

Steganography

Cornelius Aschermann

Crypto Party

January 15, 2014

The Greek



The Allies



The Terrorists

15. März 2012 17:36 Uhr

16 Kommentare | 

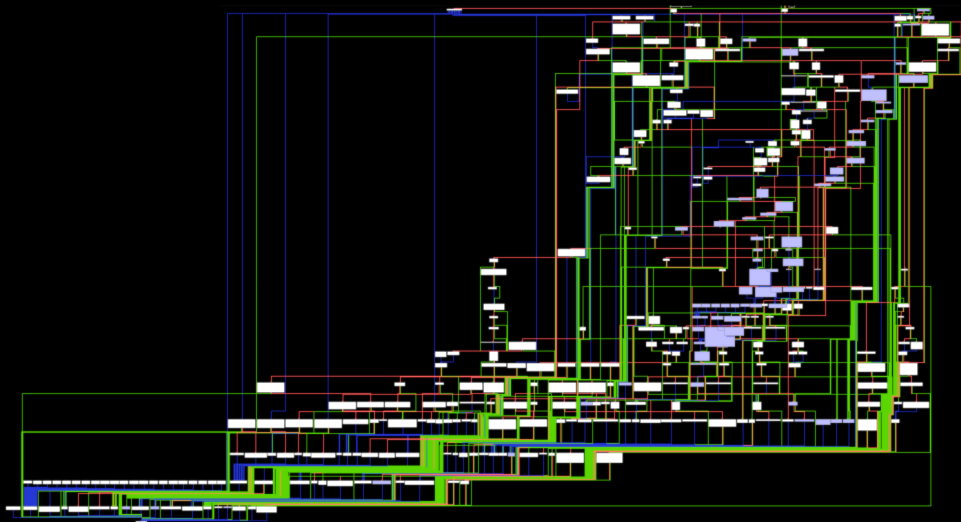
Die 141 Dateien, die Maksud L. bei seiner Festnahme am 16. Mai 2011 in Berlin dabei hatte, sollten nie entdeckt werden. Sie waren auf einer Speicherkarte durch ein Passwort geschützt und mit spezieller Software quasi unsichtbar gemacht. Aber die Beamten des Bundeskriminalamtes (BKA) fanden sie schließlich doch: Die Dateien waren in einem Pornovideo namens KickAss versteckt und in dem verschlüsselten Unterverzeichnis SexyTanja abgelegt. Drei Textdateien waren für die Fahnder von besonderem Interesse, denn nach Einschätzung von Behördenexperten stammen sie aus dem innersten Führungskreis Al-Kaidas.

Es ist das erste Mal, dass in Europa solches Material auftaucht – das ist von Zeit.de herregend. Denn es gibt den Blick frei auf Al-Kaida, auf das Denken

But
Where
To
Hide?



Code



Spam

via: spammimic.com

From Cornelius Aschermann★

↩ Reply

➡ Forward

📁 Archive

🗑 Junk

🗑 Delete

Subject **Dear Julian**

08:28 PM

To julian.assange@fbi.de★

Other Actions ▼

Dear Decision maker , We know you are interested in receiving amazing intelligence . This is a one time mailing there is no need to request removal if you won't want any more . This mail is being sent in compliance with Senate bill 1625 ; Title 4 ; Section 302 . THIS IS NOT MULTI-LEVEL MARKETING ! Why work for somebody else when you can become rich as few as 33 days . Have you ever noticed people love convenience and more people than ever are surfing the web ! Well, now is your chance to capitalize on this ! WE will help YOU decrease perceived waiting time by 190% and increase customer response by 150% . You can begin at absolutely no cost to you

81%

Unread: 0 Total: 12

Bad Kerning

Time



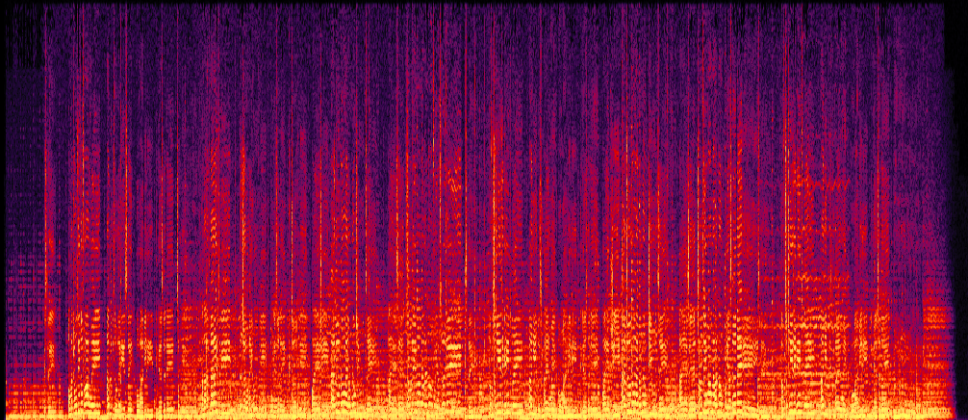
© Toni Verdú Carbó

Cornelius Aschermann

Steganography

9/27

Audio



**Why you
think the
net was
born?**

Cat Pics



IT'S DANGEROUS TO GO
ALONE! TAKE THIS.

**How do
they
work?**

RGB Cat



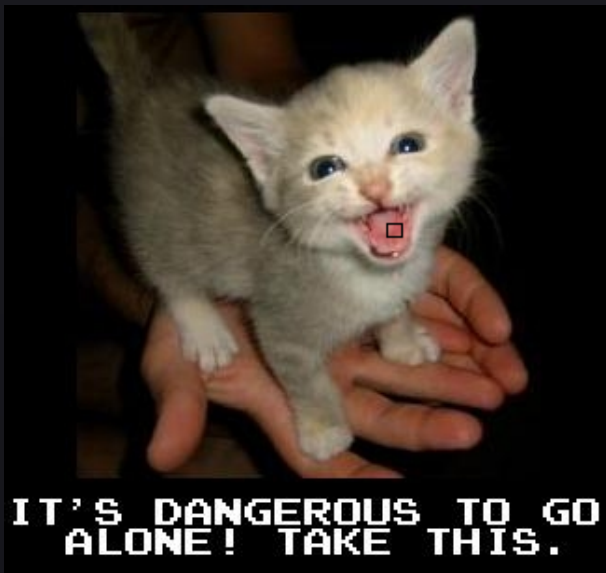
RGB Cat



RGB Cat



Pixel Cat



Pixel Cat



RGB Pixels



$(0.1, 0.3, 0.7)$

$(26, 77, 179)$

$(00011010_2, 01001101_2, 10110011_2)$

$\dots 000110100100110110110011 \dots_2$

RGB Pixels



(0.1, 0.3, 0.7)

(26, 77, 179)

(00011010₂, 01001101₂, 10110011₂)

...000110100100110110110011...₂

RGB Pixels



(0.1, 0.3, 0.7)

(26, 77, 179)

(00011010₂, 01001101₂, 10110011₂)

...000110100100110110110011...₂

RGB Pixels



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(26, 77, 179)

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...000110100100110110110011...₂

RGB Pixels



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...000110100100110110110011...₂

RGB Pixels



(0.1, 0.3, 0.7)

(26, 77, 179)

(00011010₂, 01001101₂, 10110011₂)

...000110100100110110110011...₂

Individual Bits

10000000



Individual Bits

10000000



01000000



Individual Bits

10000000



01000000



00100000



Individual Bits

10000000



01000000



00100000



00010000



Individual Bits

10000000



01000000



00100000



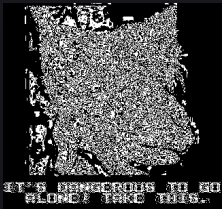
00010000



00001000



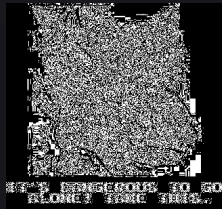
00000100



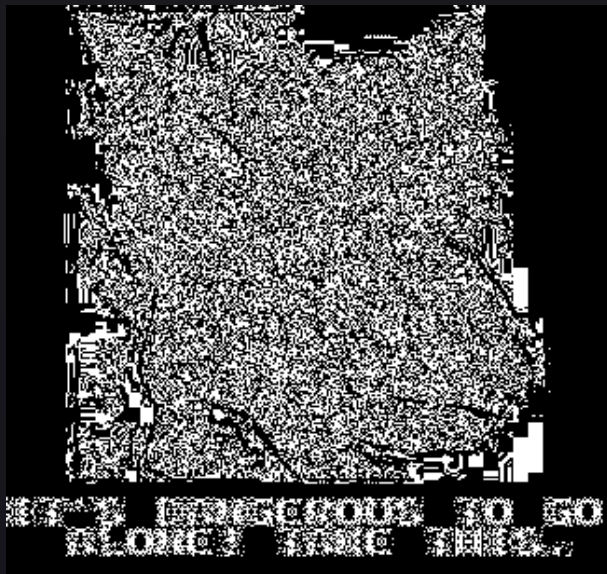
00000010



00000001



Least Significant Bits



Hiding Data

(00011010₂, 01001101₂, 10110011₂)

(26, 77, 179)



Hiding Data

$(00011010_2, 01001101_2, 10110011_2)$
 $(26, 77, 179)$



Hiding Data

(00011010₂, 01001101₂, 10110010₂)

(26, 77, 179)



Hiding Data

(00011010₂, 01001101₂, 10110010₂)
(26, 77, 178)



Hiding Data

(00011010₂, 01001101₂, 10110010₂)

(26, 77, 178)



What Changes If...?

10000000



01000000



00100000



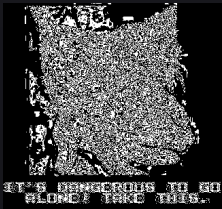
00010000



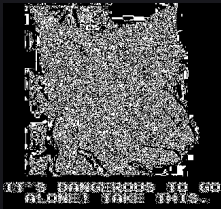
00001000



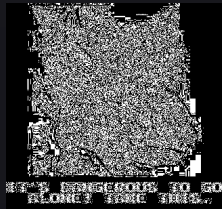
00000100



00000010



00000001



What Changes If...?

10000000



01000000



00100000



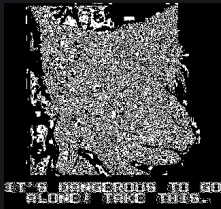
00010000



00001000



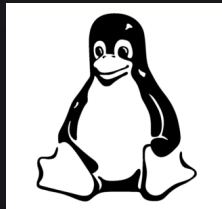
00000100



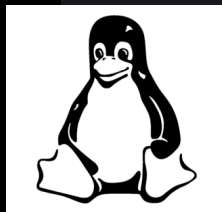
00000010



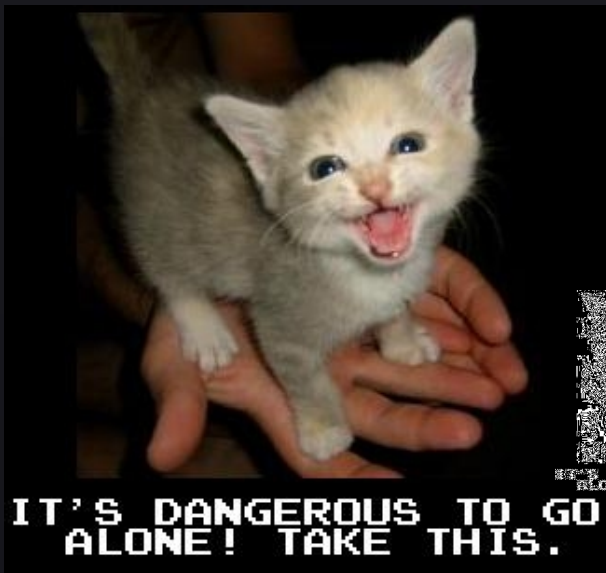
00000001



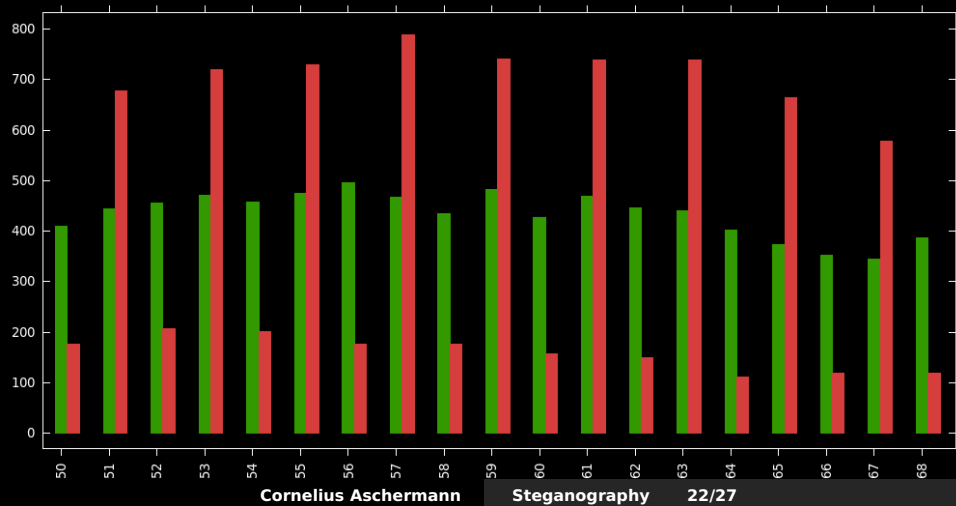
Not Much...



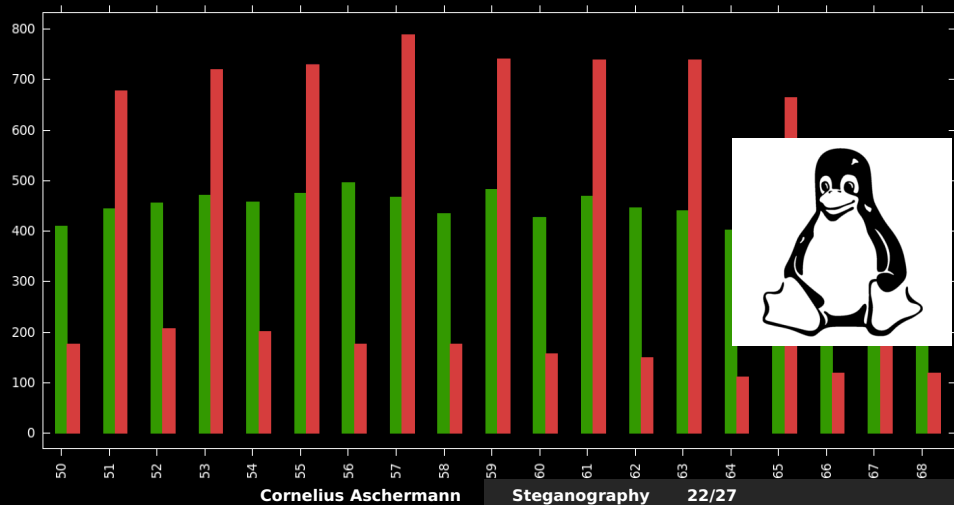
Not Much...



Or Does It?



Or Does It?



What **Now**?

github.com/ranmrdrakono

```
require 'chunky_png'

filename = ARGV[0] || 'kitty.png'
image = ChunkyPNG::Image.from_file(filename)
input = ChunkyPNG::Image.from_file('tux.png')

(0...image.width).each do |w|
  (0...image.height).each do |h|
    int = image[w,h]
    r,g,b = int >> 24 & 0xff, int >> 16 & 0xff, int >> 8 & 0xff
    lsb = if input[w,h] > 256 then 1 else 0 end
    image[w, h] = ChunkyPNG::Color.rgba(r,g, (b&0xfe)+lsb, 255)
  end
end

image.save("hidden_"+filename, :fast_rgb)
```



Stegdetect

outguess.com

Other

© Wikimedia



Media

A woman with dark hair tied back, wearing a white jacket and a purple medal around her neck. She has a serious, somewhat pouting expression. The background is blurred, suggesting a crowd at a sports event.

IT'S COOL..

**YOU GO HAVE FUN
WITHOUT ME.**

memegenerator.net