Augmenting the Web for Facilitating Learning

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Every day, users on the web go through large amount of articles and texts while fulfilling various needs. It takes a lot of time and we think this time can be spent more effectively. Information technologies and text augmentation methods are able to provide user with additional information during web browsing, which is helpful in learning process, e.g., for learning new languages. The Web content is typically written in natural language. As a result, it is not understandable for computers and therefore web augmentation is a complicated task. Finding methods which allow augmentation of selected parts of web documents is a research challenge in field of Technology Enhanced Learning (TEL).

The goal of our work is to devise a method for web augmentation during casual web browsing, which facilitates learning - foreign language learning in particular. The potential of this approach is supported by agreement of experts that vocabulary acquisition occurs incidentally and minimal mental processing (of presented vocabulary) can have memory effects [2]. Our method needs to represent user knowledge and its specifics (for example issue of forgetting) in open information spaces. It is important to take into consideration the amount of knowledge user already has and his goals, i.e., what he would like to learn.

When looking for a solution, we face the following five open problems:

- natural language processing,
- user knowledge modeling,
- augmentation of proper part of web page,
- identification of proper approach and moment for augmentation,
- problems specific for learning (remembering, forgetting…).

Existing approaches to technology enhanced learning during web browsing aims mostly on vocabulary acquisition. They can be divided into two main categories [3, 4]:

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- substitution of words in documents written in native language (L1) with words from target language (L2),
- augmentation of text written in target language (L2) with word translation possibility.

In our approach we plan to augment web pages written in language (L1) and offer user with both word substitution and word explanation if requested. To increase chance of remembering presented words we think of special augmentation using different colours which will be associated to special categories or sentence members (see Figure 1).

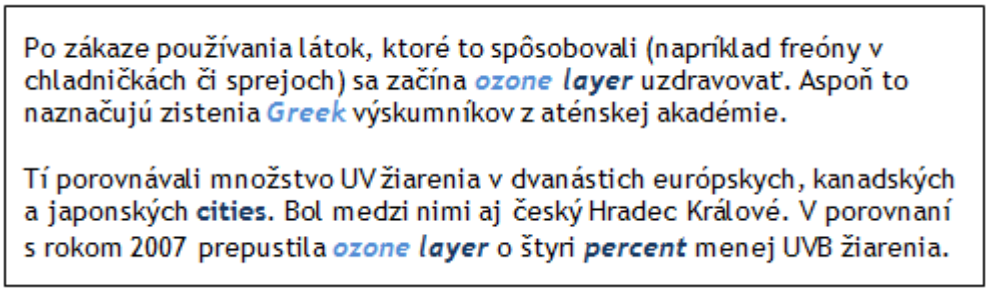

Figure 1. Example of web augmentation.

In order to evaluate our approach, we consider implementation of our method as a plugin into Adaptive proxy project [1] or a web browser extension.

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References

[1] Kramár, T., Barla, M., Bieliková, M. PeWeProxy: A Platform for Ubiquitous Personalization of the "Wild" Web. In UMAP 2011: Adjunct Proc. of the 19th Int. Conf. on User Modeling, Adaptation and Personalization. Demo. pp.7–9.

[2] Quirchmayr, G., Wahl, H., Winiwarter, W.,: Natural language processing technologies for developing a language learning environment, Proceedings of the 12th International Conference on Information Integration and Web-based Applications & Services, ACM New York, USA, 381–388, 2010.

[3] Trusty, A., Truong, K. N.: Augmenting the Web for Second Language Vocabulary Learning, Proceeding of the 2011 annual conference on Human factors in computing systems, ACM New Yok, USA, pp. 3179–3188, 2011.

[4] Tanimura M.,Utiyama M.: Reading Materials for Learning, TOEIC Vocabulary Based on Corpus Data, JACET Bulletin, vol. 42, pp. 81–96, 2006.