Introduction
The search results of PubMed are displayed in reverse chronological order. However, when users deal with a large quantity of search results, topic sorting can be crucial in selecting precise results. In order to let users search data from PubMed in an intuitive approach, the researchers designed a Google-like clustering biomedical literature retrieval system, called Visual Medline.

From Nov. 2010, the research team adopted text mining and automatic clustering technology to retrieve bibliography, abstracts and medical subject headings from the PubMed database, so that the search results can automatically be categorized and visually displayed in a radial knowledge ontology structure. In addition, tag cloud and literature filtering were two distinguished features of this system.

Methods
In order to collect users’ behavior of medical information retrieval and their thoughts and suggestions in regard to Visual Medline, the research team conducted two user tests on 43 college students who majored in Health Science related subjects and 15 clinical staff respectively.

Results
In May of 2011, the test on college students was carried out. The results were as follows: students gave positive feedback regarding knowledge ontology and tag cloud.

- While applying the same inquiry on PubMed and Visual Medline, the precision ratio of each is 60% v.s. 66% respectively.
- The search patterns were also collected. Among 43 collect students:
  - 38.1% of them used Boolean logic “AND”;
  - 19% used “Limits” filters;
  - 33% used compound phases, but only one student used quotation marks;
  - 2.4% used gender as the key word;
  - 4.8% used inverted sentences (non-natural language).

Conclusions
The research team aims to develop an intuitive, visualized, and popularized biomedical literature automatic clustering retrieval system. Users’ feedback collected through the developing process was used for system revision. This project was closed in October 2011. Currently, Visual Medline is available under the Taipei Medical University library website (http://visualmedline.tmu.edu.tw). The research team is now constructing a cloud-centric service platform to optimize Visual Medline. Hopefully, this cutting edge service can bring the ease on literature retrieval to the general public.

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For further information
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