

CAPTCHA Hax With TesseractCap

CAPTCHA Hax With TesseractCap - Gursev Singh Kalra, gursevkalra.blogspot.com.

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Content

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This blog post was voted as 8th best in [Top 10 Web Hacking Techniques of 2011](#) poll*.*

With the goal of creating a tool that can help security professionals and developers to test their CAPTCHA schemes, I conducted a research on over 200 high traffic websites and several CAPTCHA service providers listed on [Quantcast's Top 1 Million Ranking Websites](#).

During the same time frame, students at the Stanford University also conducted a similar [research \(PDF\)](#). Both research works concluded the obvious:

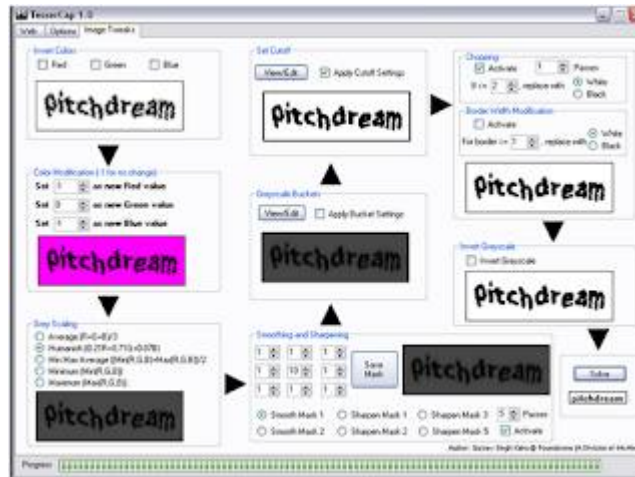
An alarming number of CAPTCHAs schemes are vulnerable to automated attacks.

I looked around, tested and zeroed in on Tesseract-OCR as my OCR engine. To remove color complexities, spatial irregularities, and other types of random noise from CAPTCHAs, I decided to write my own image preprocessing engine. After a few months of research, coding and testing in my spare time, TesseractCap was born and is ready for release now.

TesseractCap is a GUI based, point and shoot CAPTCHA analysis tool with the following features:

- A generic image preprocessing engine that can be configured as per the CAPTCHA type being analyzed.
- Tesseract-OCR as its OCR engine to retrieve text from preprocessed CAPTCHAs.
- Web proxy support
- Support for custom HTTP headers to retrieve CAPTCHAs from websites that require cookies or special HTTP headers in requests
- CAPTCHA statistical analysis support
- Character set selection for the OCR Engine

An example TesseractCap image preprocessing and run on Wikipedia (Wikimedia's Fancy CAPTCHA) is shown below:



Downloads

TesseractCap and it's user manual can be downloaded from one of the following locations:

- <http://www.opensecurityresearch.com/files/tesseractcap.zip> -- No password protection on this zip file
- <http://www.mcafee.com/us/downloads/free-tools/tesseractcap.aspx> -- Use password as "foundstone" without quotes to extract this zip file.

Results

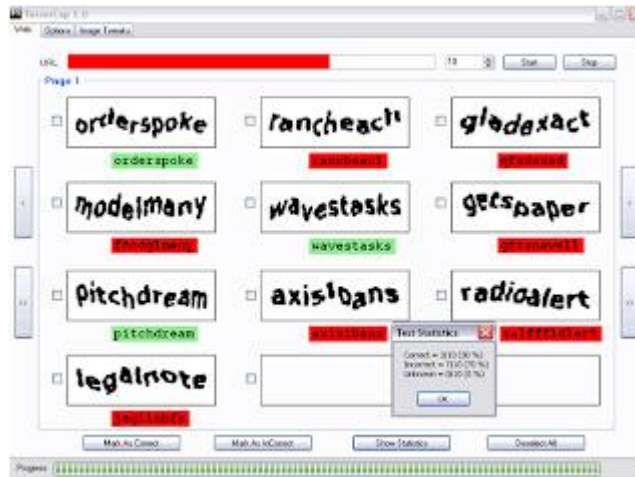
The two tables below summarize the CAPTCHA analysis performed using Tesseract for few popular websites and some CAPTCHA service providers. All these tests were performed using TesseractCap's image preprocessing module and Tesseract-OCR's default training data.

Website	Accuracy*	Quantcast Rank
wikipedia	20-30%	7
ebay	20-30%	11
reddit.com	20-30%	68
CNBC	50+%	121
foodnetwork.com	80-90%	160
dailymail.co.uk	30+%	245
megaupload.com	80+%	1000
pastebin.com	70-80%	32,534
cavenue.com	80+%	149,645

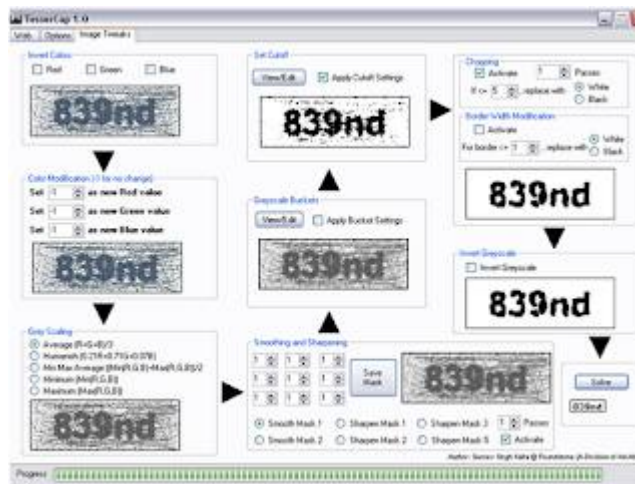
CAPTCHA Provider	Accuracy*
captchas.net	40-50%
opencaptcha.com	20-30%
snaphost.com	60+%
captchacreator.com	10-20%
www.phpcaptcha.org	10-20%
webspamprotect.com	40+%
ReCaptcha	0%

*This accuracy maybe further increased by training the Tesseract-OCR engine for the CAPTCHAs under test.

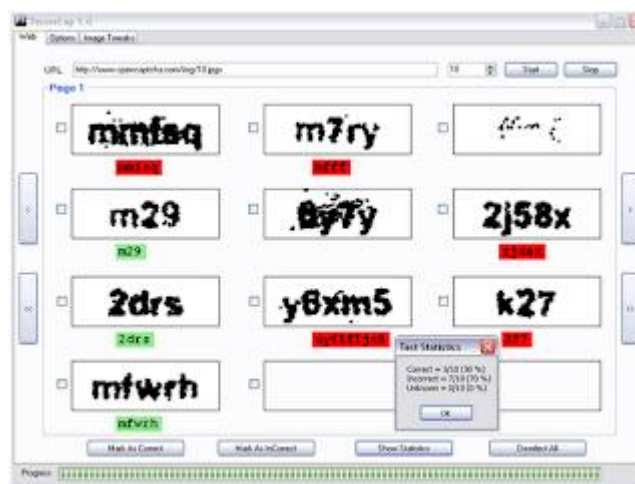
Wikipedia



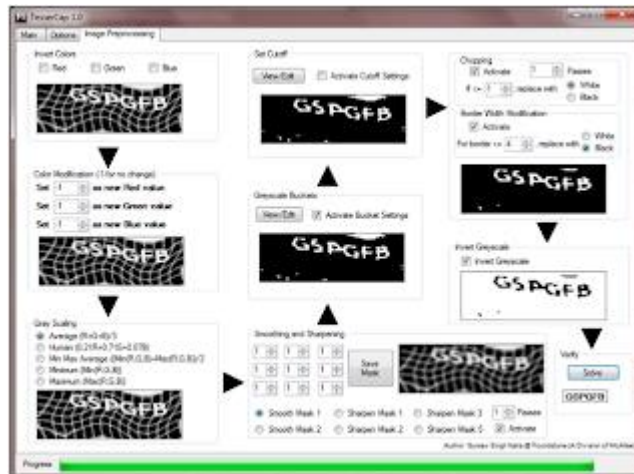
OpenCaptcha Preprocessing



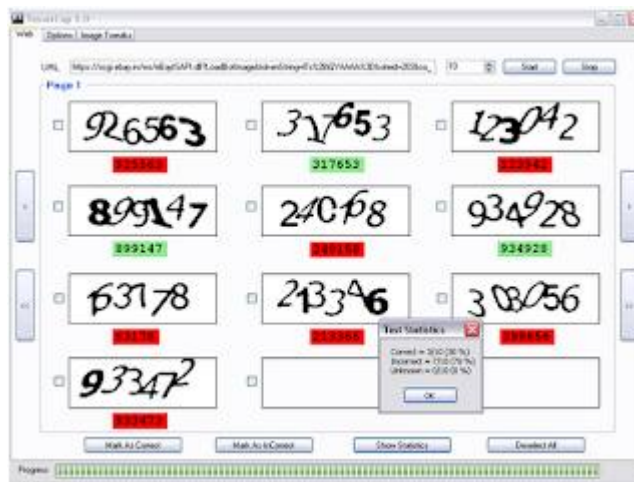
OpenCaptcha Sample Run



Reddit



eBay



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