



KOM2002 is an EU-funded research project with the aim of developing a web site with answers to questions about psychology and life style.

Project description

Natural-language question-answering technology.

Groupware for distributed multi-language content production.

List of deliverables and other important documents.



Two-page leaflet describing the software we are using (PDF format, 723Kb).

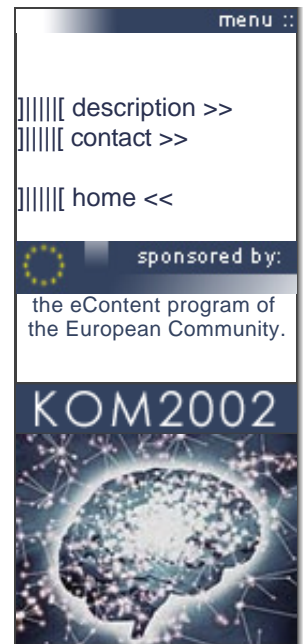


The full project description gives details about the KOM 2002 project (PDF format, 426 Kb).



download Acrobat Reader to read .pdf document.

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Template-Based Natural-Language Question-Answering

By natural-language question-answering is meant computer systems which can answer questions in natural human languages and give good answers. The systems we are discussing now take natural language written questions. Understanding of speech is not discussed here. There are two main methods of designing natural-language question-answering systems. The AI method uses artificial intelligence and linguistic methods to analyze questions and create an "understanding" in the computer of the question. The template method matches the questions against question templates produced by humans. Both methods can produce very good answers which give an impression of "computer intelligence" to the user.

The AI method requires complex and advanced linguistic analysis programs.

The template method requires careful human design of the templates for each question. The intelligence, for template-based methods, lies in the minds of the humans who write the templates. The templates can either be specific templates for single questions, or general templates for a group of questions. For example, the question "What is the population of Sweden?" and "What is the population of Italy?" might be answered by the same template, used to access a data base.

Both methods require careful testing with users, adjustment, and new user testing, before a system which gives good user satisfaction can be achieved. The most well-known template-based natural-language question-answering system is Ask Jeeves [<http://www.ask.com>], which is a large commercial system with answers to hundreds of thousands of questions. Since it is a commercial service, detailed about its design is not public.

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FAQ Search Systems

A common usage of Natural-Language Question-Answering is to search in data bases of answers to Frequently Asked Questions, FAQs.

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Our System

Eriks Sneders has constructed a template-based natural language question-answering system. You can test the system on a data base of answers about HTML at [<http://dsv.su.se/html/>]. A template must match many different variants of the same question. For example, "What is the population of Sweden", "What is the number of people in Sweden" and "How many people live in Sweden" are just three of the many variants which should return the same answer. A simple template for this question in his system might be specified as: popula* [number many much # people* person* inhabitant* human*] ; Swede* Sverige* Schwede* SuÈde*

This template means:

- A question must contain one word or phrase matching the



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text before the ";" and the text after the ";", described by item 2 and 3 below.

- The matching words after the ";" is any word beginning with either "Swede" or "Sverige" or "Schwede" or "SuEde".
- The matching phrases before the ";" can be either
- any word beginning with "popula" or
- first any of the words "number", "many" and "much", and then, any word beginning with "people", "person", "inhabitant" or "human". The "#" indicates than other words are allowed to intervene bathe the words before and after the "#".

In this way, arbitrary complex templates can be constructed, "[...]" phrases can be nested inside each other to arbitrary levels.

]||||| [references >>

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References on Natural Language Question Answering

Classification manual:

Natural Language Question Answering System Classification Manual, by Jacob Palme och Eriks Sneiders, Januari 2003 på <http://web4health.info/documentation/D2-2b-classification.pdf>.

Scientific paper:

Sneiders, E. (1999) Automated FAQ Answering: Continued Experience with Shallow Language Understanding. Question Answering Systems. Papers from the 1999 AAIL Fall Symposium. Technical Report FS-99-02, November 5-7, North Falmouth, Massachusetts, USA, AAIL Press, pp.97-107 at <http://www.dsv.su.se/~eriks/Sneiders1999.pdf>

Examples of use:

Answers to questions about HTML at <http://dsv.su.se/html/>.

Enterprise modelling data base at <http://ekd.dsv.su.se/faqs.htm>

Web4Health/KOM2002 EU project at <http://web4health.info/>.

Products on the market:

QuickAsk see <http://www.askology.com/quickask.htm>.

AskJeeves see <http://www.jeevessolutions.com/products/index.asp>.



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Content-management system

The content management system will support a group of experts in different countries, who are jointly developing a set of documents. It will support the following functions:

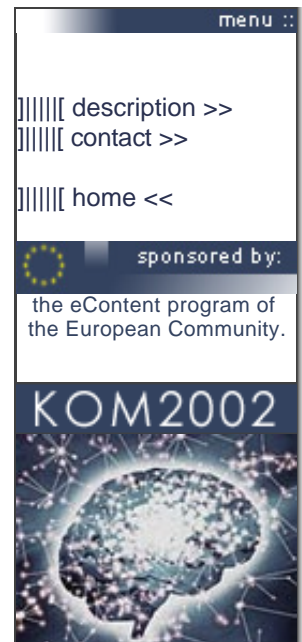
- Every document can have an arbitrary set of attributes, such as title, body, sources, etc. For every attribute is specified whether it is in plain text or HTML (preferably XHTML) format.
- Every attribute can be provided in multiple languages. Authorised users can modify attributes, with protection against information loss if two users modify the same attribute at the same time. Modification can be in any of the languages, for which this attribute is available.
- Default values can be specified for attributes not specified for a particular document.
- Documents can be exported through any of several export templates.

For example, there can be different export templates for:

- Publication as a static web page for screen viewing.
- Publication as a static web page for printing.
- Publication of a separate source statement.
- Publication in a format which is used as input for the natural-language question-answering system.
- Publication in XML format for exchange with other content management systems.

This content-management system is developed as an extension to the KOM2002 groupware system within the KOM2002/ Web4Health EU-funded research project.

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KOM2002-Groupware

Groupware for multi-language distributed content-production

Your Task:

You are a group of people in different countries, who have the task of jointly developing a set of documents with translations to multiple languages.

You need a software tool, accessible over the Internet, to coordinate the work and to store all the documents in all translations in a structured way.

The KOM2002 Solution:

You have full freedom to define the set of attributes describing your documents, such as author, main text, source, date, etc.

You can define any number of templates for output, for example a template for viewing as a static web page, a template for printing, a template for input to a data base, a template for XML, etc. A template defines the layout of the output, and where attributes of the document are to be placed in the template.

For each template, you can define where to export one or more documents, for example to static files or to be sent by HTTP to some receiving process.

To each document is associated a discussion area, which works like an asynchronous forum for discussion of this document between the experts.

Ordinary forums and chat areas are also available as needed.

Documents can be in HTML or XML format.

Every single document, attribute, template, forum, contribution can be specified in as many different languages as you need.

When an expert is working on modifying a certain document in a certain language, and another expert looks at this document, the other expert is warned that someone is working on this document, to avoid the problems which can occur if two experts try to modify the same document at the same time.

All old versions of each document are saved, so that you can easily go back to a previous version if needed.

News control, through which experts are notified in a special news page, and via e-mail, of new documents, new forum contributions and modifications and translations to documents. Different icons distinguish different kinds of news.

Example of a user view of a document:

The screenshot shows a web forum interface. At the top, there are navigation tabs: News, Private, All forums (selected), Help, and Logout. Below the tabs is a header with 'Go to:' and a list of links: All forums, Web4Health, FAQs, FAQ production, Encourage Your Child. There are also links for 'Show History', 'Subtract link', 'Who are present', and 'Translate to'. The main content area is titled 'Encourage Your Child' and includes metadata: Short name: child-encourage, Language: Swedish (), English (), Author: Martin Winkler, To: FAQ production, Modified by: Jacob Palme, 25 Feb 20:30. The 'Question(s)' section asks 'How can I help my child to develop self-esteem?' and lists a group, identifier, date-created (13 Jan 1970), date-last-modified (25 Feb 2003), and body. The body text discusses the need for parental support and lists several bullet points: Offer help and support whenever needed; Be a positive model for handling negative feelings; Respect the privacy of your child; Respect your child as an individual and very special person; Welcome your child in your arms; Invite your child to spend time with you every day; Talk to him or her and support the verbal expression of emotions; Try to understand why the child feels like she or he feels, and validate feelings; Be interested in hobbies and strengths of your child; Admire creative thinking and individual problem-solving of your child; Encourage responsibility and social awareness. The author is identified as Martin Winkler. There is a small image of a child and a parent sitting on the floor.

Exporting a document using different templates, and at the bottom a discussion area:

The screenshot shows the export options for the document. It includes a section 'Export this page to:' with several checkboxes: Web area for answers (*), Export to FAQ server (*), Printable answers (*), Web directory for sources (*), Export in DW full source format (*), FAQ text export in DW format (*), All of the destinations above, and a radio button for '. . .'. Below this is a form with a date field and an 'Export' button. At the bottom, there is a 'To Discussions:' section with two entries: 1912. Re: Perhaps you should also include, Jacob Palme, 26 Feb 11:11 and 1911. Perhaps you should also include, Jacob Palme, 26 Feb 11:10.

Note: The source code for KOM2002 is available as public domain software, for more info see <http://cmc.dsv.su.se/kom/kom2002.html>

Web4Health!

Give your visitors the right answer automatically, reduce the burden on human helpdesks! This poster shows how natural-language question-answering is used by the EU-funded eContent project KOM2002

Example of a query and answer: **Medical experts:**

The screenshot shows a web interface with a navigation bar (Home, News, Forums, Login/out, Private, Ask an Expert, Help) and a sidebar with 'Go to: New Question, Answers'. The main content area is titled 'Answers' and displays a question: 'Your Question: why am I always hungry?'. Below the question is a list of seven numbered links: 1. To be Satisfied when You Have Eaten Enough, 2. The Causes of Eating Disorders; links, 3. Eating when I am not hungry, 4. Confusing other Real Feelings with Hunger or Craving, 5. Feelings and Sensations; link list, 6. Factors Initiating Eating Disorders, 7. Eating Disorders and Other Feelings. Below the links are buttons for 'Top', 'New question', and 'Next Answer'. A yellow banner below the banner contains the text 'To be Satisfied when You Have Eaten Enough' and buttons for 'Link', 'Discuss', 'Ask an Expert', and 'Print'. The main content area contains the following text: 'Written by: [Gunborg Palme](#), certified psychologist and certified psychotherapist, teacher and tutor in psychotherapy. First version: 15 Jul 2002. Latest revision: 15 Feb 2003. **Question(s):** Why are other people satisfied, when they have eaten enough, but not me? **Answer:** For people without eating disorders who have a working hunger and satisfaction capability, the intake of nourishment is perfectly regulated so that they will be satisfied at the right time. When they have eaten enough, they feel satisfied and have no desire to eat any more. Here are some reasons why some people do not feel satisfied when other people do:

- A person who has recently been on a diet, or who has eaten and vomited, may get signals from the body saying: "Help, this is a famine, it is best to eat while there is food. You never know when you can get food again."
- Food, which people ate in former times, such as root vegetables, porridge, meat, fish, etc. gives more feeling of satisfaction than food which people eat today-biscuits, chips, soft drinks, candy, white bread, sugar, etc.
- People who eat rapidly will take in much more food, before they are satisfied, compared to people who eat slowly, one piece at the time, and who put down their fork and knife between each bite and chew thoroughly.
- Food reduces anxiety. A person who is agitated and nervous may want to reduce his anxiety with food, and this wish may be larger than his capacity of recognizing satisfaction.
- Many people with eating disorders are not conscious of their sensations of hunger and satisfaction. They cannot react to a sensation which they are not aware of. The temptation of the food on the table will win. Such people cannot separate hunger and other disagreeable feelings such as anger, fear, tiredness or aversion. All of these feelings will be experienced as hunger. People who cannot distinguish different sensations may develop eating disorders.

[Sources](#)

Fabio Piccini, Italy, Psychiatrist, psychotherapist, expert on eating disorders.
Petros Skapinata and Eva Gerasi, Greece, psychiatrists, experts on depression, sleeping problems and phobia.
Wendy Moelker, the Netherlands, Psychologist, expert on addiction and eating disorders.
Martin Winkler, Germany, Psychiatrist, expert on ADHD, Borderline disorder and child care.
Gunborg Palme, Sweden, Psychologist, psychotherapist, expert on obesity and eating disorders.
Sheldon Litt, Sweden, Ph.D., psychologist, psychotherapist, expert on Gestalt therapy.

Natural language question-answering using template matching:

The question from the user is matched against a question template. This template matches many different variations of the same question. There can also be multiple templates referring to the same answer. Answers are sorted, so that those who fit the template best, are listed first.

This technology gives much more relevant responses than ordinary search engine technology.

Example of a manually produced template:

Required: [mental* psych* personalit* # ill* disord* sick*] \$eatingdisorder \$anorexia \$bulimia ; numbe* frequen* common* often show* prevalenc* occur* strik* happen* befall* aris* [take ; place*] [crop ; up] incidenc* [many ; \$people]

Forbidden: \$treat

Optional: epidemiol* often die dead* morbid* danger* find* suffer* unwell* troubl* agoniz*

Priority: frequen* common* aris* [take ; place*] statist* prevalen* inciden* many* common* anorexia bulimia [many ; \$people]

This template will match a large number of variations of the same question, for example:

*How many people have anorexia?
What is the prevalence of eating disorders?
What is the frequency of mental illness?*

It will, because of the Forbidden clause, not match:

How many people are treated for anorexia.

It will, because of the Priority clause, list:

How frequent is anorexia?

before non-priority answers, but list

For whom will anorexia arise?

after other priority answers.

More information:

Project web site: <http://cmc.dsv.su.se/kom2002/>

Medical web site: <http://web4health.info/>

Note: The medical web site will not officially open until 1 July 2003. At present, the web site is incomplete.

Natural-language question-answering technology description: <http://web4health.info/kom2002/natural-language-answering.htm>

Note: Web4Health uses the KOM2002 Groupware for content development.



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Partners and Addresses

How to contact the project and its partners.

[website]

Short name: KTH

Company name:

KTH Technical University
Department of Computer and
Systems Sciences
Sweden

Role:

Technology provider
Natural language processing
Forum software.



Contacts:

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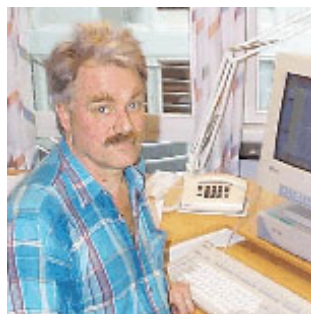


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[\[website\]](#)

Short name: ABIT

Company name:

ABIT
Italy
subcontractor to KTH

Role:

Information about and
psychotherapeutic competence on
eating disorders.

Contacts:

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[\[website\]](#)

Short name: OG

Company name:

Omega Generation SRL
Italy

Role:

Technology provider: integration
natural language question
answering
ontology building.

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[website]

Short name: Ioannina

Company name:

Department of Psychiatry
 University of Ioannina Medical
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 Greece

Role:

Family guidance
 child guidance
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 disability assessment
 epidemiology

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Short name: Emergis**Company name:**

Emergis Center for Mental
Healthcare
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Netherlands

Role:

Psychotherapy (behavioural
borderline
eating disorders
PTSS
work problems
sexual problems
depression)

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[<< back](#)[\[website\]](#)**Short name: Systran****Company name:**

Systran S.A.
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Role:

Machine translation technology
dictionaries to improve machine translation on mental health
topics.

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[\[website\]](#)

Short name: FH NON

Company name:
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Role:
 Psychotherapeutic competence on
 eating disorders
 personality disorders
 borderline personality disorders and
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[website]

Short name: Netdoktor

Company name:

Netdoktor

Role:

Exploitation
providing experience in managing health information on the
Internet
dissemination of KOM2002 information on the Netdoktor health
information web sites in Austria
France
Germany
Italy
Spain
Sweden and the U.K.

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