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## Picture puzzles separate human from machine

13:45 14 July 2010 by [MacGregor Campbell](#)

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Can you spot the hidden animals? (Image: Hung-Kuo chu)


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A way to create children's picture puzzles could be used to improve online authentication, as it involves spotting images within images.

There are four animals hidden in [the accompanying picture](#) (and you can find the solution [here](#)). To obscure them, [Hung-Kuo Chu](#) of National Cheng Kung University in Tainan, Taiwan, developed a tool that first simplifies the animal image, creating a pattern of lighter and darker regions. The image is then overlaid on the base picture so that the background texture shows through. Any gaps are filled with texture that approximates the background. "Our model can generate camouflage images at different difficulty levels," Chu says.

The technique works best with natural backgrounds that have plenty of detail, such as cliff faces, forests and cloudy skies, Chu says. Large blocks of solid colour, or regular patterns like those of brick walls, are more difficult to hide images in.

Though it is not always easy for humans to pick out the images, we can do it. However, it is almost impossible for computers, Chu says. That means as well as generating photo puzzles, the system could be used to make [Captcha](#)  images, which websites employ to ensure that users signing up for accounts are genuinely people, rather than software bots.

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"The work really is creative and their graphic tool is very neat," says [Hal Pashler](#), a psychologist at the University of California at San Diego.

Chu's work fits with the theory that the brain can only be conscious of one visual feature at a glance, but can track the locations of multiple features simultaneously, he says. As the viewer spends time looking at the image, the locations of recognised features accumulate until the object as a whole enters the viewer's attention.

The work will be presented at the [Siggraph](#) conference in Los Angeles later this month.

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## Please Do Not Use This As A Captcha. . .

Wed Jul 14 14:16:46 BST 2010 by **Maarten**

Although hiding images in other images is a nice piece of work (kudos to the developer, it couldn't have been an easy job)...

... the idea of implementing this as a captcha is bloody stupid. If the images shown here are representative of what is in store for me as a user, then the person doing the implementation should follow a refresher course on ergonomics and UI design. At first I thought that I was supposed to be staring at a beaver (look at the white area underneath the arch). Then it turns out there are a rhinoceros, a lion and a mountain lion hiding in the image. Even with knowledge that they are there I can only barely make them out. Adding a hint like 'click on a hidden animal' just invites a bot to click away at random.

The point of a captcha is that it discriminates between humans and computerised bots in a SIMPLE and QUICK fashion. Some captchas have evolved to the point where the intent is obviously to block access to a particular feature of a website completely, and these image puzzles are just the latest in a line of evolutionary dead ends.

For those interested: google for 'captcha free' or 'anti captcha' for some really clever (although by no means unbreakable) solutions which take an altogether different approach to identifying humans from bots.

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This is terrible stuff. I managed only to see the rhinoceros. I could see something else but had no idea it was a lion, and I completely missed the other 2 animals. There is no way I would pass a captcha test if this was it!

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Ugh!

Mon Jul 19 22:17:46 BST 2010 by **Nigel**  
<http://www.discreetsecuritysolutions.com>

I have to third the two comments above - even spending a long time looking at this picture in print, I eventually came on here to locate the third animal. Apparently, it's half an elephant, side on. However, there is nothing like enough information in the picture. I was trying to work out if it was an eye and nose...

The worst thing is, what question would you ask? "How many animals are there?" Well, I worked out there were three, and I suspect a computer could too, just by counting the dark patches that look like eyes, then dividing by two.

Something like "Kitten auth" is far smarter. Show 16 pictures, and ask how many are white cats, or how many horses.

Of course, spammers are smarter - just show the captcha image to a human as a game, on another website, and you'll get your human verified answer for free, in fractions of a second. The human playing the game of course has no idea the "test" just let a robot do something naughty elsewhere.

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