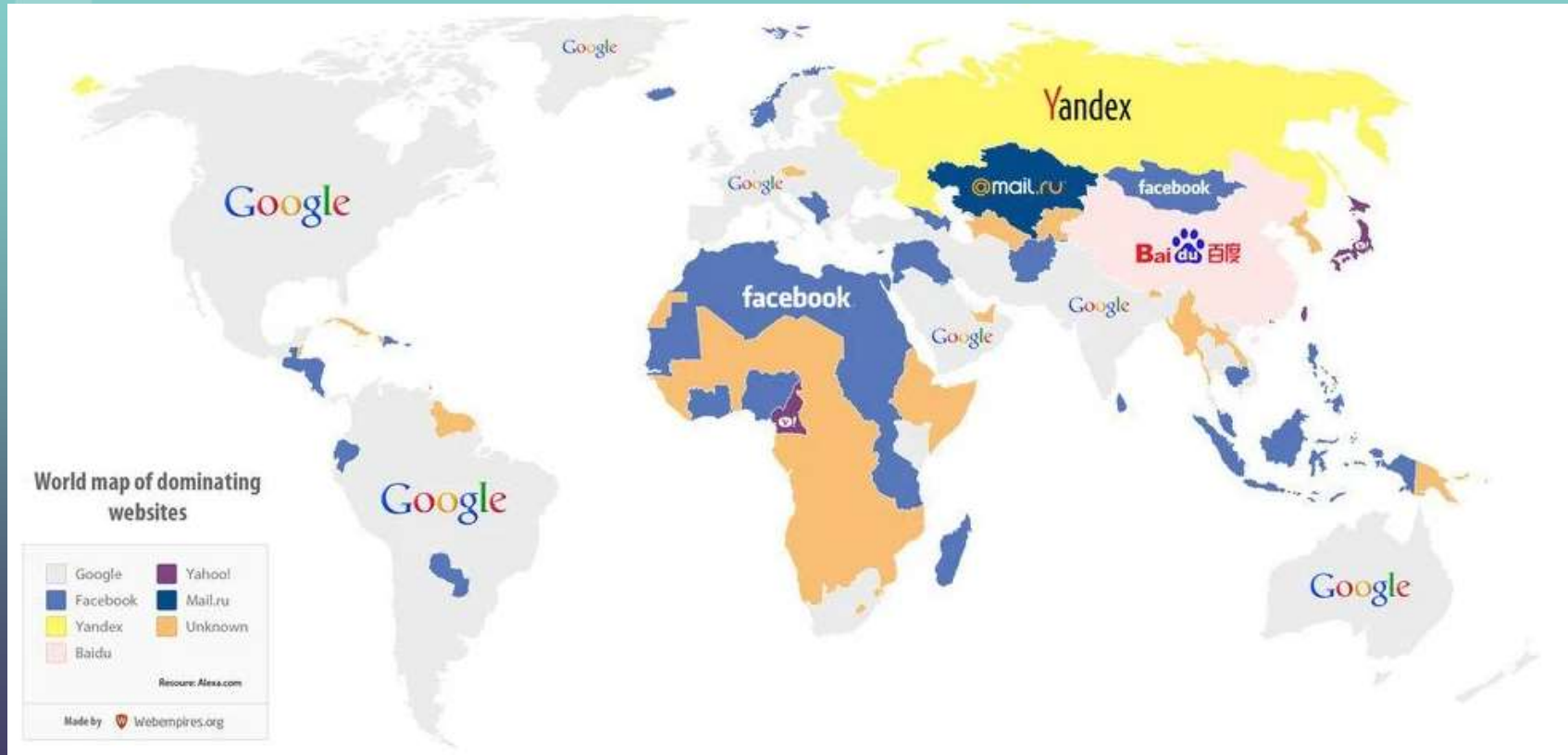




# SEARCH ENGINE OPTIMIZATION

Improve your ranking on Google

# Search websites are popular...



# Today's Agenda

01

---

## Mechanism

How search engine works?

02

## Usage

How to make my rank higher on a search engine?



# WHY IS SEARCH ENGINE IMPRORTANT?

“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 DO SEARCH ENGINES WORK?



# HOW DO SEARCH ENGINES WORK?

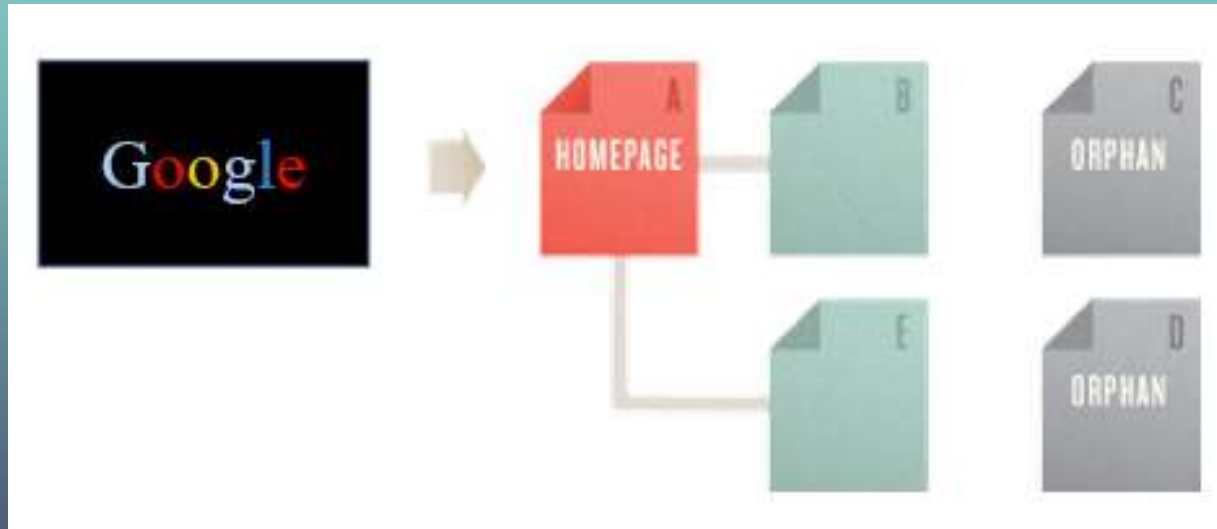
Crawl the web via spiders (a.k.a. web crawlers).



It goes from page to page.

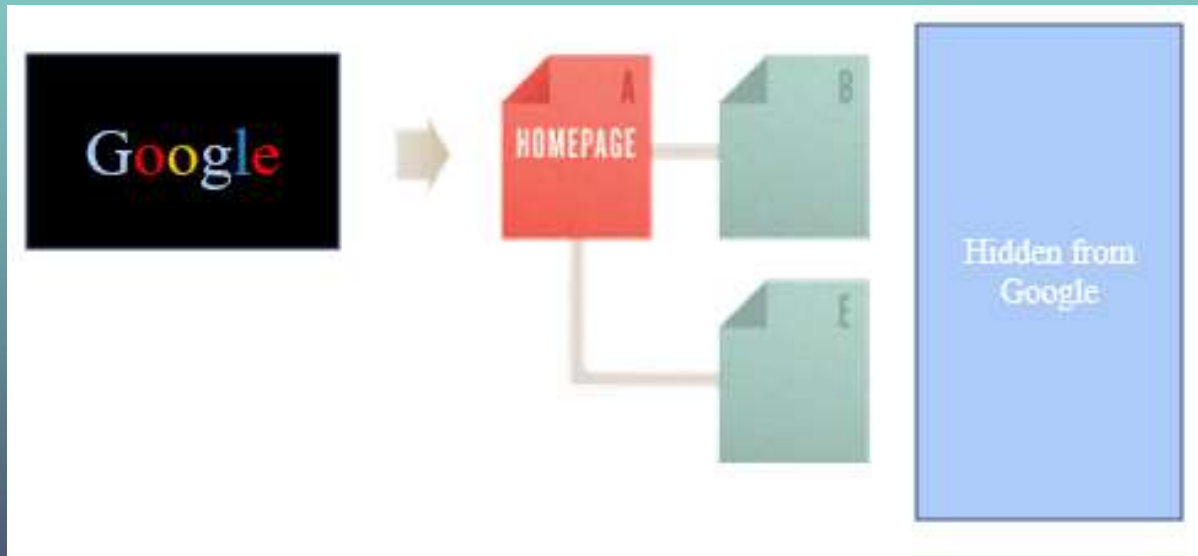
It follows links and recording what it finds.

# 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 DO SEARCH ENGINES WORK?

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 DO SEARCH ENGINES WORK?

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.






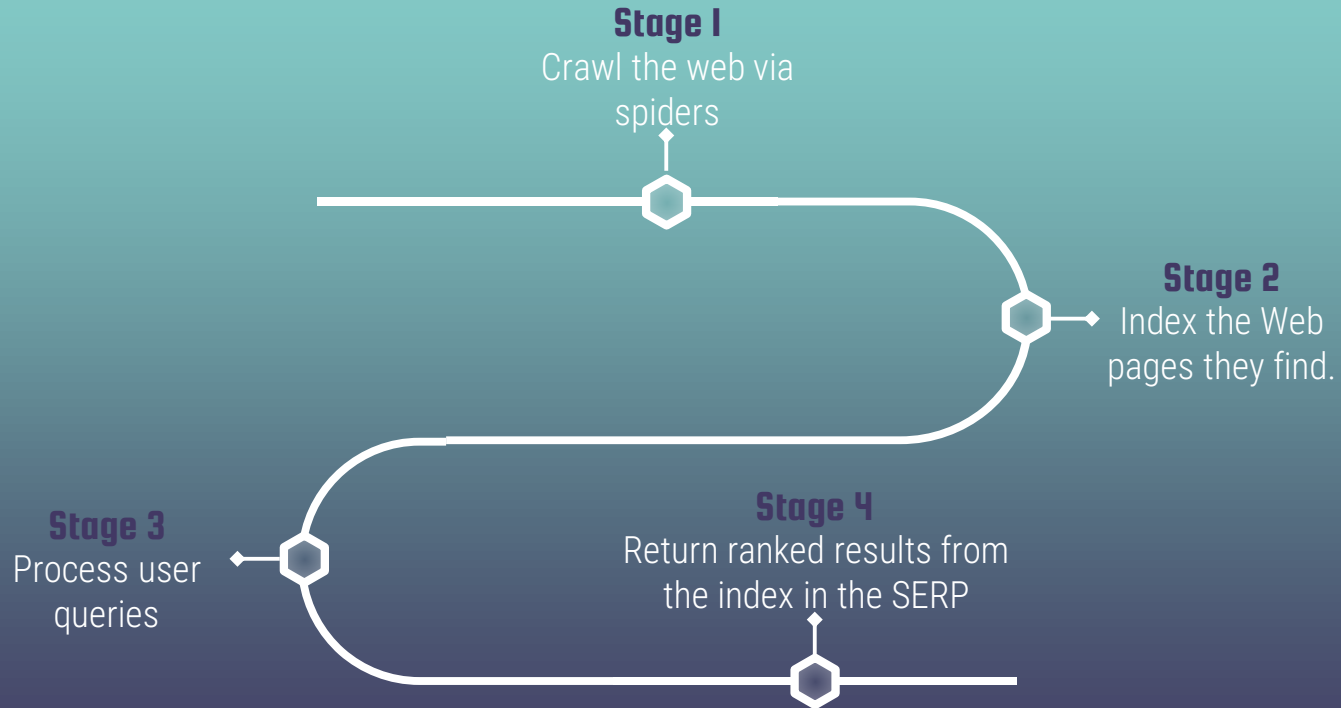
# HOW DO SEARCH ENGINES WORK?

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.




# TIMING



hk mba

All News Images Maps Videos Short videos More Tools

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 [mba.hkubs.hku.hk](https://mba.hkubs.hku.hk)  
<https://mba.hkubs.hku.hk>

**HKU Business School MBA | Top MBA Programme in Asia**  
The University of Hong Kong Ranked 11th globally in QS Rankings 2020. Extensive elite alumni network cultivating leadership across...


**Full-time MBA**  
Intensive 1-year Programme. Global Exposure & Diverse Cohort.

**Admissions**  
Entry requirements, Financial Aids Tuition, Application Process & More


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Join Us for Our Upcoming Events RSVP Now to Reserve Your Seat!

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Flexible Learning Options. Balance Studies with Commitments.

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 [mba.hkust.edu.hk](https://mba.hkust.edu.hk)  
<https://mba.hkust.edu.hk>

**Apply to HKUST Digital MBA**  
No. 1 B-School in APAC — Advance your career with HKUST's part-time Digital MBA—online, hybrid, and future-ready. Bringing together 21+ nationalities through one...


 [HKU MBA](https://mba.hkubs.hku.hk)  
<https://mba.hkubs.hku.hk>

**HKU MBA MBA Programmes | Full-time MBA | Part-time MBA ...**  
22 Mar 2021 — HKU MBA offers top mba programmes in Asia, delivering top-notch education, real-world experience, global business insights, and cultural ...

**Part-time MBA**  
The Part-time MBA (HK mode) at HKU is designed to help you to ...

**Full-time MBA**  
Admission - Programme Structure - Programme - ...

[More results from hku.hk »](#)

 [HKU Business School](https://www.hkubs.hku.hk)  
<https://www.hkubs.hku.hk>

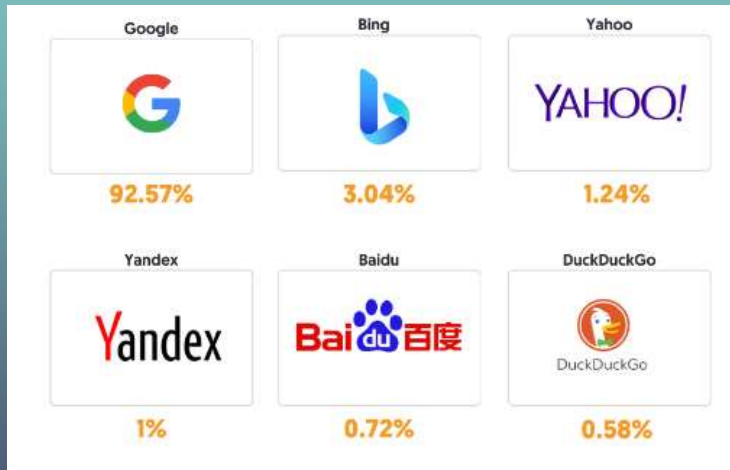
**HKU Business School: Home**  
HKU Business School is a top business school in Asia. We offer the best undergraduate, postgraduate programme and executive education in Hong Kong with a ...

Paid search

Organic search

# GOOGLE IS STILL DOMINATING THE MARKET

92.6% of search traffic worldwide is from Google.



Google also accounts for ~95% search traffic in Hong Kong.





# SEARCH ENGINE MARKETING (SEM)

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





# SEARCH ENGINE MARKETING (SEM)

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



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%
<b>Average</b>	<b>53.3%</b>	<b>27.0%</b>	<b>15.0%</b>	<b>4.7%</b>



# SEARCH ENGINE OPTIMIZATION





SEO = Free Advertising





# QUESTION

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

50%? 20%? What is your estimate?





# ON-PAGE AND OFF-PAGE SEO

On-page (or on-site):

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

AI Overview: Win the “Answer Box”

Off-page (or off-site):

Backlinks (who link to you)





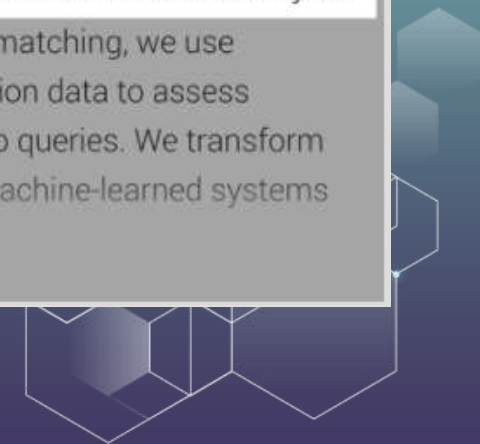
# GOOGLE SAYS THAT

## 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>
```

# ACCURATE TITLE

Accurate title: It appears elsewhere and affects visitors.



# ACCURATE TITLE

Title tag →

[www.allrecipes.com](http://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](http://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](http://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

# ACCURATE TITLE

Title tag





# Avoid Too Many Changes!

Don't change your TITLE too frequently. Google will penalize a site that has such-and-such Homepage TITLE on day 1, then another on day 7, and still another on day 4

**Rule of thumb: Don't change it again for at least 90 days!**

This rule only applies to the title but does not apply to the content.





# 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](http://www.example.com/green-dress.html)

Bad example: [www.example.com/greendress.html](http://www.example.com/greendress.html)

Make your URL short:

Good example: [www.example.com/dress/](http://www.example.com/dress/)

Bad example: [www.example.com/category/dress/](http://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 “click ability” 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 ...

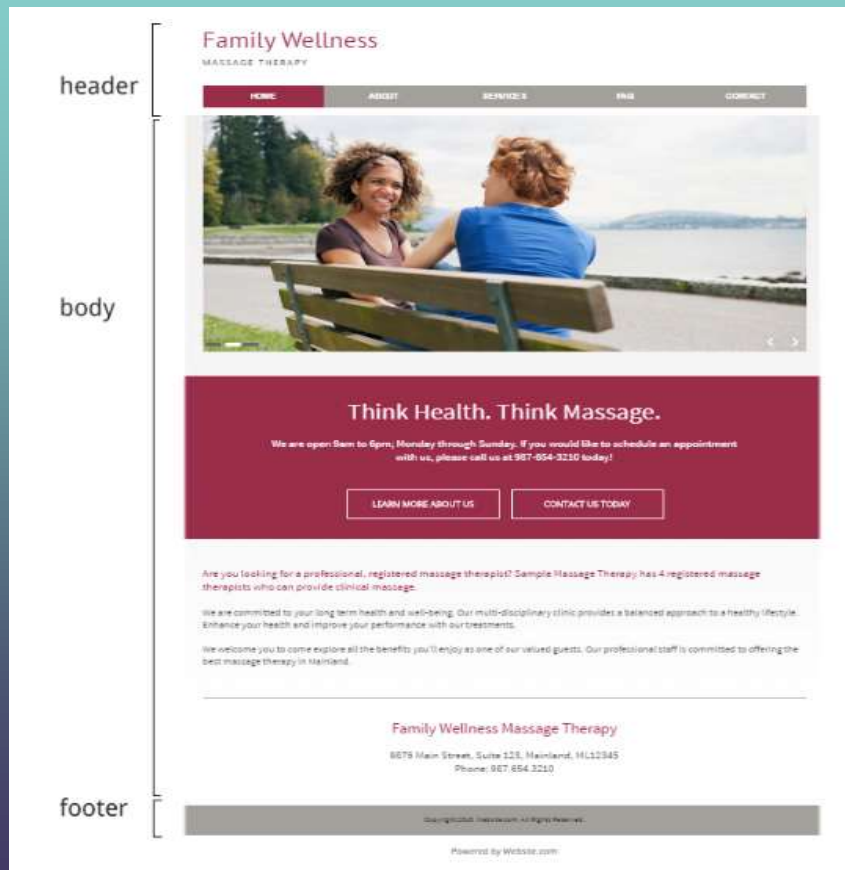
### Undergraduate Admissions

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) Circle

★★★★★ 175 customer reviews | 8 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 white corn; Ravitos® feature real cheddar cheese

```
<!-- Creating a custom overlay for image not available experience -->
<div class="variationUnavailable unavailableExp" style="display: none;">
  <div class="a-hidden" id="auiImmersiveViewDiv">
    <ul class="a-unordered-list a-nostyle a-horizontal list-maintain-height">
      <li>
        <span id="imageBlockEOPOverlay">
          <div class="image"
            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>
            </div>
          </div>
        </li>
      </ul>
    </div>
  </div>
</div>
```



# BRAINSTROMING IDEAS

Go to the following HKU page: <https://www.fbe.hku.hk/>

Pair with your classmates, can you come up with some ideas to improve the content/structure of this webpage?

Think from the perspective of a potential visitor, Prospective students,  
Current students, Alumni, Employee, Donor

Provide rationale for the design ideas





# WOORANK

Try to add the following browser extension to check your website:

<https://www.woorank.com/en/extension>



# Landing Page Optimization: AB Testing

A/B testing (i.e., split testing) is an important tool for identifying the optimal creative.





# ON-PAGE AND OFF-PAGE SEO

On-page (or on-site):

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

AI Overview: Win the “Answer Box”

Off-page (or off-site):

Backlinks (who link to you)



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







# BACKLINKS

**Inbound links (backlinks):** Links that point back to your website from an external site

Links are “like” votes!

When Google began, this was the most important factor to determine ranking/relevance. How?

- Quantity of links

- Quality of backlink sites

- Share of links on backlink sites





# 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

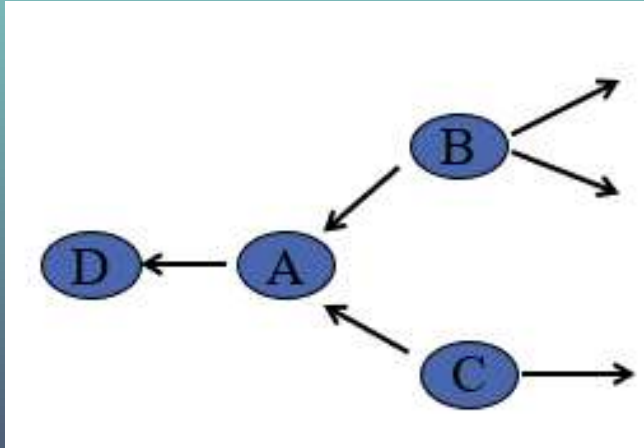
Let  $PR(U)$  be the page rank of webpage  $U$ .

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

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

$L(V_j)$  = number of outgoing links from website  $V_j$

# PAGE RANK

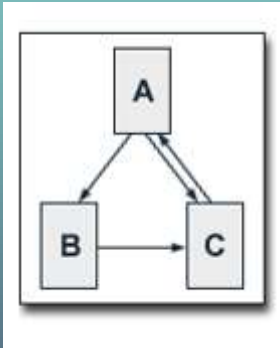


Here, B and C send links to A, so  $PR(A)$  is affected by  $PR(B)$  and  $PR(C)$ .

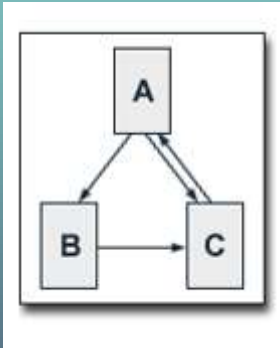
Similarly,  $PR(A)$  affects  $PR(D)$ .

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

# PAGE RANK EXAMPLE



# PAGE RANK EXAMPLE



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

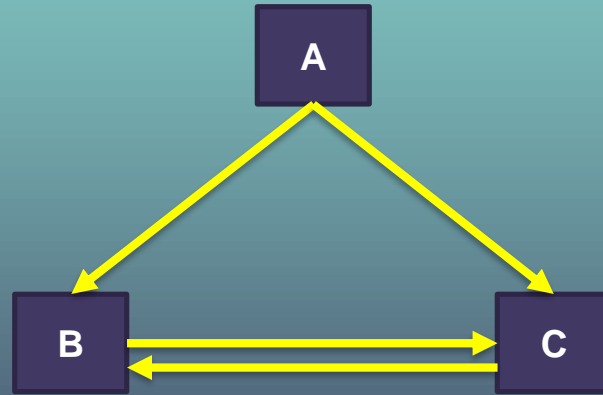
Only A sends a link to B:  $PR(B) = PR(A)/2$

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, we have  $PR(A) = 0.4, PR(B) = 0.2, PR(C) = 0.4$ .

# Exercise





How to get more inbound links?





# 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...

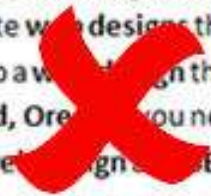
Trying to deceive search engine to increase rank

Use reputable SEO company & beware guarantees “#1 site on Google”

# Black Hat SEO

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**.

# Black Hat SEO

**Cloaking:** Serve fake content to search engine spider.



# Black Hat SEO

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

Example: JCPenney 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.





## Search Console

### Help us maintain the quality of Google search results.

We work hard to return the most relevant results for every search we have users' best interests at heart. Some site owners attempt to "buy

Google uses a number of methods to detect paid links, including algorithmic submissions, and we'll use your data to improve our algorithmic detection

### Report paid links

Website selling links:

Website buying links:



# Tools for Website Evaluation



# Using HubSpot Website Grader

The image shows the HubSpot Website Grader landing page. At the top, there is a logo consisting of a clock face with a gear inside, followed by the text "WEBSITE GRADER" and "Powered by HubSpot" in a smaller font. Below this, the main heading "HOW STRONG IS YOUR WEBSITE?" is displayed in large, bold, white capital letters. Underneath the heading, there are two input fields: "WEBSITE" and "EMAIL", each with a vertical line extending downwards from the text. At the bottom of the page, there is a small paragraph of text: "We're committed to your privacy. HubSpot uses the information you provide to us to contact you about our relevant content, products, and services. You may unsubscribe from these communications at any time. For more information, check out our Privacy Policy." Below this text is a button with the text "GET YOUR ANSWER >" in white capital letters.

# Using HubSpot Website Grader



3/30

## Performance

Optimizing your website's performance is crucial to increasing traffic, improving conversion rates, generating more leads, and increasing revenue.



# Using HubSpot Website Grader

## PAGE SIZE



55.2<sub>MB</sub>

Vaster than empires and more slow.

The heavier the site page, the slower the load. For optimal performance, try to keep page size below 3MB.

## PAGE REQUESTS



159

Now that's a lot of requests.

The more HTTP requests your website makes, the slower it becomes. Combining files can help reduce the number of requests.

## PAGE SPEED

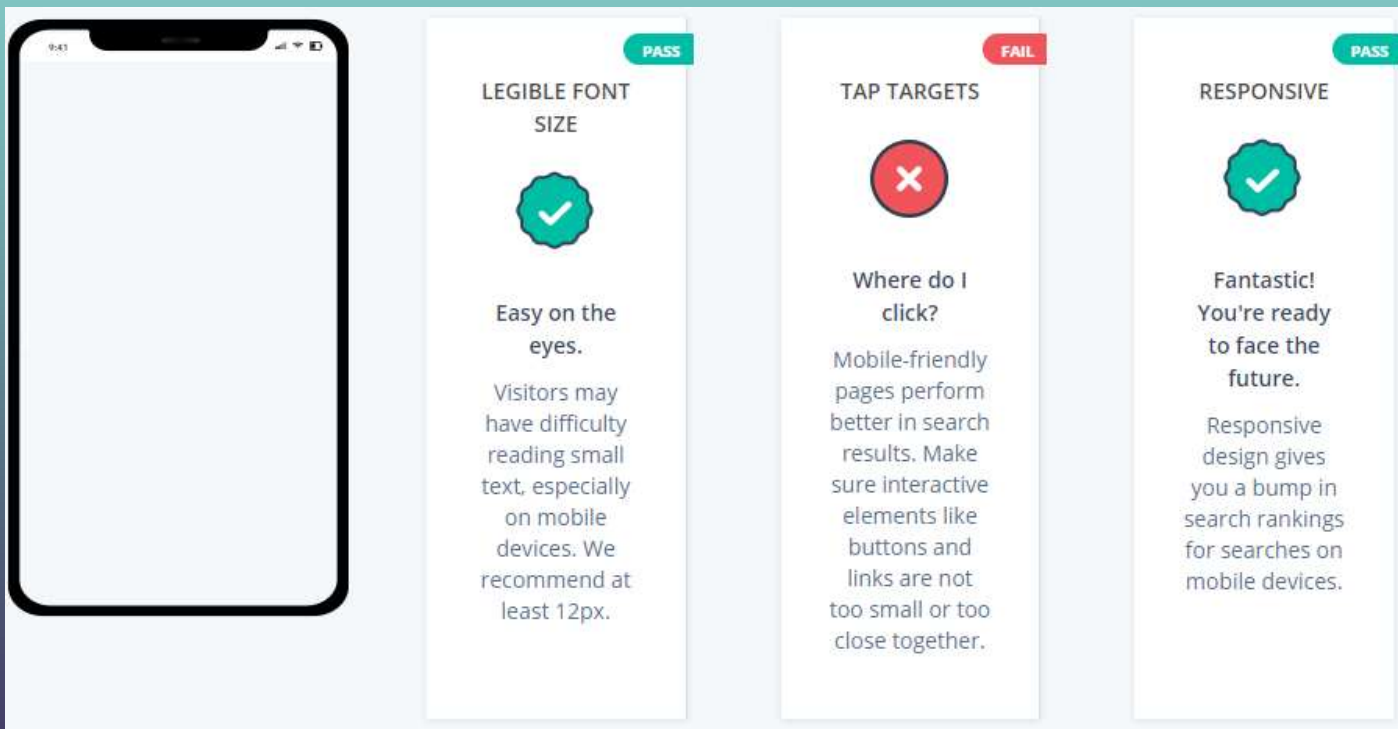


17.6<sub>SEC</sub>

We need to talk.

Best-in-class webpages should become interactive within 5.3 seconds. Any slower and visitors will abandon your site, reducing conversions and sales.

# Using HubSpot Website Grader



The image displays the HubSpot Website Grader interface for a mobile website. On the left is a mobile phone icon. To its right are three vertical panels showing audit results. The first panel, 'LEGIBLE FONT SIZE', is marked 'PASS' and shows a green checkmark icon. The second panel, 'TAP TARGETS', is marked 'FAIL' and shows a red X icon. The third panel, 'RESPONSIVE', is marked 'PASS' and shows a green checkmark icon. Each panel includes a brief explanation of the issue or success.

Category	Status	Icon	Message
LEGIBLE FONT SIZE	PASS	Green checkmark	Easy on the eyes. Visitors may have difficulty reading small text, especially on mobile devices. We recommend at least 12px.
TAP TARGETS	FAIL	Red X	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.
RESPONSIVE	PASS	Green checkmark	Fantastic! You're ready to face the future. Responsive design gives you a bump in search rankings for searches on mobile devices.

# Using HubSpot Website Grader

PERFORMANCE	CURRENT	RECOMMENDATION
Page size	55.2MB	< 3MB Lighten your pages by removing or compressing heavy content such as images and video.
Page requests	159	< 30 Combine files to minimize the number of HTTP requests your site makes.
Page speed	17.6Sec	< 5.3Sec Speed up your site by lightening up your site pages, compressing images and video where possible.
Image Size	No	Yes Use responsive images or SVGs to optimize your images for different screen sizes.
Minified JavaScript	No	Yes Use a minifier tool or contact your web host to ensure your JavaScript is minified.

# Side-by-Side SEO Comparison

Go to <https://tools.internetmarketingninjas.com/seo-compare/>

Type or paste five full URLs, one per line, whose on-page optimization factors you want to compare

You must submit 2 or more urls, one per line

Ninja Check

## Optimizing text on webpages can increase relevance to keyword queries

The text used on a webpage is vital for conveying to the human reader what the page is about. How the text is used on the page helps search engine crawlers determine what the page is about for query relevance. Words used in HTML tags important for SEO and then echoed again in body text (excluding link text, which describes the linked page) tells the search crawlers this page is relevant to these terms.

Using a free tool to find all the ways keyword text is used on webpage is very helpful to SEOs. But to have a keyword tool that compares two sites in a side-by-side report is even better. At a glance, you can see how your page and a competitor's page use keywords, how much text is on the page, and which keywords are used. This is invaluable competitive intelligence for SEOs. Internet Marketing Ninjas offers just such a free SEO tool.

# Page Speed

Report from Sep 19, 2025, 12:24:26 PM

<https://www.hkubs.hku.hk/>

Analyze

Mobile

Desktop

Discover what your real users are experiencing

This URL Origin



Core Web Vitals Assessment: **Failed**

Expand view

Largest Contentful Paint (LCP)

4 s

Interaction to Next Paint (INP)

383 ms

Cumulative Layout Shift (CLS)

0.06

OTHER NOTABLE METRICS

First Contentful Paint (FCP)

2.9 s

Time to First Byte (TTFB)

1.9 s

Latest 28-day period [\(history\)](#)

Various mobile devices

Many samples [\(Chrome UX Report\)](#)

Full visit durations

Various network connections

All Chrome versions



# Tools for Link Analysis

- Ahrefs allows you to input a competitor URL and reverse engineer who is linking to that competitor.
  - Open Link Profiler tracks new links to your website (or to competitors) and requires no registration and no payment. It's totally free!
  - Link Explorer by Moz. Type your competitor's homepage or the URL of a highly-ranked site on Google into this tool. Browse to see who is linking to your competitors.
- 