

Telling Humans and Computers Apart (Automatically)

or

How Lazy Cryptographers do AI

Luis von Ahn*

Manuel Blum*

John Langford*

Submitted to Communicationf of the ACM

If you try to get a new email account at Yahoo, you'll be asked to prove that you're a human and not a computer. Why? Because a single computer program can get thousands of free email accounts per second. And that's bad for Yahoo. But how do you prove to a computer that you're a human?

Proving that you're a human to *another human* can be done using an idea from the 1950s: the Turing Test [9]. A human judge asks you a bunch of questions and decides, depending on your answers, whether he's talking to a human or a computer.

Proving that you're a human to a *computer* is another matter. It requires a test (or a set of tests) that computers can grade, humans can pass, but paradoxically, computers can't pass. In our lingo, it requires a CAPTCHA.

*Computer Science Dept., Carnegie Mellon University, Pittsburgh, PA 15213. {biglou,mblum,jcl}@cs.cmu.edu