1. In the beginning there was the Web
   1. First one had to know the URL.
   2. Then the editors created categories and groups
   3. Then came the mid-90’s
      1. Web sites became very easy to create
      2. Too unstructured to put into neat categories
      3. This led to the creation of search engines
2. Search Engines
   1. Open to anyone (not just those with IT infrastructure)
   2. Trusting search engines
      1. Google results can be very different (China vs. U.S. perfect example Tieneman Square Incident)
   3. Search
      1. Allows user to find things.
      2. Engine to shape what you see.
      3. Engines to gather information about each of us.
   4. Web
      1. (Chaotic Marketplace)
      2. Search engines 🡪 are brokers, not editors.
         1. Quality of information (?)
            1. They usually don’t care…
   5. Questions about search engines
      1. How can it find results so fast?
      2. How does it decide the order of the results?
      3. Different engines give different results
      4. Are sponsor or organic links better?
   6. How search engines work
      1. Background steps
         1. Gather information
            1. Search engines don’t search everything

Some are domain specific

In Oct. 2005 🡪 only 3% was indexed

* + - * 1. How often to visit web pages

Varies based on page

* + - * 1. Uses crawlers/spiders
        2. Websites may or may not allow crawlers/spiders
        3. Access to spiders allowed by website designers
        4. Uses bandwidth
      1. Keep copies
         1. Caching pages

Makes it hard to remove things from the Web

Copyright issues (?)

* + - 1. Build an index
         1. List of terms with links to places they occur

Plus other information (number of times on a page, font used, etc.)

* + - * 1. Searching an index

Binary search

* + 1. Response to query
       1. Understand the query
          1. Spoken word is very ambiguous.
          2. Just identify key words and use them 🡪 not meaning.
          3. Advanced Searches

Putting things in quotes

* + - 1. Dtermine relevance
         1. Can be quite subjective
         2. Number of times a site is searched
      2. Determine ranking
         1. Based on “quality”
         2. Factors include

Trustworthy sites

Links to pages from other relevant pages

Links from page to relevant pages age

* + - * 1. How to know if ranking algorithm is good

If people like it.

* 1. Who pays for the search engines
     1. Free to use
     2. We trust them but don’t pay for them
     3. Options:
        1. Users pay as subscribers to a service
        2. Web sites pay to be discovered
        3. Government or nonprofit entity pays
        4. Advisers pay
  2. Challenges
     1. Algorithmic does not mean unbiased
     2. Not all search engines are equal
     3. Search results can be manipulated
     4. Search engines don’t see everything
     5. Search control can lead to mind control