

Anti-Paparazzi Fashion

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Abstract. As a response to the rise of paparazzi, the expanse of digital cameras and the resulting erosion of privacy, *Anti-Paparazzi Fashion* devices offer the power to control identity in public. In this paper, we reveal the technologies that allow these devices to be wearable, effective and fashionable, providing an on-demand, always-ready source of identity protection.

Keywords: Privacy, Photography, Wearable Computing, Fashion, Surveillance

1 Introduction

In hands of an artist, a camera is an expressive machine. But in the hands of the paparazzi, it becomes more like a weapon. With large rewards for compromising photos, and extreme advances in digital imaging, the paparazzi industry has become a coordinated attack on privacy. Anti-paparazzi fashion aims to shift the balance of power away from photographers and back to those on the working end of the camera.



Fig. 1. The anti-paparazzi clutch bag prototype in action.

Anti-paparazzi fashion is small, safe, stylish and powerful. By detecting camera flashes and responding with pulses of light that are bright enough to overexpose photos, the devices empower users to control their identity in a public space. As described by design blog Core77 [1], it is “brilliant (literally)”.

2 Background

While the laws enacted since Princess Diana's death have strengthened citizens' rights against invasive photography, particularly in California, the net number of paparazzi photographers is on the rise [2]. The rewards for this type of photography have inspired a rising class of amateur paparazzi and even 'pint-size paparazzi' as young as fourteen. The phenomenon of shrinking privacy is not limited to celebrities. With the rise of social networking technologies, more and more photographic content is finding its way onto the web where it can become impossible to control [3].

Among the possible methods to overcome this problem, xenon bulbs are an obvious choice because they are the industry standard light source for professional camera flashes. But they fall short as a component for identity-protection in several ways: (1) delays between flashes (2) dangerously high trigger-voltage levels (3) bulky components such as capacitors (4) they cannot be used as a continuous light source.

Alternative methods to obscure one's identity without a visible counter flash include the *Anti-Paparazzi Jacket*, a purely retroreflective garment [4], and infrared LEDs that are used to counter surveillance cameras [5]. The latter is portable and capable of continuous lighting but works better for video as most professional cameras have an IR filter covering their optical sensor. Another option is using lasers, as in *Eagle Eye* [6], but this requires a great deal of accuracy and may result in eyesight damage.

A more effective technique tracks the retroreflective CCD or CMOS chip in a camera and fires a narrow beam of visible light at the offending camera [7]. However, the system is designed solely for indoor use, requires a projector, video camera, and an IR light source. Testing also revealed its insufficiency for high-end digital SLR cameras, the main choice of paparazzi.

3 The Anti-Paparazzi Clutch

The main goal in the design of anti-paparazzi fashion is enable the wearer to communicate the desire for privacy. The *Anti-Paparazzi Clutch* makes this notion practical, possible and pleasing to the eye [8].

3.1 Technology Innovations

Our method combines pre-existing methods for detecting flash-photography with advances in lighting technology and wearable computing to create a novel, patent pending system capable of protecting one's identity in public.

With the advent of video cameras that can record continuous streams of hi-res images and emerging dark-flash photography techniques that operate in the IR and UV spectrum, the stakes are high [9]. Luckily, the new wave of super-bright LEDs and high-discharge batteries have opened the doors to create a device that produces the lumens, wavelengths, and power needed to overexpose photographs while still maintaining a portable, safe and attractive design.

The device uses light sensors to detect the sudden spikes in light intensity associated with the flash. A microcontroller receives the sensor data and algorithmically determines the most likely direction of the light source. But because photographers often use off-camera flashes, the source of the visible light is not always the target. To compensate, the device also employs an IR sensor to look for an auto-focus light, which is the more likely direction of the camera lens. This

maximizes the efficiency of the system by saving battery power and concentrating the light only where it is needed.

To use the bag as an identity protection device, the user rotates it 90° and points it toward the photographer. The tilt-motion activates the bag such that detection of a flash will trigger the LEDs. Since some cameras use IR light to capture nighttime scenes, it is crucial that an identity protection system is also able to counter flashless video using manual controls. Thus, the array of LEDs in this system use a combination of IR and visible light. To deactivate the bag for a shot with your favorite celebrity, simply return the clutch to its normal holding position.

3.2 Development of Concept

The idea was inspired by an advertisement in the New York Time's Style Magazine depicting a 'celebrity' model distressed by a pack of hungry paparazzi. It sparked the idea to create a stylish accessory that could protect against invasive flash photography. The first tests used a disposable camera with a xenon flash (Fig. 2). Testing this device with users in a variety of settings helped inform the initial designs.



Fig. 2. First tests with a disposable camera and peanut slave.

The second prototype was a custom "slave flash" circuit with microcontroller, a photocell, and an array of LEDs. A tilt-switch allows the user to designate the on/off position of the bag and a push-button can manually operate the lights. The device was housed in a simple camera-like box and then tested again.

The third prototype brought this technology into a clutch bag. Experiments continued where it was tested against digital SLRs and point-and-shoot cameras, in varying light levels and with different users. By making the circuit smaller, adding more LEDs and improving the flash detection algorithm, the prototype became the first functional version of design concept. The more robust commercial version is currently in development.

3.3 Media Coverage

From Perez Hilton's blog posting *Damn! An anti-paparazzi device*, to Wired.com's report of a *Celebrity-Shielding Flashgun Handbag*, to an upcoming article in ELLE Bulgaria, this bag has already turned heads. Since the first press coverage on PDN.com, GLAMOUR has speculated whether it could be the *Latest Celebrity It Bag* and the New York Times' *The Moment Blog* reported that Lindsey Lohan already wants two. Technophiles and fashionistas alike enjoy the idea of subverting the accepted practices inherent in our celebrity-driven media culture, while simultaneously celebrating and engaging in photographic play.

4 Conclusion

The goal of this work is not to create a weapon against photography, but a compliment to it. Certainly, blocking all access to one's image might be overzealous or, in some cases, self-destructive, however this device gives its user the power to choose when to be photographed. Although other attempts have been made to create devices that can counter flash-photography, none has proven as effective or flexible as *Anti-Paparazzi Fashion*. The concept having been successfully demonstrated with the *Anti-Paparazzi Clutch*, one can envision a suite of accessories for men and women based on this technology, including to briefcases, other bags, brass knuckles, pendants and tie tacks. Stay tuned.

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