

# Black Hat Search Engine Optimisation

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- 1. Search Engine Optimisation**
2. Blackhat techniques explained
3. Security Recommendations

# Search Engine Optimisation (SEO)

- Improving your website's ranking in search results
- Search Engines rank pages based upon
  - Keywords
  - Links
  - Magic (of the Top Secret Propriety Variety)
- SEO involves creating keywords & links to improve the ranking of a website for a given search term

# White Hat vs Black Hat

- White Hat:
  - A **white hat** is the hero or *good guy*, especially in computing slang, where it refers to an *ethical hacker* that focuses on securing and protecting IT systems.
- Black Hat:
  - **black hat** n. colloq. (orig. U.S.) (a) a villain or criminal, esp. one in a film or other work of fiction; a ‘bad guy’; (b) Computing slang a person who engages in illegal or malicious hacking, creates or distributes computer viruses, etc.”

# Black Hat SEO

- Black Hat SEO: using tricks to fool the search engines to push your website higher in search results
- Usually fine line between legitimate and disallowed SEO practices – usually comes down to whether the action is “deceptive”
- Not illegal in itself, but generally against search engines terms of service

# Relevance to Security

- Brand Damage
  - Brand associated with negative keywords
  - Brand associated with undesirable websites
- Customer mistakes another site for you own
  - Lost sales & revenue
  - Phishing
- Website exploited by blackhats
  - Brand damage
  - Delisted from search engines

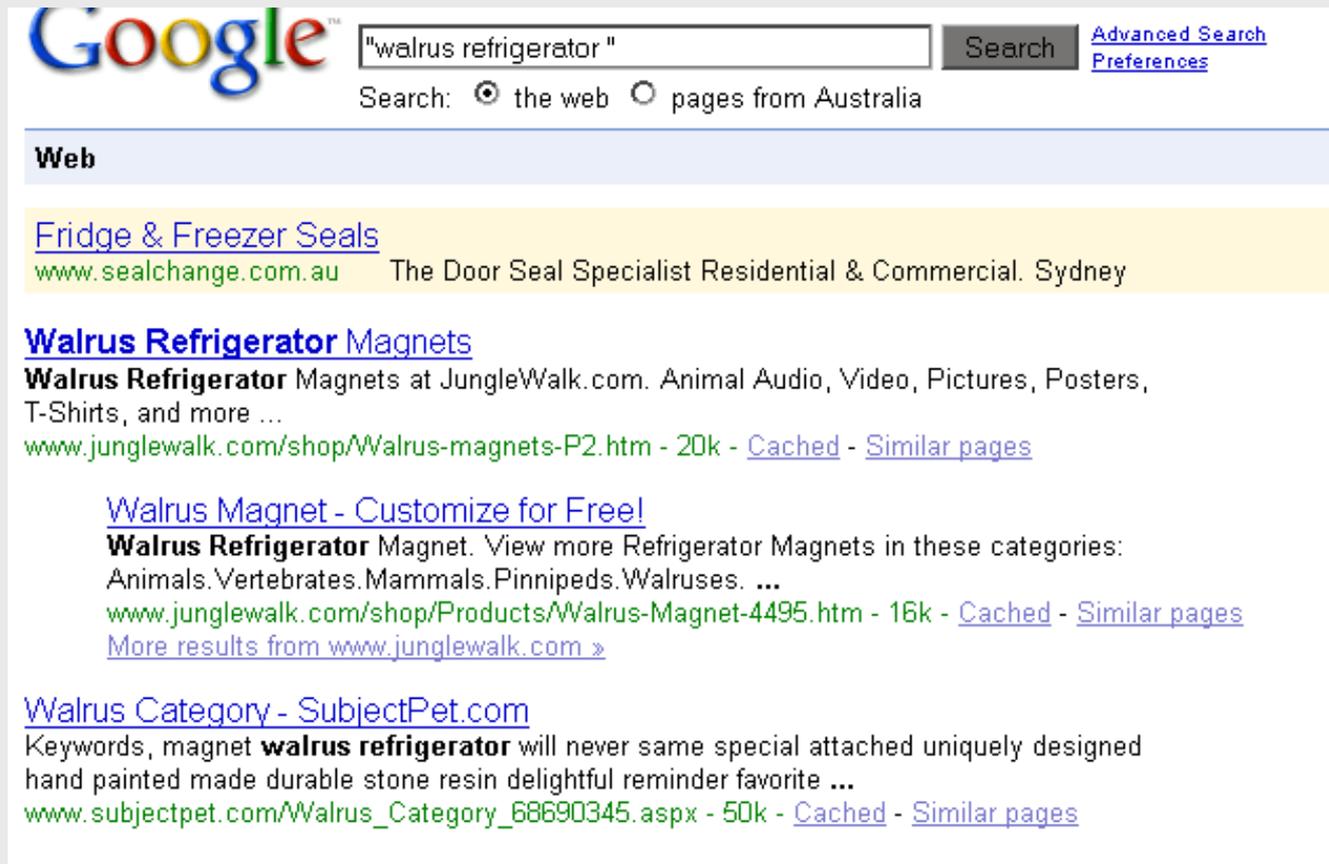
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# Search Engines Simplified

- Search Engines rank pages by examining:
  - Keyword Search
    - Occurrence, keyword density, page location
  - Links
    - relationships between pages & sites
    - ranking of origin or destination
- This is done by Search Engine “Bots”
  - scour pages for keywords, links and other characteristics
- Blackhat SEO often aims to trick the bots

# Search Ranking

- Ranking of a page for a given search phrase



The screenshot shows a Google search interface with the query "walrus refrigerator" entered in the search box. The search results are displayed under the "Web" tab. The first result is "Fridge & Freezer Seals" from www.sealchange.com.au. The second result is "Walrus Refrigerator Magnets" from JungleWalk.com, which includes a sub-result for "Walrus Magnet - Customize for Free!". The third result is "Walrus Category - SubjectPet.com".

Google "walrus refrigerator" Search [Advanced Search](#) [Preferences](#)  
Search:  the web  pages from Australia

**Web**

[Fridge & Freezer Seals](#)  
www.sealchange.com.au The Door Seal Specialist Residential & Commercial. Sydney

[Walrus Refrigerator Magnets](#)  
**Walrus Refrigerator** Magnets at JungleWalk.com. Animal Audio, Video, Pictures, Posters, T-Shirts, and more ...  
www.junglewalk.com/shop/Walrus-magnets-P2.htm - 20k - [Cached](#) - [Similar pages](#)

[Walrus Magnet - Customize for Free!](#)  
**Walrus Refrigerator** Magnet. View more Refrigerator Magnets in these categories: Animals. Vertebrates. Mammals. Pinnipeds. Walruses. ...  
www.junglewalk.com/shop/Products/Walrus-Magnet-4495.htm - 16k - [Cached](#) - [Similar pages](#)  
[More results from www.junglewalk.com »](#)

[Walrus Category - SubjectPet.com](#)  
Keywords, magnet **walrus refrigerator** will never same special attached uniquely designed hand painted made durable stone resin delightful reminder favorite ...  
www.subjectpet.com/Walrus\_Category\_68690345.aspx - 50k - [Cached](#) - [Similar pages](#)

*In order to show you the most relevant results, we have omitted some entries very similar  
if you like, you can [repeat the search with the omitted results included](#).*

# Black Hat SEO

- Manipulating Content
  - Keyword stuffing
  - Cloaking
  - Content Theft
- Manipulating Links
  - Link spamming
  - Link farms
- Impacts

# Keyword Stuffing & Cloaking

- Keyword Stuffing
  - Increasing the number of occurrences of keywords
  - Often hidden from users, but “visible” to search engine bots
  - Hiding keywords behind images, in the background, off the screen etc
  - Not really relevant to security – just be aware of it
- Cloaking
  - Similar to keyword stuffing
  - Show one page to the search bot, another to the user

# Cloaking

- Yahoo! caught cloaking

(<http://www.agerhart.com/seo-rankings/yahoo-caught-cloaking-will-they-ban-themselves/>)

Content Served to the SE Bots

Used Cars For Sale - Used Cars Dealer Listings - Used Cars Private Listings

<a href="#">Alabama Used Cars</a>	<a href="#">Kentucky Used Cars</a>	<a href="#">North Dakota Used Cars</a>
<a href="#">Alaska Used Cars</a>	<a href="#">Louisiana Used Cars</a>	<a href="#">Ohio Used Cars</a>
<a href="#">Arizona Used Cars</a>	<a href="#">Maine Used Cars</a>	<a href="#">Oklahoma Used Cars</a>
<a href="#">Arkansas Used Cars</a>	<a href="#">Maryland Used Cars</a>	<a href="#">Oregon Used Cars</a>
<a href="#">California Used Cars</a>	<a href="#">Massachusetts Used Cars</a>	<a href="#">Pennsylvania Used Cars</a>
<a href="#">Colorado Used Cars</a>	<a href="#">Michigan Used Cars</a>	<a href="#">Rhode Island Used Cars</a>
<a href="#">Connecticut Used Cars</a>	<a href="#">Minnesota Used Cars</a>	<a href="#">South Carolina Used Cars</a>
<a href="#">Delaware Used Cars</a>	<a href="#">Mississippi Used Cars</a>	<a href="#">South Dakota Used Cars</a>
<a href="#">District of Columbia Used Cars</a>	<a href="#">Missouri Used Cars</a>	<a href="#">Tennessee Used Cars</a>
<a href="#">Florida Used Cars</a>	<a href="#">Montana Used Cars</a>	<a href="#">Texas Used Cars</a>

# Cloaking

Home New Cars Used Cars Green Research Finance Insurance Maintain My Visit site

Find a Car | Sell your Car | Buy a Car | Price | Used Cars | Dealer Listings | Private Listings | Reviews | Vehicle History | Reports | News | Advice

## Content Served to the Users

Used Cars For Sale

Used Cars For Sale - Used Cars Dealer Listings - Used Cars Private Listings

[A](#) [C](#) [D](#) [F](#) [G](#) [H](#) [I](#) [K](#) [L](#) [M](#) [N](#) [O](#) [P](#) [R](#) [S](#) [T](#) [U](#) [V](#) [W](#) | [By major city](#)

<a href="#">-- A --</a>	<a href="#">Kentucky</a>	<a href="#">North Dakota</a>
<a href="#">Alabama</a>	<a href="#">-- L --</a>	<a href="#">-- O --</a>
<a href="#">Alaska</a>	<a href="#">Louisiana</a>	<a href="#">Ohio</a>
<a href="#">Arizona</a>	<a href="#">-- M --</a>	<a href="#">Oklahoma</a>
<a href="#">Arkansas</a>	<a href="#">Maine</a>	<a href="#">Oregon</a>
<a href="#">-- C --</a>	<a href="#">Maryland</a>	<a href="#">-- P --</a>
<a href="#">California</a>	<a href="#">Massachusetts</a>	<a href="#">Pennsylvania</a>
<a href="#">Colorado</a>	<a href="#">Michigan</a>	<a href="#">-- R --</a>
<a href="#">Connecticut</a>	<a href="#">Minnesota</a>	<a href="#">Rhode Island</a>
<a href="#">-- D --</a>	<a href="#">Mississippi</a>	<a href="#">-- S --</a>
<a href="#">Delaware</a>	<a href="#">Missouri</a>	<a href="#">South Carolina</a>
<a href="#">District of Columbia</a>	<a href="#">Montana</a>	<a href="#">South Dakota</a>
<a href="#">E</a>		<a href="#">-- T --</a>
		<a href="#">Tennessee</a>

# Content Theft

- Copy content from existing website
  - May allow a site to “steal” another site’s ranking
  - Search Engines attempt to weed out duplicates
  - Which site is the original?
- Stolen content often used in link farms



# Manipulating Links

- links from other sites are like a vote for your site in search rankings
  - Depends on who the link is from though
  - Higher ranking of the linking site, better the vote
- Blackhats perform many activities to generate links and networks

# Link Farms

- Networks of fake websites (thousands)
- Site content is often copied, or non-sensical – designed for search engine bots not people
- Create links on these pages to boost the ranking of another site



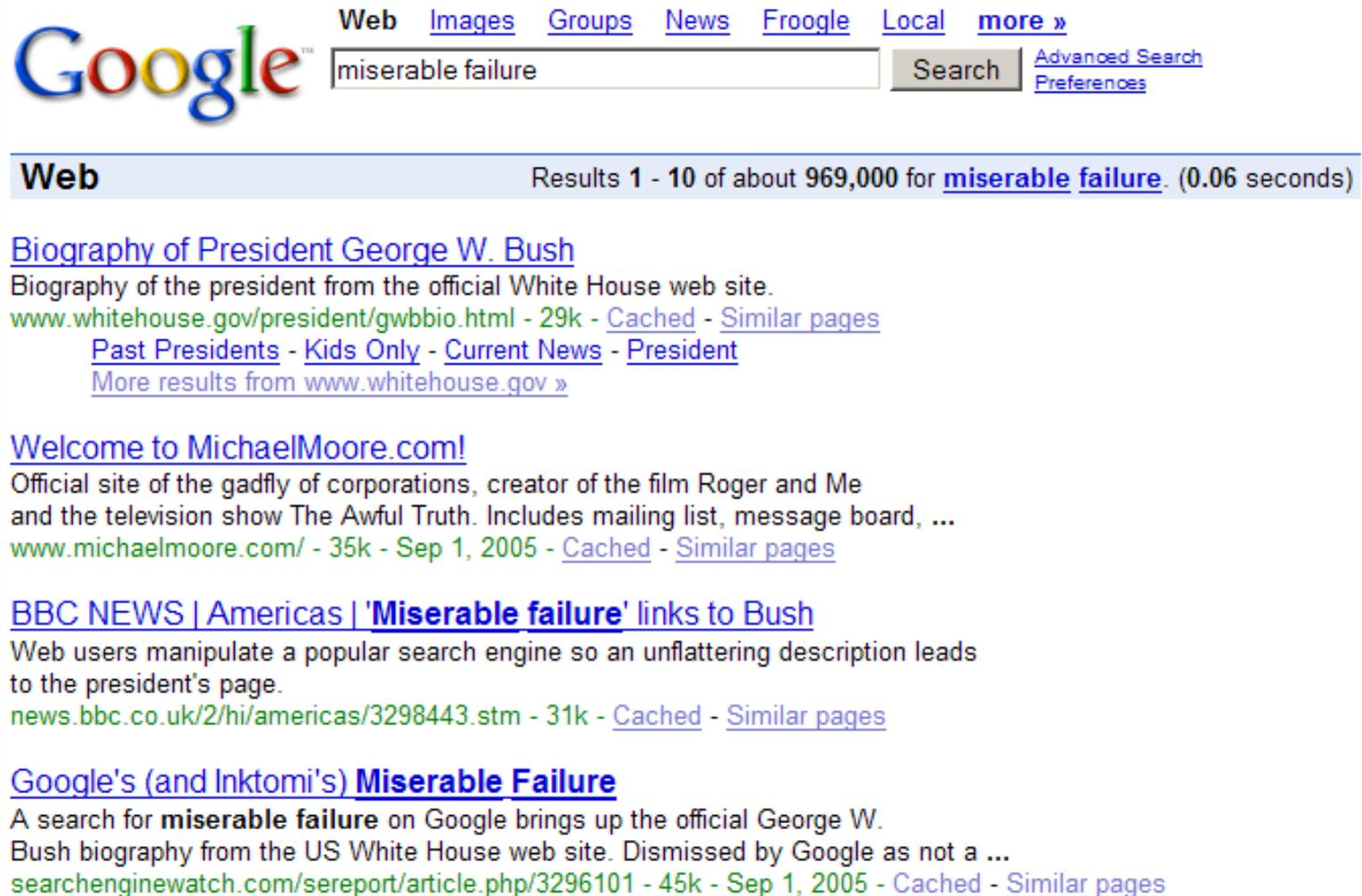
# Link Spamming

- Comment Spam
  - Relevant to you if your website allows feedback or hosts forums etc.
- Cross-site scripting vulnerabilities
  - Users are allowed to insert malicious scripts into comments, forum posts
- Blackhats use your website ranking to increase their own sites' rankings
  - May reduce your sites ranking

# Brand Damage

- Searching for negative keywords results in your website
- Searching for your brand results in competitors or undesirable sites

# “Google Bombing”



The screenshot shows a Google search interface with the search term "miserable failure" entered in the search box. The search results are displayed under the "Web" tab, showing the first 10 results. The results are:

- Biography of President George W. Bush**  
Biography of the president from the official White House web site.  
[www.whitehouse.gov/president/gwbbio.html](http://www.whitehouse.gov/president/gwbbio.html) - 29k - [Cached](#) - [Similar pages](#)  
[Past Presidents](#) - [Kids Only](#) - [Current News](#) - [President](#)  
[More results from www.whitehouse.gov »](#)
- Welcome to MichaelMoore.com!**  
Official site of the gadfly of corporations, creator of the film Roger and Me and the television show The Awful Truth. Includes mailing list, message board, ...  
[www.michaelmoore.com/](http://www.michaelmoore.com/) - 35k - [Sep 1, 2005](#) - [Cached](#) - [Similar pages](#)
- BBC NEWS | Americas | 'Miserable failure' links to Bush**  
Web users manipulate a popular search engine so an unflattering description leads to the president's page.  
[news.bbc.co.uk/2/hi/americas/3298443.stm](http://news.bbc.co.uk/2/hi/americas/3298443.stm) - 31k - [Cached](#) - [Similar pages](#)
- Google's (and Inktomi's) Miserable Failure**  
A search for **miserable failure** on Google brings up the official George W. Bush biography from the US White House web site. Dismissed by Google as not a ...  
[searchenginewatch.com/sereport/article.php/3296101](http://searchenginewatch.com/sereport/article.php/3296101) - 45k - [Sep 1, 2005](#) - [Cached](#) - [Similar pages](#)

# “Google Bombing”

The screenshot shows the Google Maps interface with a search for "Microsoft". The search results on the left list several Microsoft-related locations. The main map area shows a pop-up information box for "Microsoft Corp" at 1020 102nd Ave NE, Bellevue, WA 98004. A red circle with a diagonal slash is overlaid on the Microsoft logo in the pop-up, representing a "Google Bomb".

**Google Maps Search Results:**

- Sponsored Links:**
  - [Microsoft Updates](#)  
Be the First to Try the New Office System 2007. Get a Free Trial Now.  
[www.Microsoft.com](http://www.Microsoft.com)
- Results 1 - 8 of about 9,139 for Microsoft** - [Modify search](#)
- Categories:** [Computers](#) [Software](#) [Systems & Services](#) [Restaurants](#)
- A Microsoft Corp** - [more info >](#)  
1020 102nd Ave NE, Bellevue, WA  
(425) 936-5500 - [call](#) - [1 review](#)
- B Microsoft Alumnet** - [more info >](#)  
10900 NE 4th St # 2300, Bellevue, WA  
(425) 990-1520 - [call](#)
- C Microsoft Alumni Network** - [more info >](#)  
719 2nd Avenue, Suite 1401, Seattle, WA  
(206) 438-1850 - [call](#)

**Microsoft Corp Pop-up:**

- Microsoft Corp**
- [1 review](#) - [more info >](#)
- 1020 102nd Ave NE  
Bellevue, WA 98004  
(425) 936-5500 - [call](#)
- Get directions: [To here](#) - [From here](#)  
[Search nearby](#) - [Send to phone](#)

# Page Hijacking ?



**THE Daily Telegraph**

News Entertainment Sport Business Money Travel Property Opinion Your Say

Breaking News NSW/ACT National World Wacky In-depth Features Sunday Telegraph

SEARCH

## Porn hackers hijack kids' Smith's Crisps footy tazo site

Font size:  Email article:  Print article:  Submit comment: 

*Exclusive by Paul Kent, Chief Sports Writer*  
July 23, 2008 05:30pm

**THOUSANDS of children searching for tazo football cards have been steered into a pornographic website that has hijacked the Smith's Crisps company.**

The snack food company was forced to launch an urgent investigation this afternoon after the site, <http://www.smithsfooty.com.au/>, was hijacked by overseas porn sites.

Hackers linked the words "smiths" and "footy" to pornographic websites to search engines like **Google**, which immediately

**Also in News**

- > **Sent down:** Spousebust
- > **Star struck:** I stole Patti
- > **ICAC hearings:** Lavish lu
- > **New fears:** Sydney whal
- > **Vomit fight:** Finger-biting
- > **Aerosol scandal:** Top sc
- > **Shocking images: Dow**

# Page Hijacking ?

Web Images Maps News Shopping Gmail more ▾ Sign in

Google™ smithsfooty Search [Advanced](#) [Preference](#)

Web Results 1 - 10 of about 2,260 for smithsfooty. (0.17 seconds)

[Smiths Footy 2008](#)  
[www.smithsfooty.com.au/](http://www.smithsfooty.com.au/) - 8k - [Cached](#) - [Similar pages](#)

[NRL Smiths footy tazos 2007 <SmithsFooty>](#)  
NRL Smiths footy tazos 2007 <SmithsFooty> ... Australia Australia URL  
<http://www.bebo.com/SmithsFooty> Profile Created May 2007 Profile Views 3466 times ...  
[smithsfooty.bebo.com/](http://smithsfooty.bebo.com/) - [Similar pages](#)

[freehotgirls biz, clubsex com, smithsfooty, www 1000homemovies ...](#)  
freehotgirls biz, clubsex com, smithsfooty, www 1000homemovies, www magalytv com pe,  
iindia free sex, www psb-smpdk org, , www jizzle com, ...  
[freehotgirl.ationu.com/](http://freehotgirl.ationu.com/) - 21k - 13 hours ago - [Cached](#) - [Similar pages](#)

[hgtube, wwwdivas, www NAKEDBY com, wwwtelemujeres com, www 12sex ...](#)  
www tamilnadu com sexyhomealone com www worldsexy com hgtube, www indianworldsex  
com - arabtv com www smithsfooty com au wwwdivas, www pg tv VEDIO SEX TEENS ...  
[hgtube.nipoit.com/](http://hgtube.nipoit.com/) - 21k - [Cached](#) - [Similar pages](#)

# Page Hijacking ?



The screenshot shows the top portion of the Daily Telegraph website. The masthead features the newspaper's name in a large, white serif font against a blue background with a subtle map of Australia. Below the masthead is a horizontal navigation bar with categories like News, Entertainment, Sport, Business, Money, Travel, Property, Opinion, and Your Say. A search bar with a red 'SEARCH' button is positioned below the navigation bar.

## Adult website search engine optimisation causes strange search result for "chips and football"

Font size:   Email article:  Print article:  Submit comment: 

*Exclusive by Paul Kent, Chief Sports Writer*

July 23, 2008 05:30pm

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### Also in News

- > **Sent down:** Spousebust
- > **Star struck:** I stole Patti
- > **ICAC hearings:** Lavish lu

# Page Hijacking

 [Web](#) [Images](#) [Groups](#) [News](#) [Froogle](#) [Local](#) [more »](#)

google adsense  [Advanced Search](#)  
[Preferences](#)

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**Web** Results 1 - 10 of about 4,080,000 for google adsense. (0.14 seconds)

**Google AdSense** Sponsored Links  
[www.google.com/adsense](http://www.google.com/adsense) Place **Google** ads on your site - and earn more money.  
[Make Money Online](#)  
[www.GoogleProfits.com](http://www.GoogleProfits.com) I made \$16,000 online last month. You don't even need a website.

**Google AdSense** Sponsored Links  
... **Google AdSense** is a fast and easy way for website publishers of all sizes to display relevant **Google** ads on their website's content pages and earn money ...  
[www.all-in-one-business.com/adsense/](http://www.all-in-one-business.com/adsense/) - 16k - [Cached](#) - [Similar pages](#)

**Google AdSense Support**  
... What is **Google AdSense**? • How do I get the **AdSense** Code? ... A printable version of the entire **Google AdSense** FAQ is also available. ...  
<https://www.google.com/adsense/help> - 18k - 22 May 2005 - [Cached](#) - [Similar pages](#)

**Google AdSense - Program Policies**  
... To uphold the quality and reputation of **Google AdSense**, all publishers who ... A maximum of two **Google AdSense** for search boxes may be placed on a page. ...  
<https://www.google.com/adsense/policies> - 23k - 22 May 2005 - [Cached](#) - [Similar pages](#)  
[ [More results from https://www.google.com](https://www.google.com) ]

**Increase AdSense Revenue**  
How I went from making \$30 a day to \$500 daily with a few lazy tweaks.  
[Adsense-Secrets.com](http://Adsense-Secrets.com)

**Build an AdSense Empire**  
Learn An Advance Method To Build An **AdSense** Empire. Exclusive Manual  
[www.AdSenseEmpire.com](http://www.AdSenseEmpire.com)

**AdSense Secrets**  
Secrets in this eBook could triple your **AdSense** earnings. aff.  
[related-pages.com](http://related-pages.com)

**Make \$20 Per Click**

# Page Hijacking Impacts

- Brand Damage
  - Customers choose competitor's website
- Brand Theft
  - Used in Phishing
    - Fake login page present to steal login credentials
  - Serving Malware
    - For example, installing key loggers on customers machines

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# Security Recommendations

- Monitor search results and register page with search engines
- Implement mechanisms to prevent comment spam & similar
- Ensure website and free from Cross-site Scripting and similar issues
- Perform search engine optimisation!

# Monitor search results

- Use alerts to identify people ripping off your content
  - <http://www.google.com/alert>
- Google provides a tool to aid it's web crawler
  - <http://www.google.com/webmasters/>
  - Reduces the chance of penalties or delisting
- Contact other search engines
  - <http://help.yahoo.com/search/webmastersupport>
  - [http://g.live.com/0HE\\_TRACKSTAR\\_ENUS9/76003](http://g.live.com/0HE_TRACKSTAR_ENUS9/76003)

# Prevent Comment Spam

- Prevent Comment Spam
- Authenticate user prior comment
- Use “captcha” check to prevent automated spam
- Only allow plaintext in comments
  - No HTML or JavaScript

# Ensure website is secure

- Adhere to secure development practices
  - Open Web Application Standards Project (OWASP)
  - [www.owasp.org](http://www.owasp.org)
- Remove Cross-site scripting bugs (and similar)
  - secure development standards
  - perform application security testing

# Whitehat Search Engine Optimisation

- Higher ranked sites have higher influence
- Best way to prevent illegitimate site beating you in rankings is to be the top!
  - easier said than done
  - using “Black Hat” SEO techniques may result in removal from search engine index
- Follow search engine guidelines

# Questions?



# Black Hat Search Engine Optimisation

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