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SECURITY

Security Guru Launches iPhone App To Hack Colorblindness

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In 2008, security researcher Dan Kaminsky discovered and helped develop a patch for one of the most fundamental flaws ever found in the infrastructure of the Internet. Lately he's been working on a fix for a very different infrastructure

Security researcher Dan Kaminsky wearing a shirt that reads "I (heart) color." It's illegible to the red-green colorblind.

problem: the faulty photoreceptors in my eyes.

Like close to 6% of males, I suffer from anomalous trichromacy, also known as red-green colorblindness. "Suffer" is probably too strong a word–the extent of my sight problem is that I can't tell some shades of red, green, and brown apart. One example: red and brown M&Ms look (depending on the light) almost exactly alike.

Kaminsky isn't colorblind. But when he went with a friend to see the Star Trek movie last year, he was amazed to discover that his friend couldn't see that one character in the film had green skin. "He thought she just had a very deep tan," says Kaminsky. (Come to think of it, so did I.)

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About 14 months of on-and-off development later, Kaminsky on Wednesday launched DanKam, an augmented reality app for iPhone and Android that aims to offer a quick fix for situations where colorblindness causes ambiguities. DanKam uses the phone's camera to feed in images to the display in real-time, but tweaks those images with a collection of changeable color-shifting schemes that the user can choose. The most basic one, HueQuantize, exaggerates both red and green and moves them further to the extremes of the color spectrum, away from the indistinguishable middle ground where colorblind users get stuck. When I pointed an iPhone running DanKam at a collection of M&Ms on my desk, for instance, the reds popped out in a pinker, day-glo hue while the browns remained as brown as in the real world.
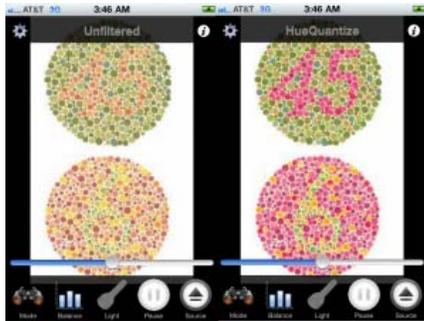
An even better before and after can be seen in these two colorblindness test images. I can confirm that the first, to my unaided eyes, looks like two piles of meaningless dots. The numbers in the second, post-HueQuantize, are as clear to me as they must be to you.

DanKam sells for $3 in the iTunes app store and Android Marketplace. BlackBerry, Windows Phone 7 and Nokia versions are on the way.

Mobile app development is new territory for Kaminsky. Since finding a bug in the Domain Name System (DNS) protocol in 2008 that would allow malicious hackers to invisibly redirect Internet's traffic, he rose to cybersecurity rockstar status advocating a more secure version of DNS known as DNSSEC. After the "Kaminsky bug" blowup, he left his position as a penetration tester at security firm IOActive to join the incubator Recursion Ventures, but has since left that firm, too, for another stealthy project called Dan Kaminsky Holdings.

"I like fixing things," he says of his side project. "I've been doing a lot of things to fix the Internet, trust, passwords, safety and security. It's nice to have a project that's not quite so complicated."

Kaminsky isn't the first to think of an app for addressing colorblindness. But unlike DanKam, most of the more than a dozen other apps simply allow the user to click on an image to identify a color. Colorblind users may also want to check out another, free app that offers real-time imaging called Chromatic Glass.

Kaminsky points to the work of Mark Changizi, who writes that humans were actually red-green colorblind as a species for thousands of years, and developed the ability to differentiate the two colors as a way to judge the health of their fellow humans based on skin tone and blood flow. Kaminsky says that may mean a variant of DanKam could someday be used as a health assessment tool.

"This is an interesting tool that will help people live their lives and get around better. In the future it may be an interesting medical application,"

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ABOUT ME

I've covered the cybersecurity and privacy beat for Forbes since 2007, with frequent detours into digital miscellania like switches, servers, supercomputers, search, e-books, online censorship, robots, and China. My favorite stories are the ones where non-fiction resembles science fiction. My favorite sources usually have the word "research" in their titles.
Since I joined Forbes, this job has taken me from an autonomous car race in the California desert all the way to Beijing, where I wrote the first English-language cover story on the Chinese search billionaire Robin Li for Forbes Asia. Black hats, white hats, cyborgs, cyberspies, idiot savants and even CEOs are welcome to email me at agreenberg (at) forbes.com.
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he says. "If nothing else, I like the fact that it has nothing to do with DNS. Absolutely nothing."

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