. Test Procedures

§ In order to objectively characterize imaging system performance in low light conditions, we have to standardize the illuminance of the test scene.
§ Lux – SI unit of illuminance, used in photometry as a measure of the apparent intensity of light.
§ Low light conditions and reference illuminance are shown in table (4)

Table 4: Low light conditions and reference luminance

Luminance, lx	Typical Conditions
320	Recommended office lighting
50-100	Living room lighting
50	Typical cameraphone LED flash from 1m distance
10	Typical cameraphone LED flash from 2m distance

5. Results

Figures (16) and (17) show the results of the experimental procedures at 200 lux with camera shake.

Figure 16: Standard Exposure at 200 Lux

Figure 17: Blurless Exposure at 200 Lux

Even though average noise levels are similar, **Blurless Exposure** demonstrates a better result in shadows. An increase in dynamic range can also be seen by inspecting white tiles at the top and a dark area in the frame. Figures (18) and (19) show the results of the experimental procedures at 20

Lux when motion is present in the scene. **Blurless Exposure** is not only compensating for camera shake, but also, to some degree, for motion in the scene. Better definition of the spokes is clearly visible.

Figure 19: Blurless Exposure at 20 Lux, rotating wheel at 25 RPM.

Figure 18: Standard Exposure at 20 Lux, rotating wheel at 25 RPM.

Figure (20) shows the comparison between the number of blurred images taken with the standard exposure method versus the number of blurred images taken with the **Blurless Exposure.**
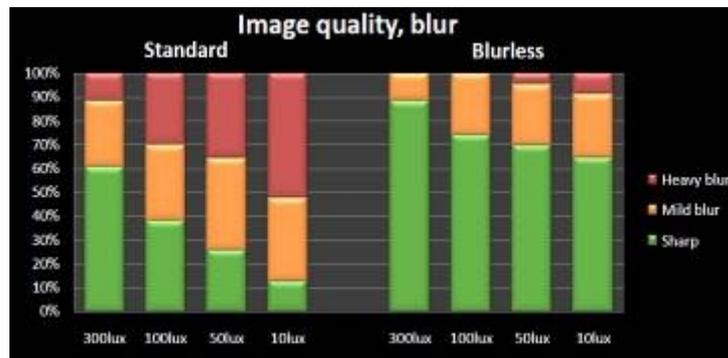

Figure 20: Comparison between the Standard Exposure and the Blurless

The comparison shows the Following results and **table (5) summarizes the results.**:

§ **With Illuminance 300 LUX**:
1. A great reduction in the number of blurred images taken with **Blurless Exposure** versus images taken with the Standard Exposure.
2. 60% of the shots turned sharp with Standard Exposure, while 90% did so using **Blurless Exposure.**
3. From 60%: 90% of the shots turned mild blur with Standard Exposure, while about 90%:100% did so using **Blurless Exposure.**
4. From 90%: 100% of the shots turned heavy blur with Standard Exposure, while there are no heavy blurred shots with **Blurless Exposure.**

§ **With Illuminance 100 LUX:**
1. A great reduction in the number of blurred images taken with **Blurless Exposure** versus images taken with the Standard Exposure.
2. Up to 35% of the shots turned sharp with Standard Exposure, while up to 70% did so using **Blurless Exposure.**
3. From 40%: 70% of the shots turned mild blur with Standard Exposure, while about 70%:100% did so using **Blurless Exposure.**

4. From 70%: 100% of the shots turned heavy blur with Standard Exposure, while there are no heavy blurred shots with **Blurless Exposure.**
5.

§ **With Illuminance 50 LUX:**
1. A great reduction in the number of blurred images taken with **Blurless Exposure** versus images taken with the Standard Exposure.
2. 25% of the shots turned sharp with Standard Exposure, while up to 70% did so using **Blurless Exposure.**
3. From 25%: 65% of the shots turned mild blur with Standard Exposure, while about 70%:98% did so using **Blurless Exposure.**
4. From 65%: 100% of the shots turned heavy blur with Standard Exposure, while about 98%:100% did so using **Blurless Exposure.**

§ **With Illuminance 10 LUX:**
1. A great reduction in the number of blurred images taken with Blurless Exposure versus images taken with the Standard Exposure.
2. 10% of the shots turned sharp with Standard Exposure, while up to 60% did so using **Blurless Exposure.**
3. From 10%: 48% of the shots turned mild blur with Standard Exposure, while about 60%:90% did so using **Blurless Exposure.**

4. From 48%: 100% of the shots turned heavy blur with Standard Exposure, while about 90%:100% did so using **Blurless Exposure.**

Table 5: The results of the comparison between the Standard Exposure and the Blurless Exposure for the image quality, blur.

Table 5: The results of the comparison between the Standard Exposure and the Blurless Exposure for the image quality, blur.

	Standard Exposure	Blurless Exposure
300 Lux	60 % sharp	Up to 90% sharp
	60%:90% mild blur	From 90%:100% mild blur
	90%:100% heavy blur	
100 Lux	Up to 35% sharp	Up to 70 % sharp
	40% : 70% mild blur	70%:100% Mild blur
	70 % : 100% heavy blur	
50 Lux	25 % sharp	Up to 70% Sharp
	25%: 65 % mild blur	70% : 98% mild blur
	65%:100% heavy blur	98%: 100% heavy blur
10 Lux	10 % sharp	Up to 60 % sharp
	10%:48% mild blur	60% : 90 % mild blur
	48%:100% heavy blur	90%:100 % heavy blur

Figure (21) shows the comparison between the noise levels happened with the Standard Exposure and the noise levels happened with the **Blursless Exposure**.
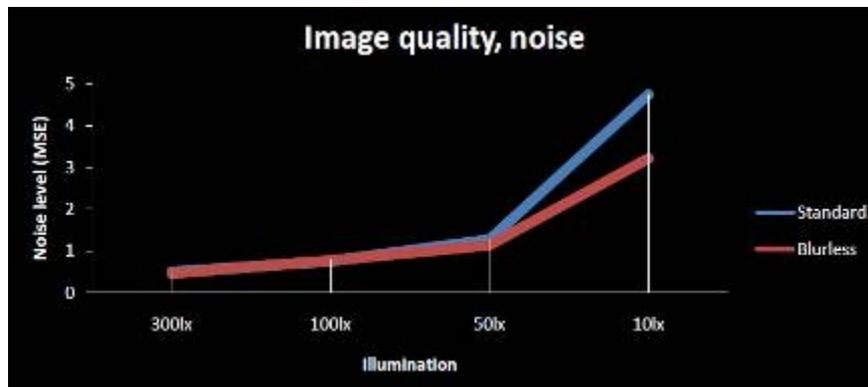

Figure 21: Comparison between the noise levels happened with the Standard Exposure method and the noise levels happened with the Blurless Exposure

The comparison shows the following results and **table (6) summarizes the results.**

§ **With Illuminance 300 LUX:**
1. The noise level was less than "1" for both Standard Exposure and **Blurless Exposure.** The noise level was the same for both exposure methods.

§ **With Illuminance 100 LUX:**
1. The noise level was at "1" for both Standard Exposure and **Blurless Exposure.** The noise level was the same for both exposure methods.

§ **With Illuminance 50 LUX:**
1. The noise level was more than "1" for both Standard Exposure and **Blurless Exposure.** The noise level was the same for both exposure methods.

§ **With Illuminance 10 LUX:**
1. The noise level was at "5" with Standard Exposure. The noise level was high.
2. The noise level was at "3" with **Blurless Exposure**. The noise level was Lower than the noise level with Standard Exposure.
3. In very low light (i.e., shadows or dark scenes), **Blurless Exposure** demonstrates a significantly lower noise level.

Table 6: The results of Comparison between the noise levels happened with the Standard Exposure method and the noise levels happened with the **Blursless Exposure**

	Standard Exposure	Blurless Exposure
300 Lux	Noise level less than "1"	Noise level less than "1"
100 Lux	Noise level at "1"	Noise level at "1"
50 Lux	Noise level more than "1"	Noise level more than "1"
10 Lux	Noise level at "5"	Noise level at "3"

5- Discussion

§ **BlurLess Exposure** was able to achieve higher percentages of sharp images compared with standard exposure, even in very low light conditions.

§ With **BlurLess Exposure,** mild blur began to emerge at the late rates compared with standard exposure rates, which began to emerge at an early ratios.

§ With **BlurLess Exposure,** heavy blur began to emerge at lower light conditions with Illuminance 50 LUX, compared with standard exposure, which began to emerge directly at Illuminance 300 LUX.

§ Noise levels were consistent except when luminance was 10 Lux, where BlurLess Exposure achieved lower noise level compared with standard exposure.

§ The study carried out by Van House et al. , (2005) referred to the various uses of images for the social networking sites, this is consistent with our study.

§ Compared to previous studies, this study has focused on camera phone image quality in addition to using these images in social media channels according to the official recommendations.

§ Social media channels compress the images and this affects badly on the image quality.

§ Images matter of social media. It's extremely important that our content is high quality and not blurred, pixilated or otherwise deprecated in any way. We need to get our facts and figures straight, therefore, the use of **Blurless Exposure** technology ensures that we get sharp images and without noise even in low light conditions.

§ The technological developments in cameraphone photography urged mainstream media and journalists to use images taken by 'normal people', and incorporate them increasingly in their own reporting, and that due to their high quality. For example, "Ana Ara", the application of the "Al Arabiya" news channel, it is a unique app that allows users to upload video and images about live political incidents to "Al Arabiya" News Channel.

6. Conclusion

§ The standard exposure did not achieve high quality results in low-light conditions.

§ Using additional photographic techniques such as "**Blurless Exposure**" contributed to obtain high quality images even in low-light conditions.

§ Following the rules of camera phone photography, contributed to improving the quality of the image.

§ We must use high quality images only for social media channels, as they compress the images and this affects badly on the image quality.

§ High quality images help us to get our facts and figures straight.

§ Images that are blurry, pixilated, poorly crafted or poorly placed, can have a profoundly negative impact on our fans.

§ Following the rules of camera phone photography, contributed to the use of images correctly in social media channels.

§ Following the official recommendations of each social media channel, contributes to post and use images correctly.

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