

# Blocking Ads and Other Objectionable Pictures (And How Not To Do It)

[http://www.theopavlidis.com/technology/norton\\_bug.htm](http://www.theopavlidis.com/technology/norton_bug.htm)

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1

## Disclaimer

- These slides include a discussion of a “bug” in the Norton Security system in use in 2005.
- Norton may have fixed that problem since then but I am not sure. I no longer use their software.

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2

## A Mystery - 1

- It all started when the thumb sketches in one of my web pages would not display on my web browser.
- I checked the source code through the **View>Source** browser button and I saw that the respective code had just disappeared.

## A Mystery - 2

- The original code had been:
 

```
<body>
<p></p>
<p></p>
</body>
```

The code down loaded in the browser was:

```
<body>
<p></p>
</body>
```

The source code for the second image had disappeared

## A Mystery - 3

- I determined that the problem was not in the server (both by checking with the server customer service and by displaying the page correctly on another machine).
- The next possible culprit was the browser, but both Internet Explorer and Mozilla Firefox displayed incorrectly in my machine and correctly on another.

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5

## A Mystery - 4

- Clearly there was a filter running on my machine that ate up pictures of certain dimensions. (I confirmed that by changing the height from 90 to 92 caused the page to be displayed correctly.)

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6

## A Mystery - 5

- My first thought that such a filter was some "malware", maybe a practical joke. I used Norton to search for such a culprit but then a friend suggested that Norton itself might be the culprit.
- I turned off *Norton Internet Security* and, presto, the file was downloaded and displayed correctly.

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7

## Tracking Down the Culprit - 1

- I went to the Norton Internet Security customer support web site. At the top of the list of cases I received was:
- **Cannot access SoftBank HAWKS Baseball Broadband TV after installing Norton Internet Security**  
**width=120 height=90**

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8

## Tracking Down the Culprit - 2

- Obviously, I was not the first victim! There was a link to a lengthy set of instructions on how to fix the problem.
- I printed them out and they came to six pages. It was explained there that such images were suppressed because they were interpreted as advertisements!!!

## Tracking Down the Culprit - 3

- Norton took the standard sizes of the Internet Advertising Bureau (16 sizes altogether) and banned any image that has one of these sizes from any web page.

## Tracking Down the Culprit - 4

- **Norton Logic:**
- An advertisement must be always displayed in one of the 16 “standard” sizes (including 120 by 90 pixels).
- Therefore any image that has one of the 16 “standard” sizes (including 120 by 90) must be an advertisement.

## Tracking Down the Culprit - 5

- Real culprit is a corporate culture that wants "results" no matter what.
- So even people who should know better implement bad designs to meet goals imposed by clueless managers.

## Tracking Down the Culprit - 6

- By coincidence the Dilbert strip of the day I encountered this problem had the "boss" hiring "Dogbert" to write the FAQs in order to anticipate "our customers' most likely questions."
- First FAQ? "Where does your CEO live? I need to know so I can throw your cruddy product through his biggest window."

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13

## Solution

- Did the lengthy instructions helped me fix the problem? NO!
- So I disabled the Norton Ad Blocker. You can do that by going to **Norton AntiSpam>Ad Blocking** and turning it off.

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14

## A Drastic Step

- If you are writing programs that create web pages that display images you can use a C++ function to **Norton-proof** your pages.
- This would save any future viewers of the pages from having either to figure how to disable the Ad Blocker or having to struggle with the stuff in the Norton "support" page.

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15

```
static BOOL AdProtect(int *width, int *height)
{
#define ADSZ 16
    POINT AdvSize[ADSZ] = { {300, 250}, ..., {300, 600} };
    for(int i=0; i<ADSZ; i++) {
        if(*width != AdvSize[i].x) continue;
        if(*height != AdvSize[i].y) continue;
        // we hit a standard advertising size
        if(*width > *height) (*width)++;
        else (*height)++;
        return TRUE;
    }
    return FALSE;
}
```

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## Better Cues for Ad Blockers

- File Format
- Image Statistics
- Image Analysis

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17

## File Format

- Most advertisements use the GIF format while most images use the JPEG format.
- Leaving JPEG images alone would let very few ads through (and thumbnail sketches are almost always JPEG).
- Statistics from three web pages with news, two from Yahoo and one from BBC.

Format/Kind	JPEG	GIF
Ad or Label	$0+1+0 = 1$	$20+16+18 = 54$
Photograph *	$7+4+1 = 12$	$0+1+3 = 4$

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18

## Image Statistics

- Images that are text displays or graphics tend to use significantly fewer distinct colors than photographs. The former usually have fewer than 100 distinct colors, the latter have in excess of 1000 distinct colors.
- Of course images with few colors are encoded best with GIF (or PNG) while image with thousands of colors are encoded best in JPEG.

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19

## Image Analysis Basics - 1

- While pixels are represented in a computer by their red, green, and blue components these values are not convenient for dealing with the content of the image. Instead use:
  - Luminance =  $0.3 * \text{Red} + 0.6 * \text{Green} + 0.1 * \text{Blue}$ ;
  - BlueChrominance =  $127.5 - 0.17 * \text{Red} - 0.33 * \text{Green} + 0.5 * \text{Blue}$ ;
  - RedChrominance =  $127.5 + 0.5 * \text{Red} - 0.42 * \text{Green} - 0.08 * \text{Blue}$ ;

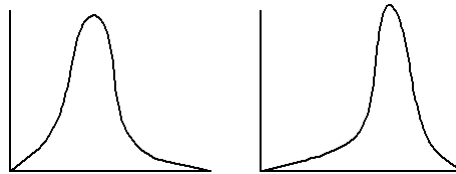
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20

## Image Analysis Basics - 2

- A **histogram** is a plot of the number of pixels with a particular color or luminance as a function of the color or luminance values.
- Luminance histograms of a dark image (left) and a bright image (right)



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21

## Image Analysis - 1



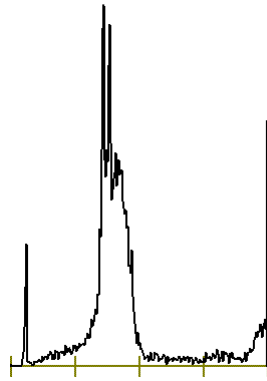
The image on the right is the gray scale (luminance) version of the image on the left and it is almost as informative as the latter. This is because the human eye has difficulty discriminating colors of the same luminance, so ad designers choose colors with different luminance for text and background.

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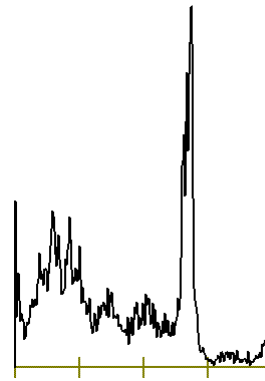
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22

## Histograms over parts of the Las Vegas pix



over "Earn the vacation ..."



over the image of the sleeping person

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23

## Image Analysis - 2

- Parts of an image where text is present tend to have histograms with distinct peaks while other parts tend to have flatter histograms.
- We can use image analysis to find out whether there is a lot of text in an image and if the answer is yes we may block it as an ad!
- There are also more elaborate techniques for identifying ads.

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24