

Brede Wiki: A neuroinformatics Web service with structured information

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April 16, 2009

The Brede Wiki is a Web service running the MediaWiki software and containing structured information from neuroscience, e.g., data from original research peer-reviewed journal articles and general neuroscience information such as a brain region ontology.

Information is organized with MediaWiki templates, enabling consistent layout, automatic categorization as well as extraction of the structured content. The templates presently defined represent information about brain region volumes, Talairach coordinates, gene-personality associations, journals, brain scanning, research subject groups, researchers and organizations, software, brain regions and scientific papers. The brain volume and Talairach coordinate templates record results from published articles, while templates for brain scanning and research subject groups describe the methodology used in such studies.

Template definitions generate wiki links for the field values in the templates. These links are possible since template instantiations are kept free of wiki formatting. Most template definitions build tables with the structured information for presentation to the reader. A few template definitions also produce schematic natural language with field values used as part of the sentences. Where appropriate the template definitions furthermore construct links to the items in the Brede Database, BrainInfo (NeuroNames), Internet Brain Volume Database, NeuroLex, PubMed and Wikipedia as well as links for Open Access article search via DOAJ and Open J-Gate. Furthermore, Web directories with listings of software, IATR, NITRC, NIF, NDG and I do Imaging, are also linked.

A script extracts the information from templates and generates SQL files so database queries are possible across structured information in the wiki. A Web service, setup using data from the Talairach coordinate and scientific paper templates, enables search for nearby brain coordinates reported in other scientific papers. For each coordinate links to other Web services are also created such that individual coordinates, e.g., can be visualized.

The Brede Wiki has yet a low number of pages: Around 200 content pages including around 60 pages for scientific papers and 46 pages for brain regions. The number of pages could potentially be increased by automatic populating the wiki with data from the Brede Database.

Information is distributed under multiple share-alike licenses. Compressed XML-files with dumps of the wiki are available on the Internet along with SQL files with extracted information from the templates.

A wiki does not solve the data entry problem per se. It does, however, support convenient incremental micropublishing. Certain of the information in the Brede Wiki may be setup with scripts, e.g., one Matlab script extracts coordinates from the SPM neuroimaging analysis program and formats them for inclusion in the Brede Wiki.

Rather than building a stand-alone wiki the information could have been included in Wikipedia with possible data extraction via DBpedia. However, the present Wikipedian consensus about notability in Wikipedia precludes the representation of many of the specialized topics of the Brede Wiki, e.g., a scientific paper will rarely be notable enough to gain its own page in Wikipedia.