**Experimental research on Machine Translation in Translation Studies curriculum: Module “Principles and Applications of Machine Translation”**

Bogdan Babych

University of Leeds

[b.babych@leeds.ac.uk](mailto:b.babych@leeds.ac.uk)

Identifying a proper place of Machine Translation (MT) in the professional translation workflow is an important task both for the translation industry and for academics who teach translation. This task is motivated by the two converging trends: on the one hand there is a growing demand for fast collaborative high volume translation; on the other hand there are major improvements in MT quality, usability, coverage and availability of a greater number of languages and translation directions, which became possible over the recent years. While in the past, professional translators have been skeptical about usefulness of MT for their work, nowadays MT quality and usability of modern systems have reached the point when proper integration of MT into the processes of translation and revision achieves measurable improvements in terms of time, cost, consistency and fitness for purpose. This change is a result of major advances in design of MT systems, improvements in the development cycle for statistical and hybrid MT, fast creation of systems for under-resourced languages, integration of MT with other Computer-Assisted Translation (CAT) tools and advances in systems’ usability that lead to the development of more friendly translators’ workbenches and integrated environments, e.g. for pre- and post-editing.

Teaching of CAT in the translation studies curriculum needs to address two aspects of this technological paradigm shift. Firstly, students have to understand current capabilities and limitations of the state-of-the-art MT systems for different translation scenarios, and to be able to use the potential of MT technology for optimizing the workflow in their translation projects. Secondly, students should be able to orient themselves in the rapidly changing technological MT landscape in future, to follow new developments and literature in the field of MT and to assess the impact of new advances in the technology on the process of translation, to understand and exploit synergies between MT and other CAT tools, to take advantage of MT customization and domain adaptation capacities for their projects and tasks. These goals are met when students develop skills and confidence in conducting experimental research on MT, specifically – on MT usability in different usage scenarios. Students should be able to design experiments, quantitative and qualitative evaluation metrics that would allow them to measure and compare efficiency of MT for different tasks and conditions.

A 15-credit module *Principles and Applications of Machine Translation*, which is taught for MA students in Applied Translation Studies at Leeds, addresses these objectives by covering theoretical issues in modern MT technology, types of MT architectures, uses of imperfect MT output, post-editing, controlled language, sublanguage, MT of different text types, customizing rule-based, statistical and hybrid MT with dictionary update, domain adaptation and translation corpus training, human and automated methods of evaluating MT quality, error analysis, system improvement and terminology management in MT projects. The main focus of the module is on MT evaluation, on teaching methods and skills for assessing the effect of using MT system within a collaborative translation workflow for a specific translation direction and subject domain. The module covers methods for comparing MT systems in terms of FEMTI evaluation parameters such as quality, operational cost, customization and usability. Students develop skills in designing and carrying out experiments for systematic evaluation and comparison of MT systems used for different purposes. The final module assessment includes a 2000-words report on students’ own experimental work designed to address theoretical or practical problems in MT. The plan of the experiments and the scope of the students’ projects are discussed in the format of individual tutorials. Guidance for formatting the report is based on the structure of research papers in the area of MT. Reports have to include references to recent publications in journals and conferences proceedings on the relevant topics.

In their reports, students often come up with innovative ideas and solutions, interesting experimental settings. They present results that in some cases are at a level suitable for publication or for conference presentation. Some reports contain results that may have a potential impact for stakeholders outside academia, such as NGOs, volunteer translation groups, translation companies and departments. Some students continue their research as their final year dissertation, often working with external organizations or partners. Their projects in many cases have real impact for professional or volunteer translation community.

The module gently introduces technical data analysis techniques for students with primarily humanities background. Based on the knowledge and skills acquired in the module, students can combine their understanding of computational linguistic technologies with their good knowledge of the professional translators’ workflow. In future this new generation of technologically aware translators may collaborate with CAT engineering teams on defining and creating the next generations of MT and CAT tools that would be more capable and useful for professional translators.