Written language corpora

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AAU, 10. March 2014
Corpus

Corpus

1. the body of a human or animal especially when dead
2. a. the main part or body of a bodily structure or organ
   <the corpus of the uterus>
   b. the main body or corporeal substance of a thing;
   specifically: the principal of a fund or estate as distinct from income or interest
3. a. all the writings or works of a particular kind or on a particular subject; especially: the complete works of an author
   b. a collection or body of knowledge or evidence;
   especially: a collection of recorded utterances used as a basis for the descriptive analysis of a language

See corpus defined for English-language learners

Examples of CORPUS

- a computerized corpus of English
- <Jane Austen's corpus is modest in number but magnificent in achievement.>
What is a corpus?

• text
• size
• format
• representation
• use
• language
• medium
• annotation
• technology
Corpus history: text studies

• Verbal concordances of the Bible are the invention of the Dominican friars. The text which served as basis of their work was naturally that of the Vulgate, the Bible of the Middle Ages.
• The first concordance, completed in 1230, was undertaken under the guidance of Hugo de Sancto Charo, afterwards a cardinal, assisted, it is said, by 500 fellow-Dominicans. It contained no quotations, and was purely an index to passages where a word was found.

• The first concordance to be printed appeared in 1470

(CATHOLIC ENCYCLOPEDIA: Concordances of the Bible)
Bible concordance: http://bibletab.com/

Online Bible Concordance

abor

Word Lookup
Bible result

**Romans 2:22** You who say a man shouldn't commit adultery. Do you commit adultery? You who *abhorr* idols, do you rob temples? (WEB KJV ASV DBY WBS YLT NAS RSV NIV)

**Romans 12:9** Let love be without hypocrisy. *Abhor* that which is evil. Cling to that which is good. (WEB KJV ASV DBY WBS YLT NAS)

**Leviticus 26:11** I will set my tent among you: and my soul won't *abhorr* you. (WEB KJV JPS ASV DBY WBS RSV NIV)

**Leviticus 26:15** and if you shall reject my statutes, and if your soul abhors my ordinances, so that you will not do all my commandments, but break my covenant; (Root in WEB KJV JPS ASV DBY WBS NAS RSV NIV)
Corpus history: 
Shakespeare concordances

• Samuel Ayscough (1745-1804), Librarian and Index-maker, known as 'The Prince of Indexers'.

• Ayscough is also remembered as the writer of the first concordance to Shakespeare. Entitled An Index to the Remarkable Passages and Words Made Use of by Shakespeare; Calculated to Point out the Different Meanings to Which the Words are Applied, it was published by John Stockdale in 1790. (Wikipedia)
• In the year after her marriage, Mary Cowden Clarke began her valuable Shakespeare concordance, which was eventually issued in eighteen monthly parts (1844-1845), and in volume form in 1845 as *The Complete Concordance to Shakespeare, being a Verbal Index to all the Passages in the Dramatic Works of the Poet.*

• This work superseded the Copious Index to ... Shakespeare (1790) of Samuel Ayscough, and the Complete Verbal Index ... (1805-1807) of Francis Twiss. (Wikipedia)
http://demo.openshakespeare.org/concordance/
### Word: abhor

<table>
<thead>
<tr>
<th>Location</th>
<th>Snippet</th>
<th>Link</th>
</tr>
</thead>
<tbody>
<tr>
<td>work: Sonnets, line: 2553</td>
<td>...With others thou shouldst not abhor my state: If thy unworthiness...</td>
<td>source in text</td>
</tr>
<tr>
<td>work: Sonnets, line: 2552</td>
<td>...though I love what others do abhor, With others thou shouldst not a...</td>
<td>source in text</td>
</tr>
</tbody>
</table>
Corpus history: lexicography

- Published on 15 April 1755 and written by Samuel Johnson, *A Dictionary of the English Language*
  - An archive of 150,000 illustrative citations on slips of paper for the 40,000 head words.

- Oxford English Dictionary
  - 71 years of building a corpus of the literary canon of English from 1000 AD to 1928 (the 12th and final volume)
  - The 2nd edition of 1984: 447,000 word forms, 2.4 mill. quotations
Corpus history: dialect studies

• Lexical variation
• The English Dialect Dictionary (1898-1905)
• The Existing Phonology of English Dialects (1889)
Corpus history: language teaching

• Thorndike (1921) compiled a corpus of 4.5 mill. words from 41 different sources
• To make frequency lists
• To teach native Americans English
Corpus history: Grammar

• The very famous Danish linguist Otto Jespersen (1860-1943)
  – Used informal corpora for his linguistic descriptions
• Survey of English Usage (Randolph Quirk, 1959-) a pre-electronic systematic corpus to be used as a basis for grammar description (A Comprehensive Grammar of the English Language, Quirk et al 1985)
Accusations of plagiarism: the Russian Nobel laureate Mikhail Aleksandrovich Sholokhov in 1974 was accused of having stolen large chunks of texts for his book *And Quiet Flows the Don* from the late author Fjodor Krjukov.
An inter-Nordic research team was formed in 1975, captained by the late Geir Kjetsaa, a professor of Russian at the University of Oslo, for disentangling the Don mystery.

Quantitative data were gathered and organised:

- relating to word lengths
- frequencies of certain words and phrases
- sentence lengths
- Grammatical characteristics, etc.

These data were extracted from three corpora.

» (Nils Lid Hjort)
Tamil-konkordans: Indeks over Kamparamayanam (Govindankutty 1973)

- 12500 stanzas
- Each stanza: 4 lines
- The complete index: 3500 typed pages

- Method: small cards, annotation for meaning and grammatical category
- Six years hard work for G. And his "long-suffering" colleagues (Kennedy 1998)
The Brown Corpus
(Brown University Standard Corpus of Present-day American English)

- The first computer corpus compiled for linguistic research
- Synchronic American language printed in 1961
- Taken from a large number of text categories (informative and imaginative prose), reasonably “representative”
- 1 mill words

LOB Corpus
- (London-Oslo-Bergen Corpus)
- British counterpart of the Brown Corpus
Brown Corpus

- • A. PRESS: REPORTAGE (44 texts)
- • B. PRESS: EDITORIAL (27 texts)
- • C. PRESS: REVIEWS (17 texts)
- • D. RELIGION (17 texts)
- • E. SKILL AND HOBBIES (36 texts)
- • F. POPULAR LORE (48 texts)
- • G. BELLES-LETTRES (75 texts)
- • H. MISCELLANEOUS: GOVERNMENT & HOUSE ORGANS (30 texts)
- • J. LEARNED (80 texts)
- • K: FICTION: GENERAL (29 texts)
- • L: FICTION: MYSTERY (24 texts)
- • M: FICTION: SCIENCE (6 texts)
- • N: FICTION: ADVENTURE (29 texts)
- • P: FICTION: ROMANCE (29 texts)
- • R. HUMOR (9 texts)
Modern corpus history

- The Brown Corpus has also spawned a number of similarly structured corpora: the LOB Corpus (1960s British English), Kolhapur (Indian English), Wellington (New Zealand English), Australian Corpus of English (Australian English), and the FLOB Corpus (1990s British English). Other corpora: include the International Corpus of English, and the British National Corpus, a 100 million word collection of a range of spoken and written texts, created in the 1990s by a consortium of publishers, universities (Oxford and Lancaster) and the British Library. For contemporary American English, work has stalled on the American National Corpus, but the 360 million word BYU Corpus of American English (1990-present) is now available.
Some written language corpora developed at the Text Laboratory (UiO)

- Bosnian Corpus
- KAL-korpuset
- The Corpus for Bokmål Lexicography LBK
- NoWaC
- Oslo-korpuset av taggede norske tekster
- The French Newspaper Corpus
- Macedonian Corpus
- Sidaama Corpus
- Usenet-korpuset
- SKRIV Corpus
- Two Corpora with music reviews
- Oslo Multilingual Corpus
- RuN-korpuset
- OPUS
- LOGONs norsk-engelske turistkorpus
- The Sofie Treebank
- + a big Oslo Parallel Corpus under arbeid
• Research using corpora:
  – Corpus-based
  – Corpus-driven

• Data collection for corpus:
  – Monitor corpora
  – Web as a corpus
  – sample corpora, balanced corpora
Types of corpora

• General corpora
  – Balanced
  – Biased

• Specialised corpora
  – Training+test
  – Dialect or region
  – Parallel
  – Music critiques

• Types of text
  – Whole texts or parts of texts
  – Dynamic (monitor) or static

• Time
  – Synchroic or diachronic

• Medium
  – Spoken or written
Annotating corpora

- POS-tagging
- Parsing
- Alignment
- Semantic tagging
- Metadata:
  - Author
  - work
  - date
  - place
Search example

• Find a definite noun followed by a preposition
det i år være mulig å levere selvangivelsen i bydelene. KARIN ERIKSEN i Et samarbeidsprosjekt

Lambertseter, Sagene, Torshov og Bøler vil sette kassene i biblioteket. Røta vil ha to kasser

bydel. Du behøver ikke å levere selvangivelsen i den bydelen du bor - Det

hente selvangivelseskjema og innhente all informasjon om uttrykking i Oslo Rådhus, med inngang fra sjesiden

et "gammelt" preg som ikke bryter med stilten til nabobygningene. Foruten innkjøring til Dagbladet blir

, viser tall fra Statistisk sentralbyrå. Indekstallet i desember var 250,9. Det er en

er en nedgang på 0,1 prosent fra måneden før. Fra desember i 1992 til desember

gikk ned 0,3 prosent som følge av nedgangen i bensinprisene. Gruppen andre varer og tjenester

. I 1993 var det nedgang i prisene i juli, august, november og desember

BERIT SIMENSTAD i NHOs kritikk av bystyre for handlingslammelse og ubelønnsomhet i behandlingen av byrå

av bystyre for handlingslammelse og ubelønnsomhet i behandlingen av byrådets näringsmelding, som Aftenposten skrev om

Planen var at komiteen skulle ferdigbehandle saken innen i fjor sommer. Horntvedt overtok som nestleder

sommer. Horntvedt overtok som nestleder i komiteen etter Kristin Krohn Devold i oktober. Horntvedt

Den arbeidsgruppen som komiteen satte ned for arbeidet med näringsmeldingen, ledet av Bernt Bull. 

til Aftenposten at han tar på seg ansvaret for at saken ikke ble behandlet før sommeren

til seg Horntvedts kritikk når det gjelder arbeidet med näringsmeldingen i høst. SÅ snakk om

Horntvedts kritikk når det gjelder arbeidet med näringsmeldingen i høst. SÅ snakk om boikott og

Men hvorfor har ikke komiteen da ferdigbehandlet saken med en flertallsinnstilling fra Arbeiderpartiet og SV?

har den politiske makten. Derfor har målsetningen i komiteen vært å utarbeide en felles politikk
Selvangi deg i din egen bydel!

For første gang vil det i år være mulig å levere selvangivelsen i bydelene.

KARIN ERIKSEN | Et samarbeidsprosjekt mellom 19 bydeler og Oslo likningskontor vil gjøre det lettere å levere inn selvangivelsen. Bydelene vil ha innleveringskasser fra og med 20. januar.

tid: AV01Af930001
title: Aftenposten: Selvangi deg i din egen bydel
category: AV01
publisher: Aftenposten
pubdate: 1993
pubplace: Oslo
translation:
class:
name: Eriksen, Karin
type: author
sex: F
born:
“Count” from the Action menu

Include:
- [x] Case sensitive
- [x] Create headings
- [ ] Orthographic word form
- [ ] Lemma
- [ ] Part of speech
- [ ] Type

Max number of results: 

Output format:
- [ ] HTML

Submit Query

---

<table>
<thead>
<tr>
<th>Occurrences</th>
<th>Match</th>
</tr>
</thead>
<tbody>
<tr>
<td>94</td>
<td>løpet av</td>
</tr>
<tr>
<td>27</td>
<td>slutter av</td>
</tr>
<tr>
<td>20</td>
<td>siden av</td>
</tr>
<tr>
<td>20</td>
<td>året før</td>
</tr>
<tr>
<td>17</td>
<td>kampen mot</td>
</tr>
<tr>
<td>16</td>
<td>spørsmålet om</td>
</tr>
<tr>
<td>16</td>
<td>midten av</td>
</tr>
<tr>
<td>16</td>
<td>begynnelsen av</td>
</tr>
<tr>
<td>15</td>
<td>behovet for</td>
</tr>
<tr>
<td>15</td>
<td>arbeidet med</td>
</tr>
<tr>
<td>14</td>
<td>ansvaret for</td>
</tr>
<tr>
<td>14</td>
<td>resten av</td>
</tr>
<tr>
<td>11</td>
<td>delen av</td>
</tr>
<tr>
<td>11</td>
<td>bruken av</td>
</tr>
<tr>
<td>10</td>
<td>utgangen av</td>
</tr>
<tr>
<td>10</td>
<td>ledelsen i</td>
</tr>
<tr>
<td>10</td>
<td>kampen om</td>
</tr>
<tr>
<td>10</td>
<td>muligheten for</td>
</tr>
<tr>
<td>9</td>
<td>utviklingen av</td>
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<td>9</td>
<td>grunnlaget for</td>
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<td>9</td>
<td>økningen i</td>
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<tr>
<td>9</td>
<td>forholdet mellom</td>
</tr>
<tr>
<td>8</td>
<td>toppen av</td>
</tr>
<tr>
<td>8</td>
<td>muligheten til</td>
</tr>
<tr>
<td>7</td>
<td>grunnen til</td>
</tr>
<tr>
<td>7</td>
<td>evnen til</td>
</tr>
<tr>
<td>7</td>
<td>salget av</td>
</tr>
<tr>
<td>7</td>
<td>betydningen av</td>
</tr>
<tr>
<td>7</td>
<td>situasjonen i</td>
</tr>
<tr>
<td>7</td>
<td>prisen på</td>
</tr>
</tbody>
</table>
“Action menu: “Count”, display as chart

- Case sensitive
- Create headings

**Include:**
- Orthographic word form
- Lemma
- Part of speech
- Type

Max number of results: 

Output format: 

Submit Query

---

Action menu: “Sort” results

- Case sensitive

**Sort by:**
- Match
- Position in context (counting from match)

Features used on tokens:
- Orthographic word form
- Lemma
- Part of speech
- Type

**Sort by (secondary):**
- Right context
- Position in context (counting from match)

Features used on tokens:
- Orthographic word form
- Lemma
- Part of speech
- Type

Reset Submit Query
regnet ut fra vinkelen på skyggen sat avstanden mellom punktene utgjorde en femtiendedel av 360 grader

din oppfatning? - Vi vil oppfylle avtalen for fosfor. For nitrogen matker vi neppe

og skapte problemer for ratifiseringen av START1 avtalen i november. Men spørsmålet er vel om
det hele tiden har vært uenig i avtalen med danskene fra 1991. Frykter forsinkelser i

protesterer allerede, slik de protesterte mot avtalen mellom Kravtsjuk og Jeltzin i sommer om deling

for en kort samtale med Kravtsjuk. Avtalen mellom USA, Russland og Ukraina om kompensasjon

felles håndtrykk etter undertegnelsen av den historiske avtalen om fjerning av atomvåpen fra Ukraina i Moskva

å finne en måte å omgå denne avtalen på , sier Egggen. SAS' informasjonssjef

statskasse - mange dollar. Clinton offentliggjorde avtalen på første dag av NATOtoppmøtet i Brussel mandag

. Men personverninteressene må ofte vike i avveilingene mot andre gode formål. Når dette skjer

inn i bykassen . Året etter var avviket på 332 millioner , mens i fjor traff politikerne

de nærmere 1200 frivillige Skiforeningsfuskjonærnes roller i avviklingen av de sagnomsuste Holmenkollrennene , referer Kirsten Klafstad

har styret i Norsk Iskrem bestemt. Avviklingen av disse to fabrikkene skal føre til en

. For øvrig er det lurt å legge badestellet til sent på kvelden , og gi siste

- Min klart største prestasjon på badmintonbanen hittil , så en glad og fornøyd Tandberg-Johansen

( i midten ) ønskes velkommen til badminton-toppen av Hans Sperre ( t.v.) og Erik

opp. En mann grafset til seg bagen med ca. 20000 kroner i . Han forsvant

plutselig stopper den . Og så går bakdørene opp. Der står Kritt . Han er

betalte for statskirkens virksomhet . Dette er bakgrunnen for at man i 1969 i lovs form

. Men Aftenposten er kjent med at bakgrunnen for den planlagte aksjonen er misnøye med Europavegelsens
<table>
<thead>
<tr>
<th>Publication Date:</th>
<th>Medium of Text:</th>
<th>Text Sample:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1960-1974</td>
<td>Book</td>
<td>Whole text</td>
</tr>
<tr>
<td>1975-1984</td>
<td>Periodical</td>
<td>Beginning sample</td>
</tr>
<tr>
<td>1985-1993</td>
<td>Miscellaneous: published</td>
<td>Middle simple</td>
</tr>
<tr>
<td></td>
<td>Miscellaneous: unpublished</td>
<td>End sample</td>
</tr>
<tr>
<td></td>
<td>To-be-spoken</td>
<td>Composite</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Domain:</th>
<th>Derived text type:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imaginative prose</td>
<td>Academic prose</td>
</tr>
<tr>
<td>Informative: Natural and pure sciences</td>
<td>Fiction and verse</td>
</tr>
<tr>
<td>Informative: Applied science</td>
<td>Non-academic prose and guides</td>
</tr>
<tr>
<td>Informative: Social science</td>
<td>Newspapers</td>
</tr>
<tr>
<td>Informative: World affairs</td>
<td>Other published written materials</td>
</tr>
<tr>
<td></td>
<td>Unpublished written materials</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Estimated Circulation Size:</th>
<th>Perceived Level of Difficulty:</th>
<th>Domicile of Author:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Low</td>
<td>UK and Ireland</td>
</tr>
<tr>
<td>Medium</td>
<td>Medium</td>
<td>Commonwealth</td>
</tr>
<tr>
<td>High</td>
<td>High</td>
<td>Continental Europe</td>
</tr>
<tr>
<td></td>
<td></td>
<td>USA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Elsewhere</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age of Author:</th>
<th>Sex of Author:</th>
<th>Type of Author:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-14</td>
<td>Male</td>
<td>Corporate</td>
</tr>
<tr>
<td>15-24</td>
<td>Female</td>
<td>Multiple</td>
</tr>
<tr>
<td>25-34</td>
<td>Mixed</td>
<td>Sole</td>
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<tr>
<td>35-44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45-50</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Your query "picture" in written texts returned 9646 matches in 1982 different texts (in 87,903,571 words; frequency: 109.73 instances per million words)

<table>
<thead>
<tr>
<th>No</th>
<th>Filename</th>
<th>Solution 1 to 50</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A00 273</td>
<td>The picture then has changed and we now need to plan for increasing numbers of those with chronic illnesses needing specialist community care volunteers, although volunteers continue to have a vitally important role to play.</td>
</tr>
<tr>
<td>2</td>
<td>A04 30</td>
<td>Pater's measured prose goes on to connect the picture with drawings by Verrocchio, speculate on the artist and the sitter, and wonder about how the picture is in progress.</td>
</tr>
<tr>
<td>3</td>
<td>A04 30</td>
<td>Pater's measured prose goes on to connect the picture with drawings by Verrocchio, speculate on the artist and the sitter, and wonder about how the picture is in progress.</td>
</tr>
<tr>
<td>4</td>
<td>A04 44</td>
<td>Let us picture a girl entering through the impressive doors of the New York Public Library.</td>
</tr>
<tr>
<td>5</td>
<td>A04 124</td>
<td>A teacher's list for analysing pictures may be something like that of the American educationalist Thomas Munro: first impressions of the picture and dark, colour, mass, space, unity of design.</td>
</tr>
<tr>
<td>6</td>
<td>A04 173</td>
<td>Pater's judgement is decisive, that this picture is Leonardo's masterpiece.</td>
</tr>
<tr>
<td>7</td>
<td>A04 217</td>
<td>But, seeing that a fine picture is nature reflected by an artist, the criticism which I approve will be that picture reflected by an intelligent and sensitive.</td>
</tr>
<tr>
<td>8</td>
<td>A04 217</td>
<td>But, seeing that a fine picture is nature reflected by an artist, the criticism which I approve will be that picture reflected by an intelligent and sensitive.</td>
</tr>
<tr>
<td>9</td>
<td>A04 218</td>
<td>Thus the best account of a picture may well be a sonnet or an elegy … as for criticism properly so-called …</td>
</tr>
<tr>
<td>10</td>
<td>A04 226</td>
<td>The whole surface of the sea included in the picture is divided into two ridges of enormous swell, not high, not local, but a low broad heaving of the lifting of its bosom by deep-drawn breath after the torture of the storm.</td>
</tr>
<tr>
<td>11</td>
<td>A04 231</td>
<td>Its daring conception, ideal in the highest sense of the word, is based on the purest truth, and wrought out with the concentrated knowledge of a life almost perfect, not one false or morbid hue in any part or line, and so modulated that every square inch of canvas is a perfect composition; its draughts as fearless; the ship buoyant, bending, and full of motion; its tones as true as they are wonderful; and the whole picture dedicated to the most subtle impressions … the power, majesty and deathfulness of the open, deep, illimitable sea.</td>
</tr>
<tr>
<td>12</td>
<td>A04 372</td>
<td>But, though independent, these objects of his attention coalesced, inevitably, in the act of painting when all the discrete, scattered moments, followed the wing, suspended or elusive, were in process of becoming the picture on the easel.</td>
</tr>
<tr>
<td>13</td>
<td>A04 376</td>
<td>For him, critical writing has to take up wider issues than enjoyment of a picture or a sculpture.</td>
</tr>
<tr>
<td>14</td>
<td>A04 435</td>
<td>Excellence is not necessarily a criterion for including a picture or a sculpture in a chronological survey.</td>
</tr>
</tbody>
</table>

...and more entries...

...to continue...

...and more entries...

...to continue...
Corpus or web?
What kind of linguistic research?

• phonetics and phonology?
• morphology?
• syntax?
• semantics?
• pragmatics?
• contrastive linguistics?
Tasks