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# Annotating the Arabic Quran with semantic web content tags

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## 1 Introduction

Islamic tradition holds that Muslims should learn to read, understand, and appreciate the Quran in its original Classical Arabic, since any translations into other languages may propagate (mis)interpretations. The two billion Muslims worldwide who study the Classical Arabic Quran may want to examine and understand meanings of the text verse-by-verse, examining the Arabic verse alongside its translation into a known language, eg English. They may also want to search for **concepts** rather than specific words or letter-sequences, and find all the verses which involve this concept; the concept may be stated in English or Arabic, as long as the search leads to the relevant source Arabic verse(s).

Our semantic web search-by-concept approach, implemented in the Qurany website, demonstrates novel features to improve recall and precision when searching for concepts. The system accepts concept search terms in Arabic and/or English, and the underlying corpus includes original Arabic and eight English translations to cope with variant translations and transliterations, eg Jibril / Jibrail / Gabriel. The system can also lemmatize the concept search terms and offers the user a choice of synonyms from WordNet, to broaden their query and improve recall further. To allow search for abstract concepts, such as 'Juridical Regulations' or 'Women's Property', the Quran corpus is augmented with an ontology or index of key concepts, taken from a recognized expert source 'Mushaf Al Tajweed'. This contains a comprehensive hierarchical index or ontology of nearly 1200 concepts in the Quran. Scholars can use the online Qurany ontology browser to identify a precise concept and find the verses which allude to this concept, with higher precision. Alternatively, researchers can use the standard Google search engine on our website holding a tagged version of the Quran, where each verse is a separate web-document annotated with concept semantic tags; so finding documents to match the Google search terms delivers the verses containing the sought concepts. The concept semantic tags are concepts taken from a recognized expert Quran commentary; so should not be subjective or controversial.

The method can be extended to other Classical Arabic texts. For example, we have added a set of example Haddith verses (other Islamic religious texts), in Arabic and English translation, to our Quran search-by-concept online demonstrators.

## 2 Quran concept ontology browser

You can search for verses in the Arabic Quran containing a specified concept by using our online Quran concept ontology browser:

<http://xyzqurany.appspot.com/>

For example, if you choose from the tree of concepts on the left hand side, and select:

the concept "Pillars of Islam"  
then, "The Prayers"  
then "Performing the Prayers"  
then "Friday Prayers"

...you will get Quran verses on this topic in the upper right frame, and Hadith verses on this topic in the lower right frame.

## 3 Google search for concepts in the Quran

The qurany.appspot.com implementation relies on search of an underlying Quran database on the website; this can be slow at times. We know that Google provides very efficient web-search, so it could be better to utilise the Google search engine. To achieve this, we transformed the Quran database including original Arabic, English translations and concept ontology into a large set of HTML web-pages, one per verse. Each Quran verse is stored as an HTML file:

Header: The University of Leeds Qurany Tool  
Noorhan Abbas & Eric Atwell  
Chapter Name in English  
Verse Number in English  
Chapter Name in Arabic  
Verse Number in Arabic  
Arabic text of verse  
8 English translations of verse  
List of Concepts/Themes Covered in Arabic  
List of Concepts/Themes Covered in English  
Navigation links: Home Prev Next  
Footer: summary info, with links to.appspot.com

The set of HTML files were uploaded to a website <http://www.comp.leeds.ac.uk/nora/> which can be directly searched in Google using the "site:" constraint to restrict search to the website. For example, Google search for:

Friday prayers site:<http://www.comp.leeds.ac.uk/nora/>

Will return a set of verses about Friday Prayers.

## Appendix: A sample search-by-concept

The screenshot shows a software application titled "Quran Concepts". On the left is a navigation pane with a tree view of topics. The selected item is "صفات الجنة" (Its Characteristics) under "الجنة" (The Paradise). The main content area displays search results for the concept of "The Unseen World".

**YUSEFALI:-** To dwell therein. The promise of Allah is true: and He is Exalted in Power, Wise.

سورة فاتر

جَنَّاتٍ عَدْنٍ يَدْخُلُونَهَا يُحَلَّوْنَ فِيهَا مِنْ أَسَاوِرَ مِنْ ذَهَبٍ وَيُؤْتَوْنَ عَلَيْهَا خَزَائِرَ مِنْ لؤلؤةٍ وَيُتَوَّجُونَ بِهَا حُلِيِّمْ فَهُمْ فِيهَا خَالِدِينَ 33

**Fatir**

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**KHAN:-** 'Adn (Eden) Paradise (everlasting Gardens) will they enter, therein will they be adorned with bracelets of gold and pearls, and their garments there will be of silk (i.e. in Paradise).

**MAULANA:-** Gardens of perpetuity, which they enter – they are made to wear therein bracelets of gold and pearls, and their dress therein is silk.

**PICKTHAL:-** Gardens of Eden! They enter them wearing armlets of gold and pearl and their raiment therein is silk.

**RASHAD:-** They will enter the gardens of Eden, where they will be adorned with bracelets of gold and pearls, and their garments in it will be made of silk.

**SAWAR:-** They will enter the gardens of Eden wherein they will be decked with bracelets of gold, pearls, and silk garments.

**SHAKIR:-** Gardens of perpetuity, they shall enter therein; they shall be made to wear therein bracelets of gold and pearls, and their dress therein shall be silk.

**SHERALI:-** Their reward will be Gardens of Eternity. They will enter them and will be adorned therein with bracelets of gold and pearl; and their garments therein will be of silk.

**YUSEFALI:-** Gardens of Eternity will they enter: therein will they be adorned with bracelets of gold and pearls; and their garments there will be of silk.

The Windows taskbar at the bottom shows several open applications: RADIO STATION, QuranSearchConc..., \*Python Shell, Quran Concepts, temparabic - Micr..., and Microsoft PowerPo... The system clock indicates 15:24.