Web Search Basics

Introduction to Information Retrieval
INF 141/ CS 121
Donald J. Patterson

Content adapted from Hinrich Schütze
http://www.informationretrieval.org

Overview

Overview

- Introduction
- Classic Information Retrieval
- Web IR
- Sponsored Search
- Web Search Basics
  - Size of the Web
- Web Users
  - Helping the User
- Spam

Spam

The trouble with paid placement (aka ads):

- It costs money... so instead
- Search Engine Optimization ("SEO")
  - define: "Tuning" your web page to rank highly in the search results for select queries
  - Alternative to paying for placement
  - It is marketing. Getting your content to your audience.

Spam

Search Engine Optimization

Spam

Search Engine Optimization

- Motives

Spam

Search Engine Optimization

- Motives
  - Commercial

Spam

Search Engine Optimization

- Motives
  - Commercial
  - Political

Spam

Search Engine Optimization

- Motives
    - Commercial
    - Political
    - Religious

Search Engine Optimization

- Motives
    - Commercial
    - Political
    - Religious
    - Lobbying

Spam

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- Who does this?

Spam

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- Who does this?
    - Internally: webmasters

Search Engine Optimization

- Motives
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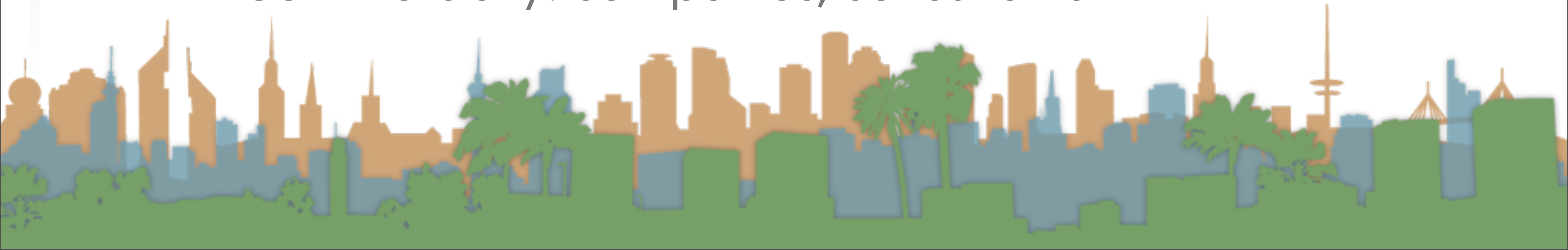
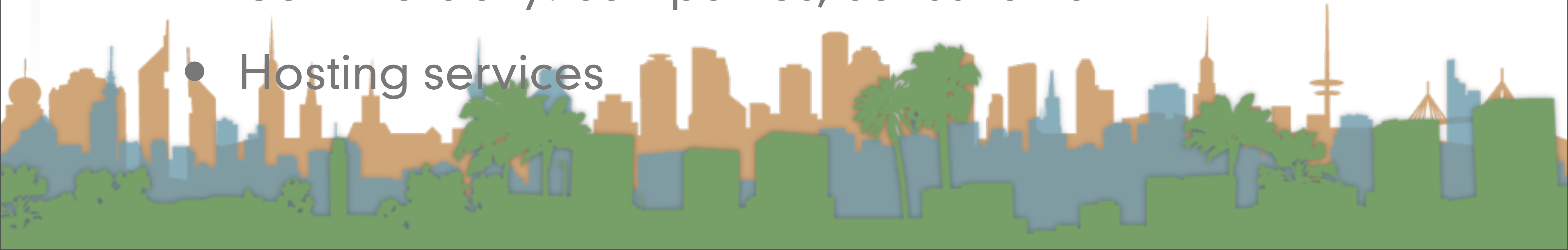
- Who does this?
    - Internally: webmasters
    - Commercially: companies, consultants



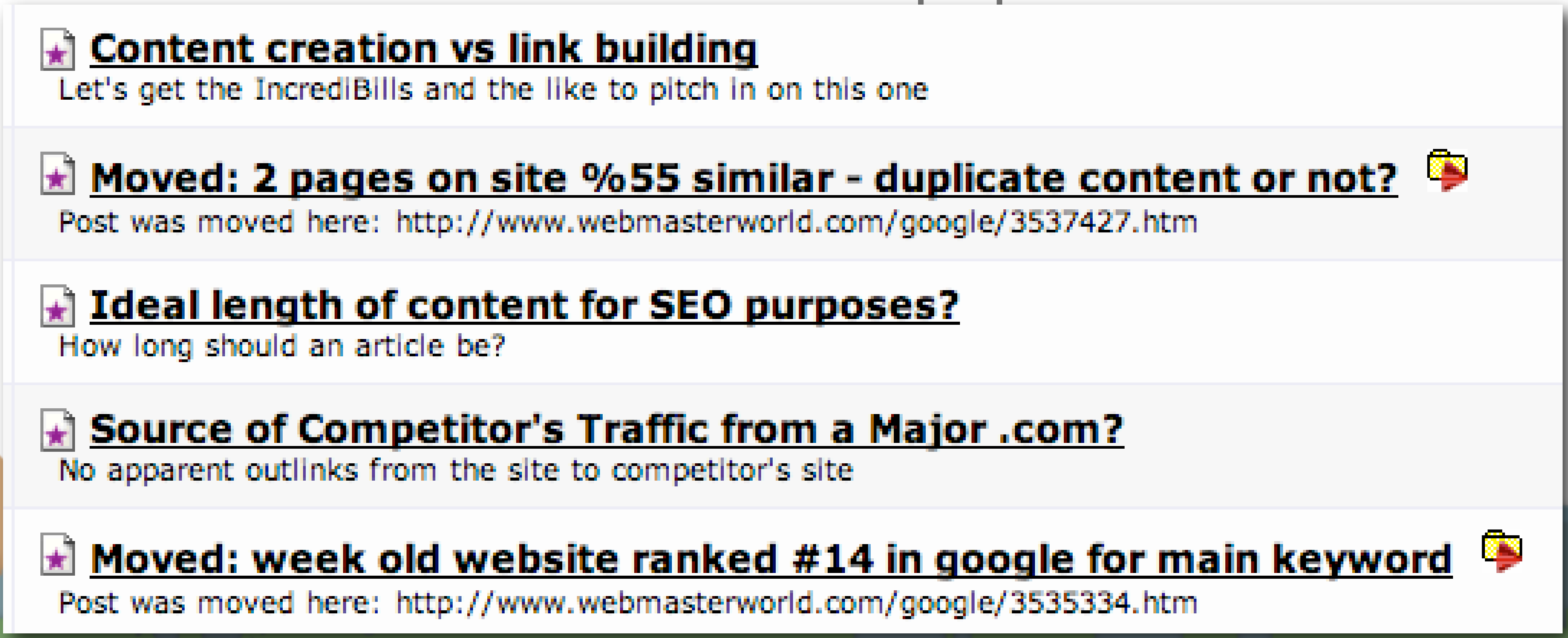
Search Engine Optimization

- Motives
  - Commercial
  - Political
  - Religious
  - Lobbying
- Who does this?
  - Internally: webmasters
  - Commercially: companies, consultants
  - Hosting services



Search Engine Optimization

- Learn more about how to do it online:
  - Web-Master World
  - http://www.webmasterworld.com
  - Search Engine Specific Tricks
  - Discussions about academic papers and results



Content creation vs link building
Let's get the IncrediBills and the like to pitch in on this one

Moved: 2 pages on site %55 similar - duplicate content or not?
Post was moved here: http://www.webmasterworld.com/google/3537427.htm

Ideal length of content for SEO purposes?
How long should an article be?

Source of Competitor's Traffic from a Major .com?
No apparent outlinks from the site to competitor's site

Moved: week old website ranked #14 in google for main keyword
Post was moved here: http://www.webmasterworld.com/google/3535334.htm

Search Engine Optimization

- There are ethical and inethical ways to approach SEO
- Legitimate approach is to:
  - create valuable content
  - make it widely accessible
  - clearly organize it
  - keep it up to date
  - use web standards
  - use web validation tools
  - get high visibility sites to link to your content

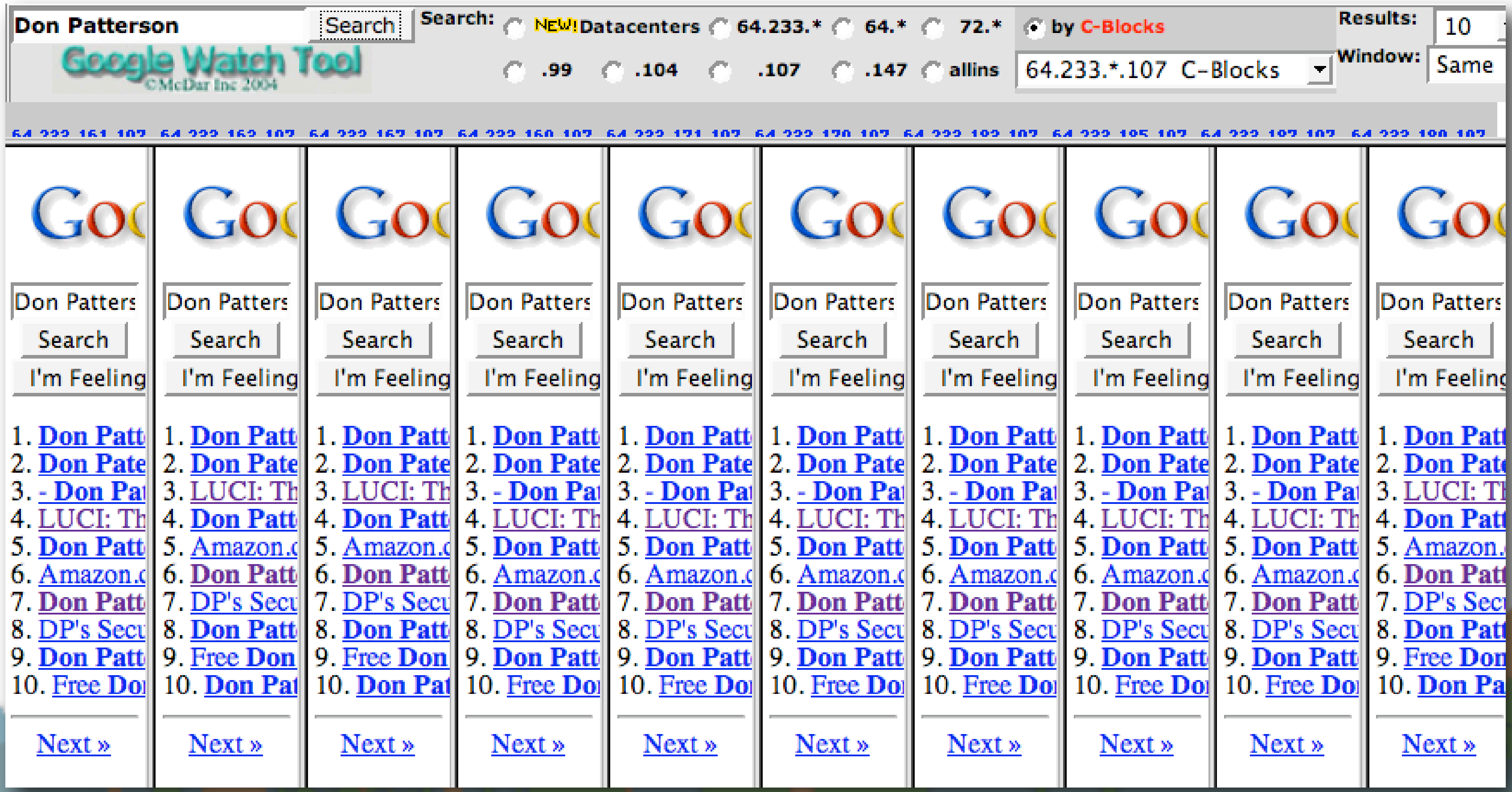
Spam

Search Engine Optimization

- Inethical approaches (aka spam):
  - lots of tricks
    - make lots of fake pages which point to your site
    - make lots of fake comments on sites which point to your site
    - In a nutshell, “lie”
- Sometimes legitimate and illegitimate techniques are hard to differentiate. It can be a fine line between them.

Search Engine Optimization

- Ranking depends on the data center
  - http://www.flickr.com/photos/the_impression_that_i_get/1321041609/
- Examine the different results:
  - http://www.mcdar.net/dance/index.php



Don Patterson Search | Search: ○ NEW! Datacenters ○ 64.233.* ○ 64.* ○ 72.* ● by C-Blocks | Results: 10
Google Watch Tool ©McDar Inc 2004 | ○ .99 ○ .104 ○ .107 ○ .147 ○ allins | 64.233.*.107 C-Blocks | Window: Same

64.233.161.107	64.233.162.107	64.233.167.107	64.233.169.107	64.233.171.107	64.233.179.107	64.233.183.107	64.233.185.107	64.233.187.107	64.233.189.107
Don Patters	Don Patters	Don Patters	Don Patters	Don Patters	Don Patters	Don Patters	Don Patters	Don Patters	Don Patters
Search	Search	Search	Search	Search	Search	Search	Search	Search	Search
I'm Feeling	I'm Feeling	I'm Feeling	I'm Feeling	I'm Feeling	I'm Feeling	I'm Feeling	I'm Feeling	I'm Feeling	I'm Feeling
1. Don Patt	1. Don Patt	1. Don Patt	1. Don Patt	1. Don Patt	1. Don Patt	1. Don Patt	1. Don Patt	1. Don Patt	1. Don Patt
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5. Don Patt	5. Amazon.c	5. Amazon.c	5. Don Patt	5. Don Patt	5. Don Patt	5. Don Patt	5. Don Patt	5. Don Patt	5. Amazon.
6. Amazon.c	6. Don Patt	6. Don Patt	6. Amazon.c	6. Amazon.c	6. Amazon.c	6. Amazon.c	6. Amazon.c	6. Amazon.c	6. Don Patt
7. Don Patt	7. DP's Secu	7. DP's Secu	7. Don Patt	7. Don Patt	7. Don Patt	7. Don Patt	7. Don Patt	7. Don Patt	7. DP's Secu
8. DP's Secu	8. Don Patt	8. Don Patt	8. DP's Secu	8. DP's Secu	8. DP's Secu	8. DP's Secu	8. DP's Secu	8. DP's Secu	8. Don Patt
9. Don Patt	9. Free Don	9. Free Don	9. Don Patt	9. Don Patt	9. Don Patt	9. Don Patt	9. Don Patt	9. Don Patt	9. Free Don
10. Free Do	10. Don Pat	10. Don Pat	10. Free Do	10. Free Do	10. Free Do	10. Free Do	10. Free Do	10. Free Do	10. Don Pa
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  - http://www.void.be/googletool.html

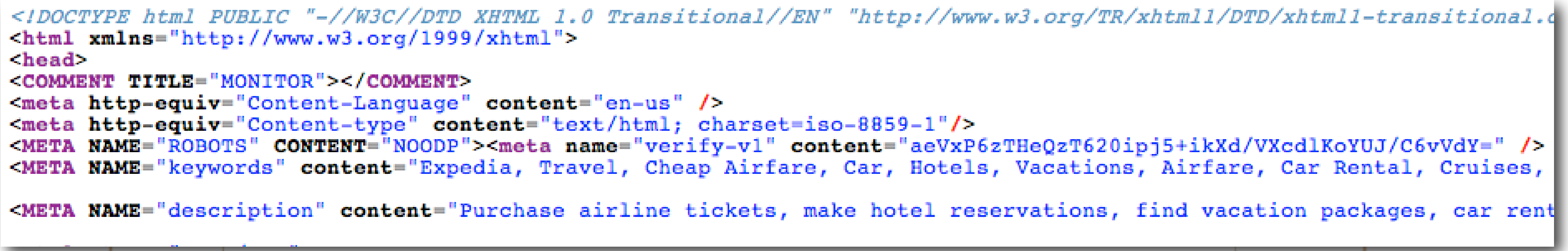
Spam

Keyword Stuffing

- First Generation Search Engines
    - Heavily relied on tf/idf ratio.
    - E.G. The highest ranking page for the query “brilliant computer scientist” had the most examples of those words.

Keyword Stuffing

- So SEOs responded by screwing around with keywords
  - Misleading meta-tags
  - Repeating keywords over and over and over and....
  - Playing games with colors. (white on white keywords)
    - visible to spiders but not users in browsers

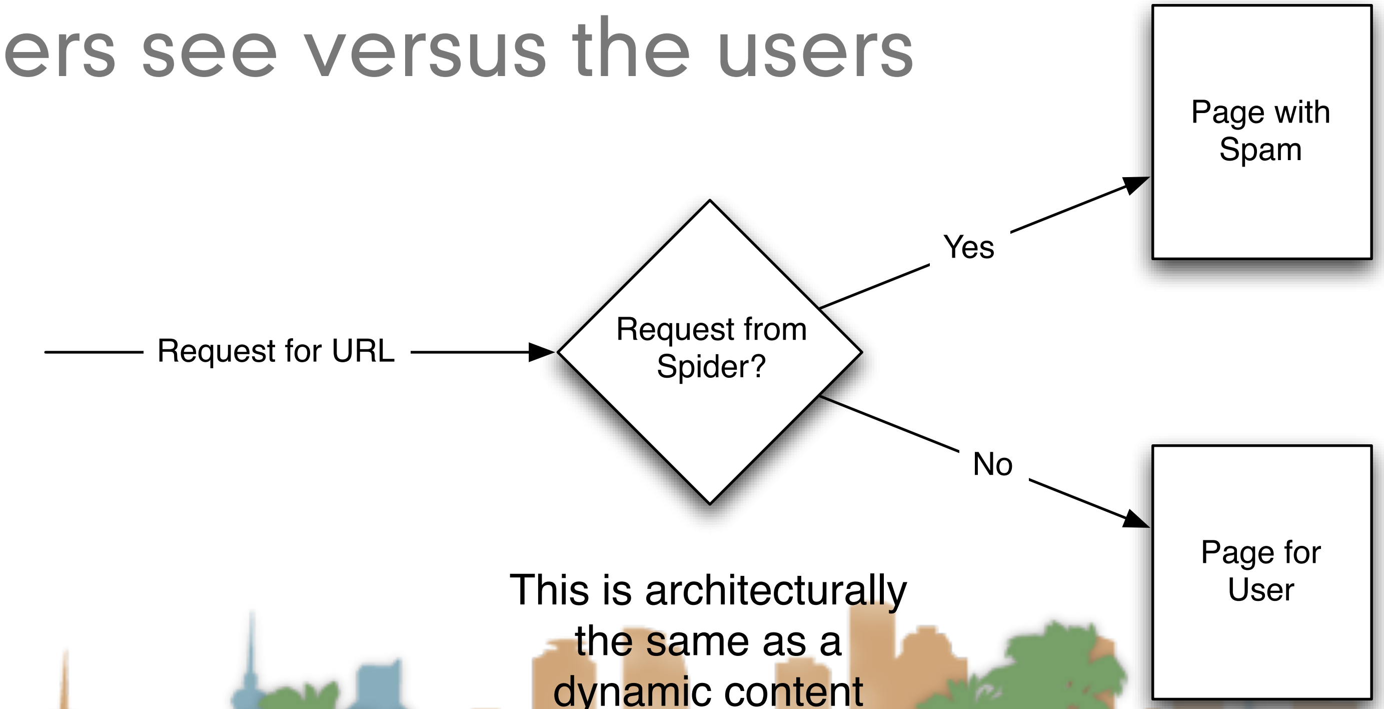


```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.
<html xmlns="http://www.w3.org/1999/xhtml">
<head>
<COMMENT TITLE="MONITOR"></COMMENT>
<meta http-equiv="Content-Language" content="en-us" />
<meta http-equiv="Content-type" content="text/html; charset=iso-8859-1"/>
<META NAME="ROBOTS" CONTENT="NOODP"><meta name="verify-v1" content="aeVxP6zTHeQzT620ipj5+ikXd/VXcdlKoYUJ/C6vVdY=" />
<META NAME="keywords" content="Expedia, Travel, Cheap Airfare, Car, Hotels, Vacations, Airfare, Car Rental, Cruises,

<META NAME="description" content="Purchase airline tickets, make hotel reservations, find vacation packages, car rent
```

Keyword Stuffing

- Cloaking
  - define: Serving different content to a spider than to a user.
  - More sophisticated versions of differentiating what the spiders see versus the users



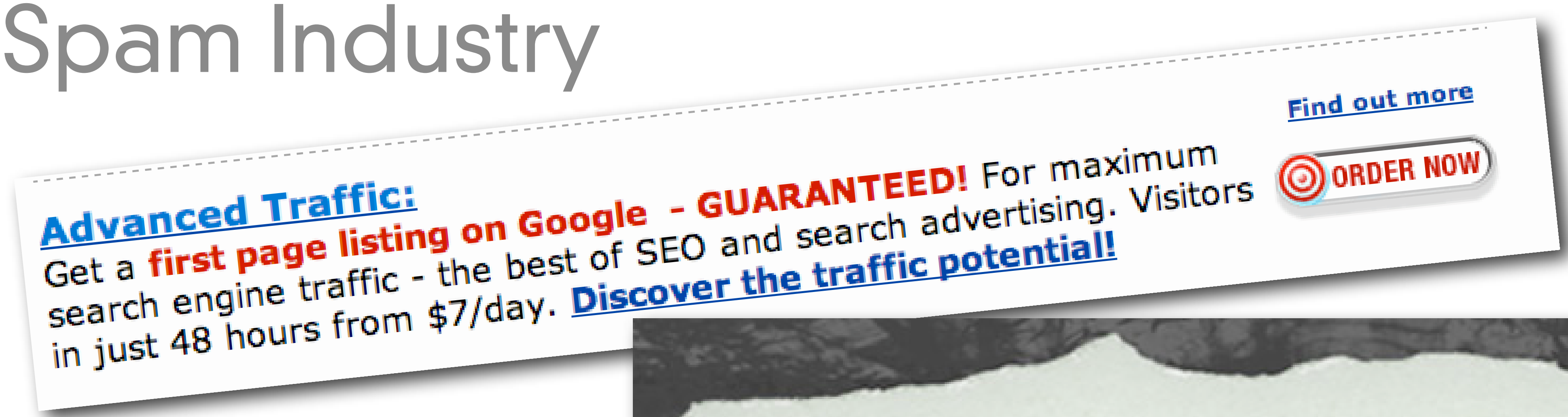
This is architecturally the same as a dynamic content engine

Other spam techniques

- Doorway pages
  - Like cloaking but using a redirect
  - Initial page is optimized for a keyword then a redirect takes the user to the “real” page
- Link spamming
  - Programs that search for blogs and automatically leave comments with links
- Robot Clicker-Fraud
  - Programs that “click” on query results to up their value.

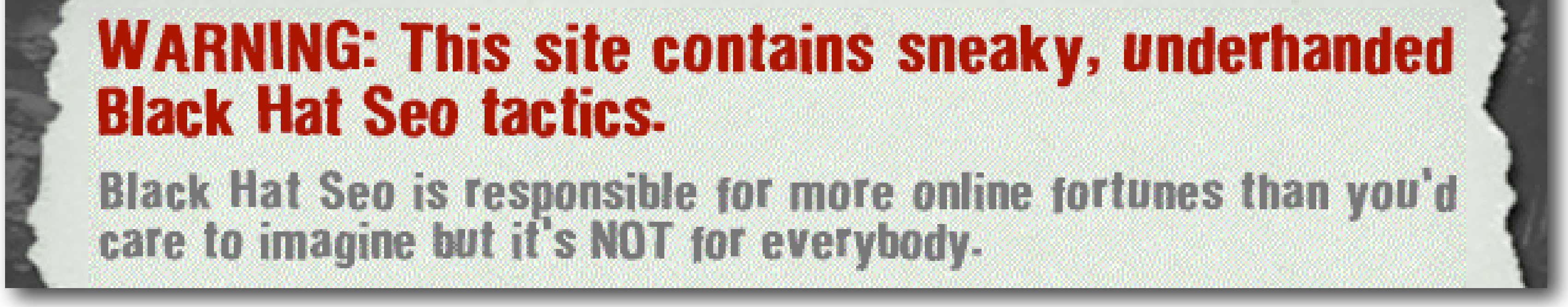
Spam

Spam Industry



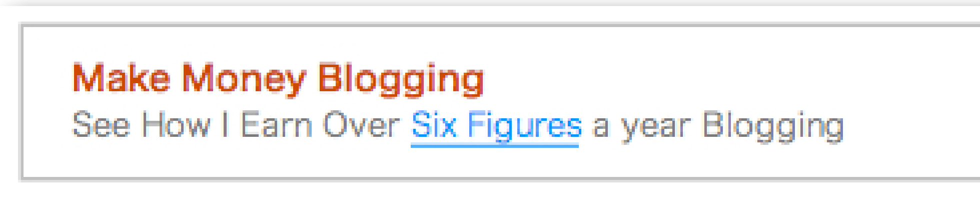
Advanced Traffic:

Get a **first page listing on Google - GUARANTEED!** For maximum search engine traffic - the best of SEO and search advertising. Visitors in just 48 hours from $7/day. **Discover the traffic potential!**



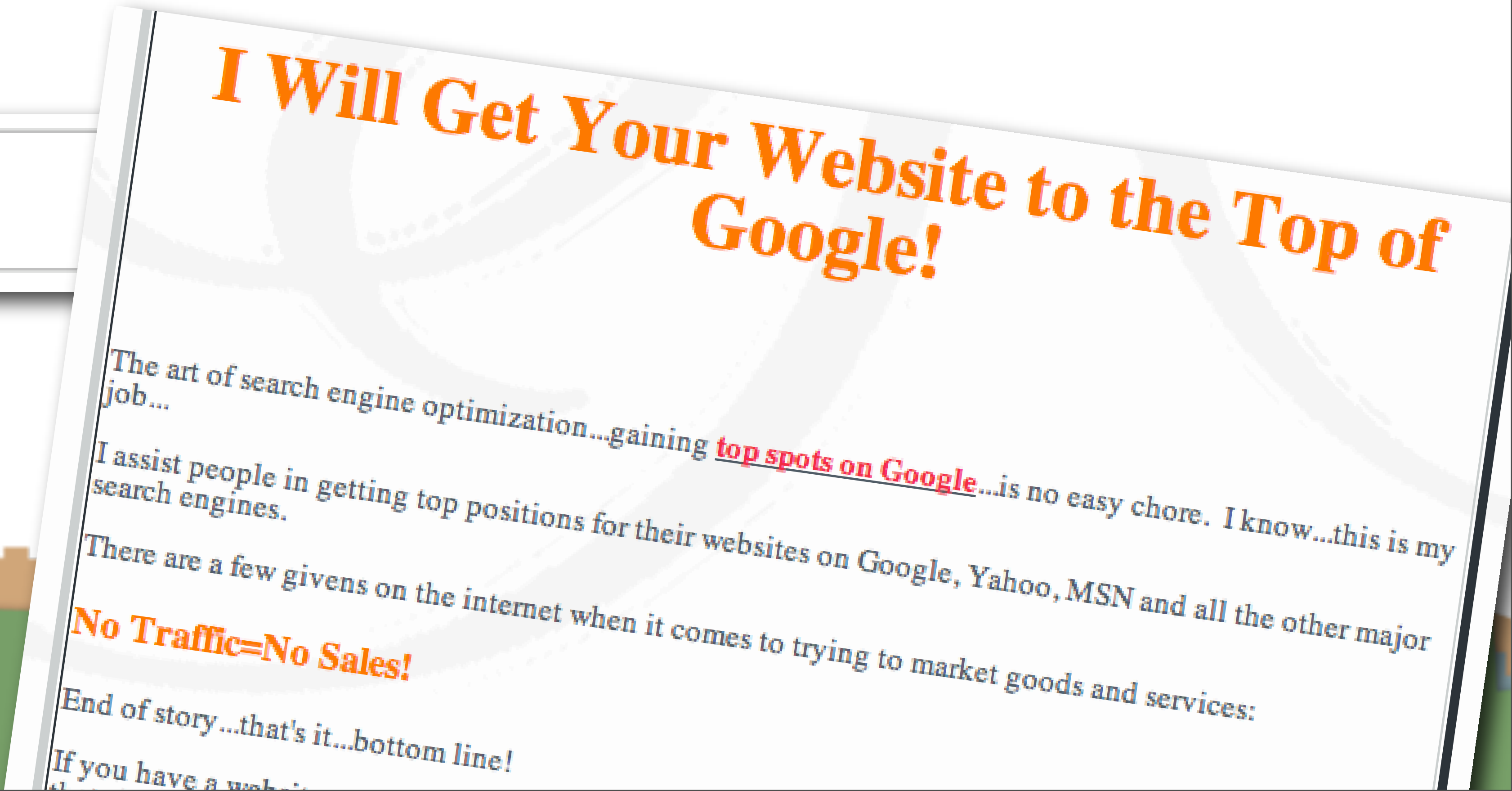
WARNING: This site contains sneaky, underhanded Black Hat Seo tactics.

Black Hat Seo is responsible for more online fortunes than you'd care to imagine but it's NOT for everybody.



Make Money Blogging

See How I Earn Over Six Figures a year Blogging



I Will Get Your Website to the Top of Google!

The art of search engine optimization...gaining top spots on Google...is no easy chore. I know...this is my job...

I assist people in getting top positions for their websites on Google, Yahoo, MSN and all the other major search engines.

There are a few givens on the internet when it comes to trying to market goods and services:

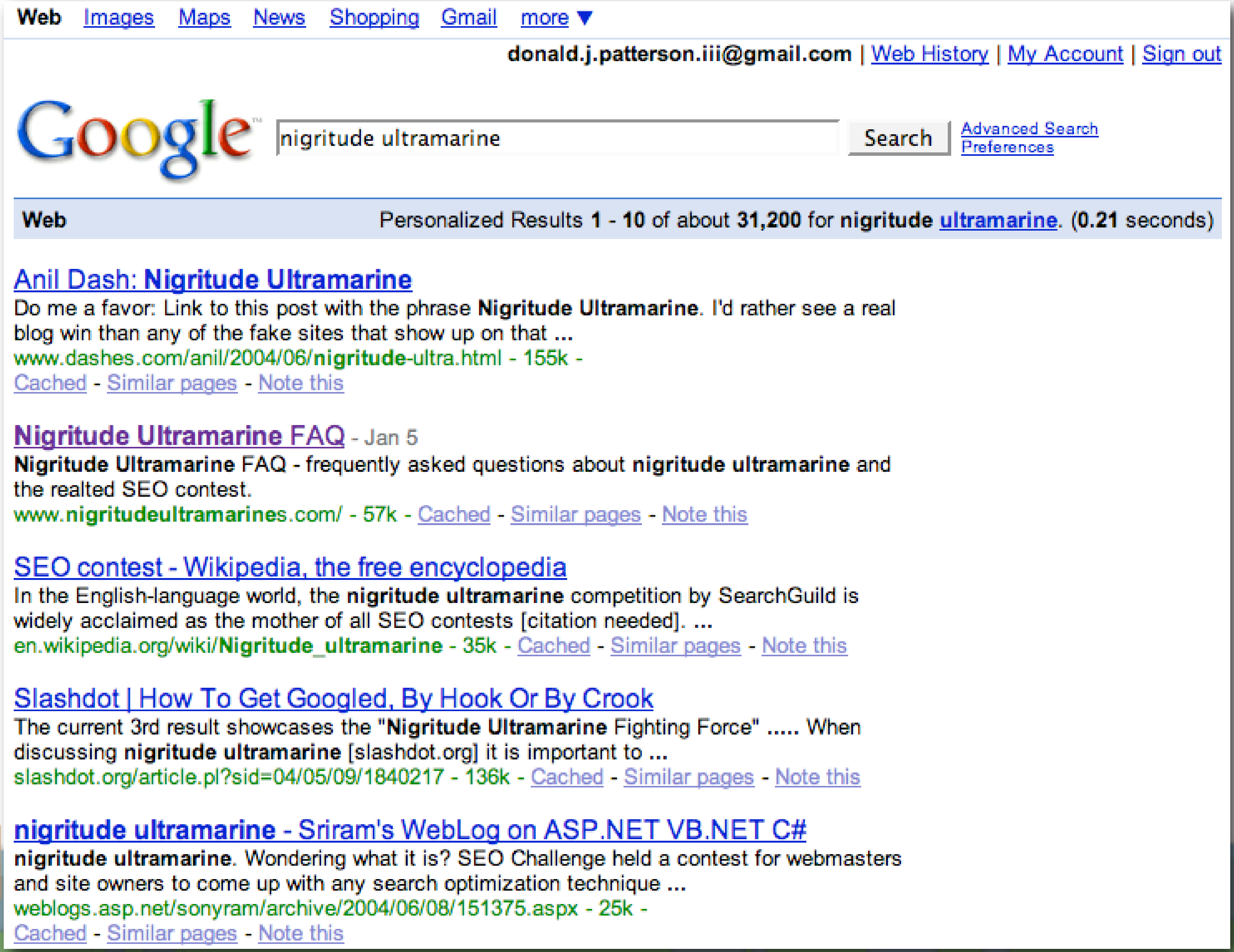
No Traffic=No Sales!

End of story...that's it...bottom line!

If you have a web

Spam

Spam Contest



Web Images Maps News Shopping Gmail more ▼
donald.j.patterson.iii@gmail.com | Web History | My Account | Sign out
Search
Advanced Search
Preferences
Web

nigritude ultramarine

Personalized Results **1** - **10** of about **31,200** for **nigritude ultramarine**. (**0.21** seconds)

Anil Dash: **Nigritude Ultramarine**
Do me a favor: Link to this post with the phrase **Nigritude Ultramarine**. I'd rather see a real blog win than any of the fake sites that show up on that **...**
www.dashes.com/anil/2004/06/**nigritude**-ultra.html - 155k -
Cached - Similar pages - Note this

Nigritude Ultramarine FAQ - Jan 5
Nigritude Ultramarine FAQ - frequently asked questions about **nigritude ultramarine** and the realted SEO contest.
www.**nigritudeultramarines**.com/ - 57k - Cached - Similar pages - Note this

SEO contest - Wikipedia, the free encyclopedia
In the English-language world, the **nigritude ultramarine** competition by SearchGuild is widely acclaimed as the mother of all SEO contests [citation needed]. **...**
en.wikipedia.org/wiki/**Nigritude_ultramarine** - 35k - Cached - Similar pages - Note this

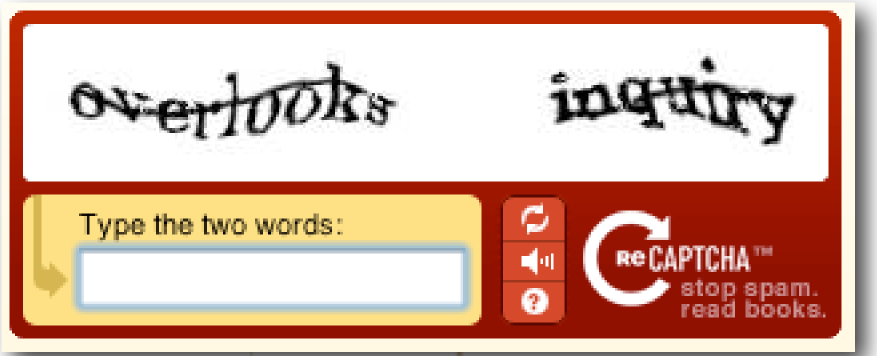
Slashdot | How To Get Googled, By Hook Or By Crook
The current 3rd result showcases the "**Nigritude Ultramarine** Fighting Force" **.....** When discussing **nigritude ultramarine** [slashdot.org] it is important to **...**
slashdot.org/article.pl?sid=04/05/09/1840217 - 136k - Cached - Similar pages - Note this

nigritude ultramarine - Sriram's WebLog on ASP.NET VB.NET C#
nigritude ultramarine. Wondering what it is? SEO Challenge held a contest for webmasters and site owners to come up with any search optimization technique **...**
weblogs.asp.net/sonyram/archive/2004/06/08/151375.aspx - 25k -
Cached - Similar pages - Note this

Spam

The war on spam

- Quality Indicators
  - Statistical Analysis of Links (aka PageRank)
    - votes from authors
  - Usage indicators (users visiting a page)
    - votes from users
- Anti-Robot techniques
  - “Captchas”
  - Completely Automated Public Turing Computers and Humans Apart



overlooks inquiry

Type the two words:

ReCAPTCHA™

stop spam. read books.

The war on spam

- Limits on meta keywords
- Spam Recognition by machine learning
- “no-follow” attribute
- Family Friendly filters
    - Automatic Detection of Pornography
        - Often the spammers desired landing page
    - Text Analysis
        - Look for keywords and variants

Spam

The war on spam

- Robust Link Analysis
  - Ignore statistically improbable links
  - Use link analysis to detect spammers
    - “Guilt by association”

Spam

The war on spam

- Editorial Intervention
  - Blacklists
  - Query Reviews
  - Customer Complaints
  - Visualization Tools

Webmaster Guidelines

- Search Engines have SEO policies
  - What is allowed and not allowed
- Example: Search for “google webmaster guidelines” or “msn guidelines for successful indexing”
- Ignore them at your own risk
- Once you are blacklisted by a search engine you will disappear from the web
  - Remember how search engines enable scalability?
- Adversarial IR Research:
  - http://airweb.cse.lehigh.edu/