To: tcook@apple.com
When: July 19, 2023
Subject: Apple Can Help Save Photography from Generative AI

Dear Mr. Cook,

I am writing to you about Apple's opportunity to help re-establish trust in photography.

You may have read about this controversial photograph last week:

Photo by Suzi Dougherty of her son, Caspar, and two mannequins at the Powerhouse Museum in Sydney, Australia. [Story link](#).

As noted in the article, the photograph was taken with an iPhone, but the controversy is about its provenance. It was judged to be too good to be real: it must be the product of Generative AI. Yes, Generative AI could have produced this image, but how can anyone tell these days?

Imagine another less staged scenario: a family member documenting a wedding manipulates photographs taken on an iPhone to alter what others who could not attend understand about the event. With no camera-recorded provenance, there is no record of how that happened. The liar's dividend is paid in full years later: who knows what to believe in the digital family album?

The iPhone could thus lose its value as the primary recorder of people's lives. More people go straight to Generative AI to invent their events, as is happening now.

The solution lies in affirming the historic trust relationship that has existed since the invention of the photograph, that a human witness—using a camera—was the maker of the photograph. Society has trusted that relationship for nearly 200 years, coincident with evolving democracy.

Generative AI, whether intentional or not, is an existential threat to that trust relationship. Since a Generative AI "photograph" is not made with a camera—operated by a human—it has no ethics. Generative AI produces only fiction masquerading as photography and almost never watermarks itself as such. Since the beginning of the year, we almost daily see the mischief unethical actors can cause in a polarized society increasingly unable to agree on what is "fact". Consequently, the threat of Generative AI to democratic institutions is real.

Generative AI is rapidly [metastasizing](#) and cannot be effectively regulated in a timely manner. Regulation may not be necessary if enough camera companies, among others, adapt to protect this trust relationship. As the maker of the most ubiquitous camera in history, this is a problem that Apple can help solve.

Fortunately, a technology solution has been developed by the [Coalition for Content Provenance and Authenticity](#) (C2PA) which "addresses the prevalence of misleading information online through the development of technical standards for certifying the source and history (or provenance) of media content." Notwithstanding the to-date unresolved privacy and consumer protection issues because its first implementation is being driven largely by forensic photography (by [Truepic](#), a specification founder, whose server solutions address only enterprise customers), C2PA is nevertheless adaptable to any use case.

C2PA is an open specification complete with open-source Rust SDK to establish the provenance of any photograph (or video) from the instant it was taken through all editing and publishing processes. To date, [Nikon](#) is shipping a C2PA-compliant camera. [Sony](#) offers a solution but it is unclear that it includes technology based on the C2PA specification (even though they are on the steering committee). Canon has not offered a solution but is a General Member of the C2PA (many other founding members of the C2PA consortium have significant financial investments in Generative AI: Generative AI image makers *are* allowed to adopt the standard, thus compromising the brand!). Samsung has been silent on the issue.

Of course, the number of photographs (and videos) taken with an iPhone dwarf all others. Apple should review the specification, and then adapt it to protect the trust relationship between photographers and their audiences.

Apple could implement several steps in the operating systems of the iPhone and iPad:

- Add C2PA manifest metadata directly to the image file, just as EXIF and IPTC metadata are, when the file is initially saved to memory (the photo/video is taken);
- Make it possible for end users to configure in the Camera app settings how they add C2PA metadata to their photographs/videos. The defaults are:
  - to add cryptographically protected C2PA metadata, including basic authorship, contact information, IP protection license, and a sentence about their visual ethic, such as "This image is not edited in any way, what you see is what my camera

got." (all configurable in the Camera app settings), to all photographs and videos and begin the manifest immediately, including a record of edits made in-camera after the initial exposure, if any;

- o to display an encircled "i" in a lower corner of the image (clicking/tapping on it reveals the basics of the C2PA manifest, see bullet point directly above), with an option to not show it (on all or selected images);
- o to assert that all photographs or videos are not to be used for any Generative AI training or data mining purposes ("scraping");
- o to assert that any editing program cannot add to or modify any part of the image using Generative AI; and
- o to add location data to the manifest with an option to not include it (on all or selected images).

- • Finally, make all Apple photo and video editing apps on all Apple platforms C2PA compliant so that any edits subsequently made will be recorded in the file's manifest.

I suggest that Apple lead that effort in iOS/iPadOS 17.x, before 2024 (I'm using the public beta of iOS 17). It's a relatively simple technological solution, but I acknowledge that it's not so simple to make this decision. With Generative AI such a hot topic, Apple can distinguish itself again, as it has done with industry-leading privacy protections, to "Think Different."

Individual camera users should not have to convince others that their photographs are "real." The technology to prove that should be built into the camera so that the manifest begins the instant that the image is committed to machine memory. That provenance should be easy to establish and the results transparent to all. Active promotion of the feature will establish that photographs made with an iPhone can be trusted.

Finally, this is a depiction of an 18% reflectance gray card used by analog photographers (I was one once) with a light meter to determine proper exposure. It also represents the result—if we are successful at proclaiming the authenticity of all human-generated photographs using C2PA watermarks as well as preventing Generative AI from scraping "real" photographs—of a Generative AI image once their models can only digest all known "fake" photographs, and then recursively train on all generated AI "photographs," *ad infinitum*.

This future will be made possible because Generative AI companies, whether they intended to or not, never anticipated that all human photographers—"we were there with a camera"—were organized to build trust in photography by watermarking the provenance of their images with the help of all camera makers.

I look forward to a conversation about the possibilities, as well as Apple's "Trust Photography" campaign to save human photography for future generations.

Sincerely,

Marshall Mayer

marshall@take-note.com
206-351-1846

P. S. By way of my relevant biography:

- I was awarded a Masters of Fine Art in Photography from the University of California at San Diego in 1981. I never intended to use my degree professionally (outside of teaching an occasional college course). In retirement, I've returned to my passion.
- I helped my partner buy and use a Macintosh Plus and a LaserWriter in 1986 to start the first "desktop publishing" business in Montana using Aldus Pagemaker v1.05. Desktop Type was a leading graphic design and advertising firm in Montana when she sold it in 2010 to retire.
- At the same time, I became the lead nonprofit computer consultant for Northern Rockies Action Group in Helena MT when few businesses, let alone nonprofits, had computers. In 1990, I started Desktop Assistance, one of the first half-dozen (and at the time of the dot.com meltdown in 2001 the largest) stand-alone nonprofits in the country with a mission to help nonprofits use computer technology and the internet. After Desktop Assistance was adopted by the Rockefeller Family Fund to take our mission national, I led (along with other initiatives) the program with Apple Community Affairs to grant Apple hardware and ESRI GIS software to environmental and conservations across the country in the late 1990s. Steve Jobs answered my email.
- Apple Community Affairs also granted my nonprofit an Apple QuickTake 100 and a Color LaserWriter. I was introduced to digital photography, after having given up on analog photography for a decade. Suddenly, photography was fast, easy, and cheap.
- In 2002, I founded livemodern.com, an internet community to marchitect modern, green housing solutions. It ran exclusively on xServes until the domain name was sold in 2020.
- I invested early in Apple stock, and have only sold it once (my CFP told me it outweighed the rest of my portfolio, I don't listen to that advice anymore). This proposal, however, is not motivated by share price :).
- I bought my first iPhone in 2007 in Seattle (hence my area code 206) because AT&T had no Montana presence where I live.
- I retired to photography in 2008 and have exclusively used an iPhone to take pictures since 2011. My work is shown exclusively online at take-note.com, served from a Mac mini (M2 Pro). I'm writing this email on a 14" MacBook Pro (M1 Max).
- Most recently, I've been working with Fred Ritchin, acclaimed author and founder of the Photojournalism and Documentary Photography Program at the International Center of Photography as well as the visionary fourcornersproject.org, to re-establish a trust relationship with photography in the digital age. He is working on a parallel and complementary effort, Writing with Light, an international consortium of professional photojournalism organizations to adopt a symbol that establishes an image as an actual photograph that is essentially unmanipulated. Their website will be unveiled in September.