

Search Engine Optimization

Which search engines have you used except Google?

Why is search engine important?

“A search is a statement of intent.”

– Susan Athey, Former Chief Economist at Microsoft

Search engines are the doorway to the Internet

80% of sites are found through search engines.

Types of search

Informational: Generic Search

(e.g., “high cholesterol”, “school ranking”)

Navigational: Brand Names

(e.g., “United Airlines”, “HKTV Mall”)

Transactional: Specific information on products / services

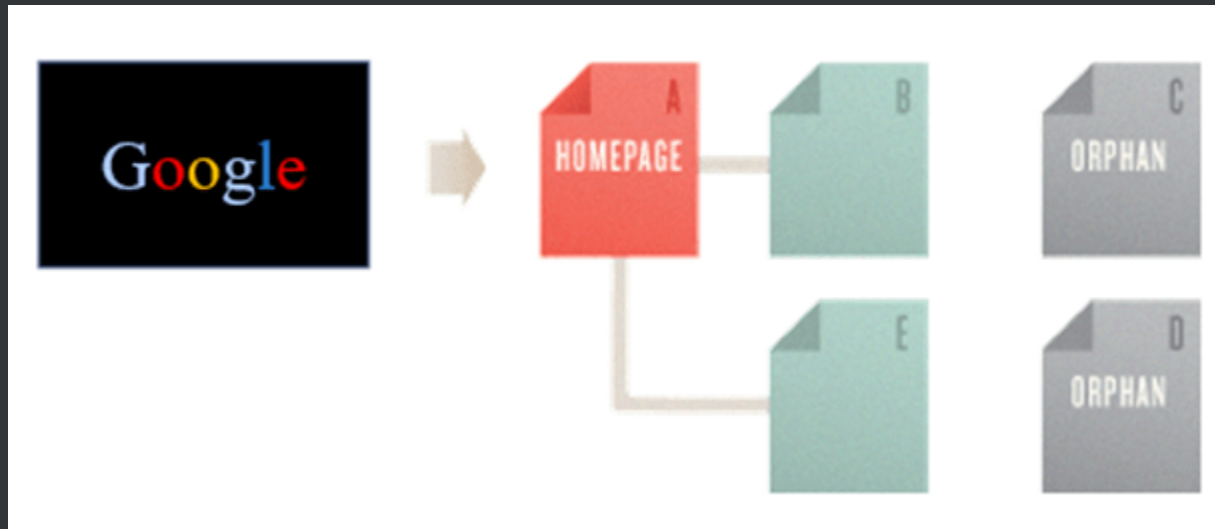
(e.g., “Macbook Pro”, “Diet Coke”)

How does search engine work?

Crawl the web via spiders (a.k.a. web crawlers).

- It goes from page to page.
- It follows links and recording what it finds.

Crawlable?



Crawlable?



How does Google find your homepage?

You can submit an individual URL to [Google](#).

Google finds you through links from other websites.

Google finds you from online libraries, books and other materials...

How does Google find your homepage?

After crawling, search engines index the pages.

- The index is what the spider creates. It is a “library” of pages on the Internet. The search engine creates databases for keywords, so it knows where to go to when a user enters a query.
- Yes, we know you are there (crawlable) but we cannot communicate with you (non-indexable). (Search engine only speaks HTML)
- Your webpage may have Images, Flash files, Java applets, and other non-text content.

How does Google find your homepage?

After indexing, search engines process user queries.

- Users input a search query by typing a keyword or phrase into the search bar. The engine then checks its index to find relevant pages and delivers them ordered from most relevant to least relevant.

How does Google find your homepage?

Finally, search engines return ranked results from the index in the SERP (search engine results page).

- Users input a search query by typing a keyword or phrase into the search bar. The engine then checks its index to find relevant pages and delivers them ordered from most relevant to least relevant.

How does Google find your homepage?

1. Crawl the web via spiders.
2. Index the Web pages they find.
3. Process user queries.
4. Return ranked results from the index in the SERP.

How does Google make money?

Search Engine Marketing

Search Engine Marketing

Definition: A form of Internet marketing that involves the promotion of websites by increasing their visibility in search engine results pages (SERPs).

Type of SEM: SEO + PPC

- SEO: Search engine optimization
- PPC: Paid search advertising

Search Engine Marketing

Organic & paid search responsible for 68% of all site traffic.

Vertical Segments	Avg Organic Visits	Avg Other Channel Visits	Avg Paid Search Visits	Avg Social Visits
Retail & eCommerce	41.0%	23.2%	23.6%	5.1%
Media & Entertainment	53.0%	32.7%	6.2%	8.2%
B2B	64.1%	20.6%	12.3%	3.0%
Technology	59.8%	27.8%	9.7%	2.7%
Travel & Hospitality	41.4%	30.7%	23.4%	4.6%
Average	53.3%	27.0%	15.0%	4.7%

Search Engine Optimization

How many users will visit the second page of the search results?

50%? 20%? What is your estimate?

SEO considerations

- What are the goals of our business?
- Who do we want to visit our website?
- What do we want our target audience to do on our website?
- What pages do we want them to visit and what path must they follow to get there?

On-page and Off-page SEO

On-page (or on-site):

- Technical Structure (Page Title, Headers, Page Body, Image Tags, URL, Meta Description)
- Content Tactics

Off-page (or off-site):

- Backlinks (who link to you)
- Social Engagement

Google says that...

Relevance of webpages

Next, algorithms analyze the content of webpages to assess whether the page contains information that might be relevant to what you are looking for.

The most basic signal that information is relevant is when a webpage contains the same keywords as your search query. If those keywords appear on the page, or if they appear in the headings or body of the text, the information is more likely to be relevant.

Beyond simple keyword matching, we use aggregated and anonymized interaction data to assess whether search results are relevant to queries. We transform that data into signals that help our machine-learned systems better estimate relevance.

The Six Secrets of On-the-Page Optimization

#1: The most important piece of on-page optimization is title of the page

- Displayed at the top of the browser and in the natural listings.
- Each page should have its own title; unique and includes chosen keywords; short and focused.

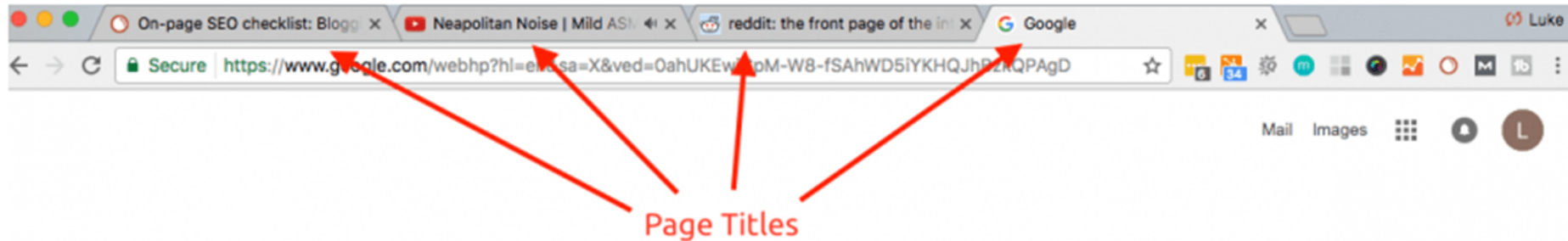
The Six Secrets of On-the-Page Optimization

```
<meta name="description" content="Established in 1911, the University of Hong Kong (HKU) is the territory's oldest institute of higher learning and also an internationally recognized, research le
<title >The University of Hong Kong (HKU)</title>

<link media="all" href="/assets/css/index.css?t=20220516" type="text/css" rel="stylesheet" /><link rel="stylesheet" type="text/css" href="/assets/css/print.css" media="print"/>
<script type="text/javascript">
    var bgdata = [{image:'/f/wallpaper/21252/2381_edit copy.jpg', title:'2020 sky'},{image:'/f/wallpaper/9820/DSC_8588G1.jpg', title:'CC Lily Pond'}];
</script>
```


The Six Secrets of On-the-Page Optimization


Accurate title: It appears elsewhere and affects visitors.



The Six Secrets of On-the-Page Optimization

www.allrecipes.com › recipe › fresh-southern-peach-co... ▼

Fresh Southern Peach Cobbler Recipe - Allrecipes.com




Preheat oven to 425 degrees F (220 degrees C). In a large bowl, combine peaches, 1/4 cup white sugar, 1/4 cup brown sugar, 1/4 teaspoon cinnamon, nutmeg, lemon juice, and cornstarch. Toss to coat evenly, and pour into a 2 quart baking dish. Bake in preheated oven for 10 minutes.

★★★★★ Rating: 4.7 - 2,797 reviews - 1 hr - 562 cal

tastesbetterfromscratch.com › Dessert ▼

Old Fashioned Peach Cobbler - Tastes Better From Scratch




Jul 20, 2018 - This old fashioned **Peach Cobbler** recipe is not only extremely easy to make from scratch, but it's made with fresh or canned peaches, so enjoy ...

★★★★★ Rating: 4.8 - 361 votes - 55 min - 386 cal

[How to make Peach Cobbler](#) · [Peach Scones](#) · [Peach Jam](#) · [How to Can Peaches](#)

www.foodnetwork.com › Recipes ▼

Easy Peach Cobbler Recipe | Food Network

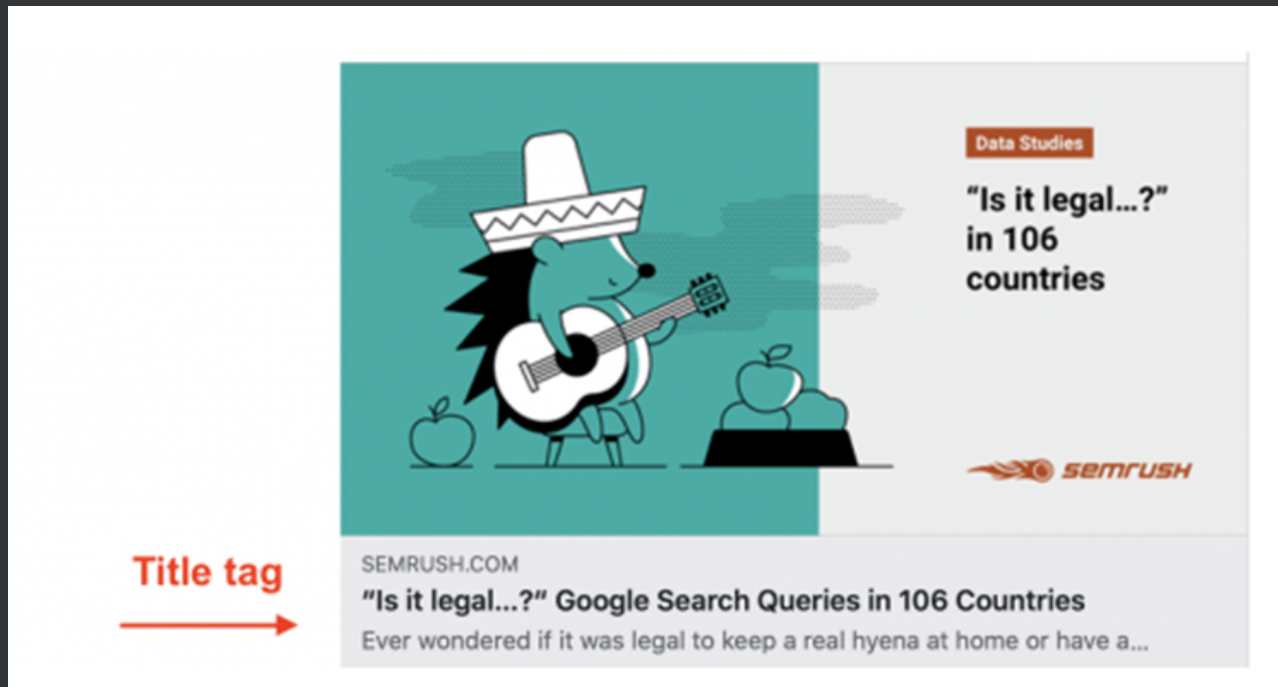


Easy Peach Cobbler. Getting reviews... Yield: 6 to 8 servings; Nutrition Info. Total: 1 hr 5 min; Prep: 15 min; Cook: 50 min. [Save Recipe](#). [Pinterest](#) · [Facebook](#) ...

★★★★★ Rating: 4.6 - 173 reviews - 1 hr 5 min - 403 cal

Title tag →

The Six Secrets of On-the-Page Optimization



The Six Secrets of On-the-Page Optimization

#2: Incorporate key words into your URL (your page address)

Simple URL

Make your URL easier to understand:

- Good example: www.example.com/green-dress.html
- Bad example: www.example.com/greendress.html

Make your URL short:

- Good example: www.example.com/dress/
- Bad example: www.example.com/category/dress/

Contain keywords in your URL:

- Good example: <http://www.example.com/green-dress.html>
- Bad example: <http://www.example.com/112.html>

The Six Secrets of On-the-Page Optimization

#3: The meta description does not influence the ranking so much, but substantially impacts the “clickability” of your result as it is what the search engine picks up.

The University of Hong Kong (HKU)

Established in 1911, the University of Hong Kong (HKU) is the territory's oldest institute of higher learning and also an internationally recognized, research led, ...

Meta Description

Results from hku.hk



HKU Portal

Log In. Please login with your HKU
Portal UID (User Identification ...

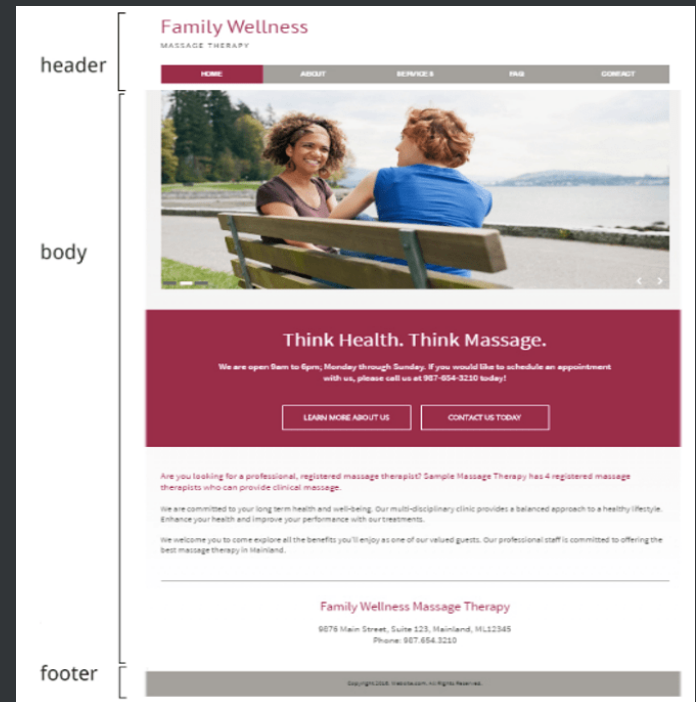
Undergraduate Admissions

Undergraduate Admissions - HKU
Admissions and Academic ...

The Six Secrets of On-the-Page Optimization

#4: Headers: Visible in the source code, contribute towards Google's perception of the subject matter of the page. Make sure the header has the keyword.

#5: Page Body: Context and proximity in the text play a role – keywords should be close to the beginning of the body copy.




The Six Secrets of On-the-Page Optimization

#6: Alt tags are descriptions of images on your website

- Help people who use screen readers to use your website
- Allow Google to interpret images, index them and support your ranking

Doritos Tortilla Chips, Nacho Cheese, 1.75-Ounce Large Single Serve Bags (Pack of 64) Doritos

★★★★☆ 175 customer reviews | 9 answered questions



About the Product

- Pack of 64, 1.75-ounce large single-serving bags (total of 112 ounces)
- Doritos tortilla chips with classic nacho-cheese flavor
- Made of whole corn; flavorings feature real cheddar cheese

```
{ "id": "defect-image-offensive", "value": "offensive or adult content" },
{ "id": "defect-image-extra-items", "value": "Shows additional items" },
{ "id": "defect-image-not-clear", "value": "Is not clear" }, { "id": "defect-
other-image-issue", "value": "Other" } }" data-metadata="IMAGE" data-
feature-container-id="imageBlockEDPOverlay" data-custom-event-handler=
"imageBlockEDPCustomEventHandler" data-display-name="Images" data-edit-
data-state="imageBlockEDPEditData" data-position="0" data-resolver=
"COResolver"></span>
<!-- Creating a custom overlay for image not available experience -->
</div class="variationUnavailable unavailableExp" style="display:
none;"></div>
<div class="a-hidden" id="auImmersiveViewDiv"></div>
<ul class="a-unordered-list a-nostyle a-horizontal list maintain-
height">
::before
<span id="imageBlockEDPOverlay"></span>
<li class="image item itemNo0 maintain-height
selected" style="cursor: pointer;">
<span class="a-list-item">
<span class="a-declarative" data-action="main-image-click" data-
main-image-click="{}">
<div id="imgTagWrapperId" class="imgTagWrapper" style="height:
500px;">

</div>
</span>
</li>
</ul>
</div>
</div>
```


Other Tips: Content Tactics

- Regular, helpful content targeted at your audience (tutorials, how to guide, etc.).
- Make sure content is keyword rich – but not too rich
 - Use synonyms, avoid keyword stuffing
 - Rule of thumb: keyword density 2-4% of content
- Freshness or signs that your site is alive and growing (e.g., news feed).

On-page and Off-page SEO

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Off-page (or off-site):

- Backlinks (who link to you)
- Social Engagement

If you only had a video of a party, how could you tell who is most influential?



Page Rank

PageRank is a numeric value measuring the importance of a page on the web. Named after *Larry Page* (co-founder of Google)

A link analysis algorithm that assigns a numerical weighting to each element (webpage) in the entire set (web) to measure the importance of the page.

Sum of the PageRank of all pages in a system is set to 1.

Page Rank

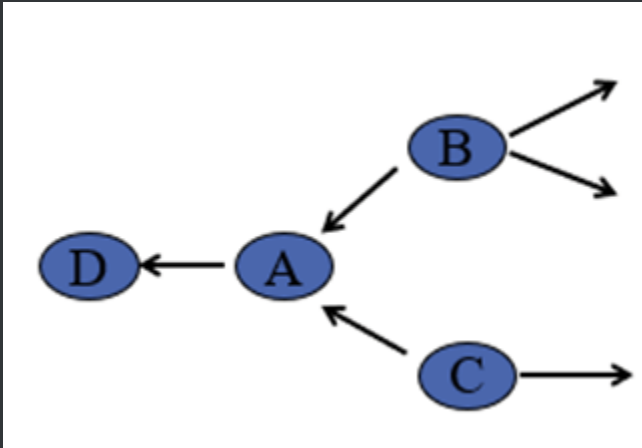
Let $PR(U)$ be the page rank of page U .

Assuming m webpages V_1, \dots, V_m send incoming links to page U , then

$$PR(U) = \frac{PR(V_1)}{L(V_1)} + \frac{PR(V_2)}{L(V_2)} + \dots + \frac{PR(V_m)}{L(V_m)}$$

where $L(V_i)$ = number of outgoing links from page V_i .

Page Rank

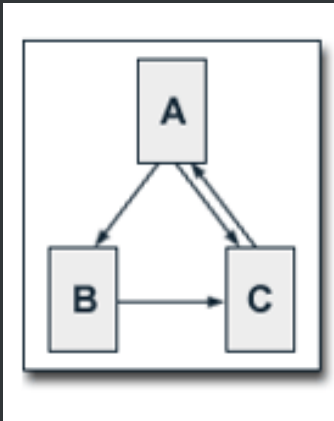


Here, B and C send links to A, so $PR(A)$ is affected by $PR(B)$ and $PR(C)$.

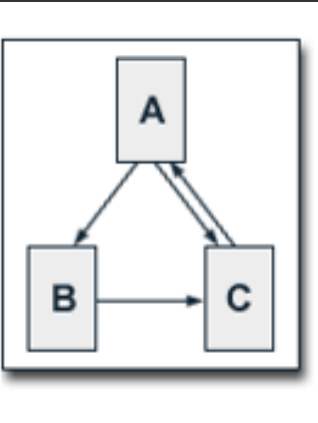
Similarly, $PR(A)$ affects $PR(D)$.

$$PR(A) = \frac{PR(B)}{3} + \frac{PR(C)}{2}$$

Page Rank



Page Rank



Only C sends a link to A: $PR(A) = PR(C)$

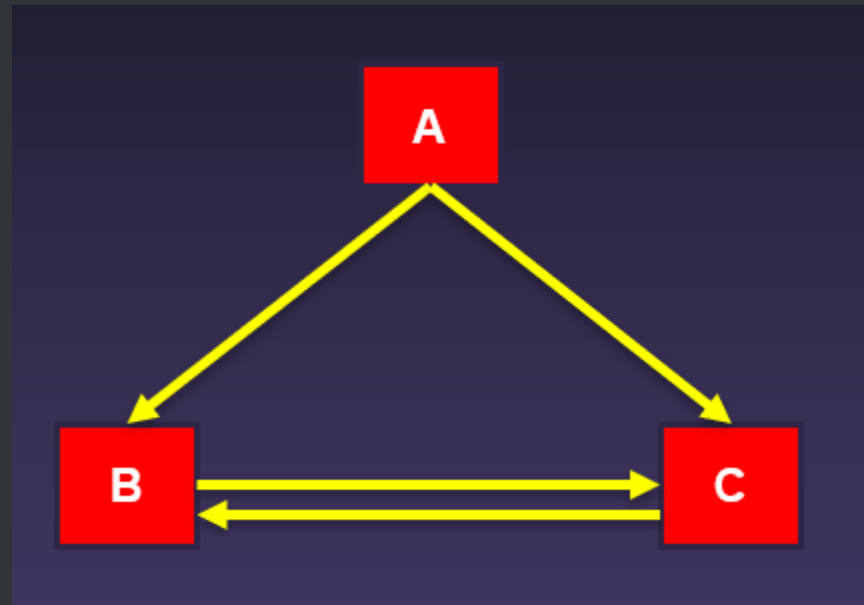
Only A sends a link to B: $PR(B) = PR(A)/2$

Both A and B send links to C: $PR(C) = PR(A)/2 + PR(B)$

And all ranks add to 1: $PR(A) + PR(B) + PR(C) = 1$

Solve the model: $PR(A) = 0.4, PR(B) = 0.2, PR(C) = 0.4$.

Exercise



Link Building

- Create link worthy content
 - Write content that others want to read and link;
Create tools and documents that others want to use;
Create and host a game that others want to play
- Content variety
 - Many types of contents available; Examples include blogging, white papers, videos, webinars, podcasts, webcasts, and infographics.

Link Building

- Web PR
 - Submitting guest blog posts to popular blogs in your industry. Generally, you will get a link back to your website in an author box at the top or bottom of your post's content. Submit your website to applicable industry directories
- Competitor analysis
 - Who is linking to your competitors? They may link to you.

Tracking Inbound Links

There are several tools that help you track inbound links to your website. For example, you can use ahrefs to track the links:

ahrefs: <https://ahrefs.com/backlink-checker>

SEO: The White and Black

White Hat SEO (legitimate):

- Conforms to the search engines' guidelines and involves no deception
- Create content for users and search engines

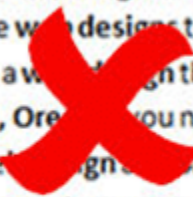
Black Hat SEO (illegitimate)

- Going overboard with SEOs...
- Trying to deceive search engine to increase rank
- Use reputable SEO company & beware guarantees “#1 site on Google”

SEO: The White and Black

Just a few examples from 1000s of such practices --- you will be penalized by search engines when uncovered.

Keyword stuffing: overusing the same keywords throughout one page in order to maximize its visibility and organic traffic.



We are a web development company in Bend, Oregon. As a web development company who does web design and SEO, we are able to create web designs that are SEO friendly. Yes, we do good web design and SEO and can help you develop a web design that is SEO friendly. When it comes to looking for a web development company in Bend, Oregon, you need to make sure they are experienced in web design and SEO. Because experience in web design and SEO is very important. You need good web design and SEO from a good web development company in Bend, Oregon to rank well on Google. So hire us, your web development company in Bend, Oregon—experienced in web design and SEO.

Cloaking: search fake content to search engine spider

<https://www.youtube.com/embed/QHtnfOgp65Q?enablejsapi=1>

SEO: The White and Black

Paid Links: pay other websites to link to their page to get high rankings.

Example: JCPenny paid other websites to link to JCP.com. After being caught, it was blocked from ranking in the first page of results at Google for 3 months. Lost \$30mm in sales.

Google Panda



Google Panda is an algorithm used to reward high-quality websites and diminish the presence of low-quality websites in Google's organic search engine results.

It punishes thin content, duplicate content, low-quality content, high ad-to-content ratio, content mismatching search query.

It rewards original content and outbound links to reputable websites.



63

www.hku.hk

PERFORMANCE

3/30



SEO

30/30



MOBILE

20/30



SECURITY

10/10



PASS

BROWSER CACHING



Wowee. Your web caching is world class.

Browser caching speeds up your website by storing frequently used content in local memory.

PASS

MINIMAL PAGE REDIRECTS



Straight to the point.

Multiple redirects can make your site load slower. Aim for no more than one redirect.

FAIL

IMAGE SIZE



Out of place.

Images can take a long time to load. Use responsive images or SVGs to optimize your images for different screen sizes.

PASS

LEGIBLE FONT SIZE



Easy on the eyes.

Visitors may have difficulty reading small text, especially on mobile devices. We recommend at least 12px.

FAIL

TAP TARGETS



Where do I click?

Mobile-friendly pages perform better in search results. Make sure interactive elements like buttons and links are not too small or too close together.

PASS

RESPONSIVE



Fantastic! You're ready to face the future.

Responsive design gives you a bump in search rankings for searches on mobile devices.

ahrefs: <https://ahrefs.com/backlink-checker/>?

A / B Testing

A/B testing

Suppose that you have two (or more) versions of a website,
and you do not know which one is better.

What should you do?