The Genius Who's Tricking the World Into Doing His Work

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Turns out reCAPTCHAs are doing more than 'proving you're a human' and being annoying. Introducing human-based computation.

CAPTCHAs – those weird, distorted words that prove you're human before you buy overpriced tickets to Adele's upcoming tour. You know 'em, I know 'em, neither of us like 'em.

They've been around a while now and until a couple weeks ago I dismissed them as a neat, annoying idea to prevent bots and scammers from running wild on the interwebs.

But here's the surprise kicker: a lot of times the **CAPTCHA**s are actual words from actual text. My five seconds of attention combined with the five seconds of attention of everyone else unwittingly adds up to a boatload of computing power.

This is old news for some but I sure as sh*t didn't know about it.

Here's the story of how it all got started and the certified genius who made it happen.

The problem

In 2000, 22-year-old **Luis von Ahn** was a graduate student at Carnegie Mellon. He worked alongside his professor, **Manuel Blum**, on developing a test that humans can pass but not computers. One practical application being a way to prevent automated programs from buying event tickets only to be resold in a secondary market at a higher price.

The solution that he came up with was **CAPTCHA**. This stands for "Completely Automated Public Turing test to tell Computers and Humans Apart." Looking past the questionably complicated acronym, the **CAPTCHA** system displayed distorted sequences of letters for people to transcribe, thereby proving they were human.

Problem solved, right? Yes and no.

Although **CAPTCHA** was effective in preventing scammer bots, **von Ahn** recognized a new problem relating to efficiency. In an interview with The Walrus, Luis said that he'd unwittingly

created a system that “was frittering away, in ten-second increments, millions of hours of a most precious resource: human brain cycles.”

Specifically, 200 million words / day at about 10 seconds each adds up to about 500,000 hours of wasted human computation every day.

The solution

The story goes that **von Ahn** was driving from D.C. to Pittsburgh when he came up with the idea of using real, unreadable words rather than fake distorted characters. This way, the previously “wasted” human computation time could be put to good, productive use.

It’s a genius idea (he was awarded a $500,000 **MacArthur** genius grant in 2006) as he’d connected two inefficient uses of brain power to create a functional win-win scenario.

About 20% of all scanned words are unreadable by optical character recognition (OCR), the computer process that “reads” printed materials.

b’s first project with newly dubbed re**CAPTCHA** was digitizing the New York Times’ archive, which starts in 1851 and consists of more than 13 million articles. They’re all searchable now.

HERE’S HOW THE MECHANICS OF RECAPTCHA WORK, STRAIGHT FROM WIKIPEDIA:

> *The suspicious word is displayed, out of context, sometimes along with a control word already known. If the human types the control word correctly, then the response to the questionable word is accepted as probably valid. The identification performed by each OCR program is given a value of 0.5 points, and each interpretation by a human is given a full point. Once a given identification hits 2.5 points, the word is considered valid. Those words that are consistently given a single identity by human judges are later recycled as control words. If the first three guesses match each other but do not match either of the OCRs, they are considered a correct answer, and the word becomes a control word. When six users reject a word before any correct spelling is chosen, the word is discarded as unreadable.*

Obviously Luis hit on something big by connecting two seemingly unrelated dots. Now many people doing a tiny amount of work to create meaningful value with 99.1% accuracy.

Websites like **Facebook, TicketMaster, Twitter, 4chan, CNN.com, StumbleUpon, and Craigslist** display **CAPTCHA**s over 100 million times a day. This is to keep their sites free from bots, and, as a result, the world’s information is digitized.

Google saw the global value of re**CAPTCHA** and acquired it in 2009 for an undisclosed amount for use in **Google** Books: **Google**’s ambitious effort to digitize every book in the world. As of October 2015, they’ve scanned over 25 million books out of an estimated 130 million titles

worldwide.

Side note: Ever come across a re**CAPTCHA** that looked an awful lot like a house number? In 2012 **Google** also started throwing in screenshots from Street View to identify addresses, street names, and traffic signs.

The takeaway

re**CAPTCHA** has been criticized as being a source of unpaid labor because it uses people around the world to help with transcription. Think **Amazon**'s Mechanical Turk without paying the workers.

While this is technically true, it's important not to overlook **CAPTCHA**'s primary purpose: to differentiate between humans and computers.

Does it really matter that an actual word is used rather than gibberish? From a user's perspective, I couldn't care less. In fact, I actually welcome the opportunity to lend a hand. Feels like when we all downloaded that SETI screensaver in 2002 to help find aliens.

Regardless on where you stand on unwitting **digital** labor, you have to admire how **von Ahn**'s mastery of human computation brings BIG ideas to life — leveraging one need against another.

Kickstarter made crowdfunding mainstream, and the idea of crowdsourcing in business isn't a new one for entreprenerds. Human-based computation, however, has yet to see widespread adoption. When used correctly, Mechanical Turk is a powerful tool for a large amount of work distributed across hundreds if not thousands of people. Like the guy who got 10,000 drawings of sheep for only $200.

And the best part is this type of thinking can be used in all types of applications. Just look at Luis' current company, Duolingo, the free online language learning service.

If aren't familiar, it's a gamified way to learn a language by translating text on free web or mobile apps. What kind of text, you ask? Let's just say **Duolingo** has partnerships with **BuzzFeed** and **CNN** to translate their content.

And with over 100m active **Duolingo** users as of June 2015, hopefully people in Brazil like listicles as much as we do.

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