MTPE quality evaluation in translator education: the postedit.me app

Marie-Aude Lefer, Romane Bodart, Justine Piette, Adam Obrusník
UCLouvain, Louvain-la-Neuve, Belgium
marie-aude.lefer@uclouvain.be, romane.bodart@uclouvain.be,
justine@tradorizon.com, adam.obrusnik@gmail.com

Abstract

This article presents the main functionality of the postedit.me app. Postedit.me is a software program that supports machine translation post-editing training in translator education, with special emphasis on standardized quality evaluation of post-edited texts produced by students. The app is made freely available to universities for teaching and research purposes.

1 Background

Translation curricula across the globe are regularly updated to reflect the most recent technological advances in the language services industry. Machine translation post-editing (MTPE) is a case in point. While the first concrete proposals to incorporate MTPE training into translator education emerged in the 2010s, many translation curricula nowadays feature MTPE training in the form of stand-alone technology modules or language-pair-specific practical courses. Surprisingly, however, there are relatively few digital tools that support MTPE training and learning. Examples include MATEO (Vanroy et al., 2023), a web interface devoted to machine translation (MT) evaluation training, and COPECO (Mutal et al., 2020), an online collaborative platform designed to collect an annotated student post-editing corpus. In this article, we describe the postedit.me app. The tool streamlines assignment of MTPE tasks to students and automates standardized quality evaluation of students' post-edited texts.

2 Basic functionality

The postedit.me app consists of a teacher interface and a student interface. Its main objective is to help MTPE trainers assess the quality of the post-edited texts produced by their students, relying on standardized annotation taxonomies. Students are asked to carry out their MTPE assignments in dedicated computer-aided translation (CAT) tools, and to use postedit.me to submit their final post-edited texts, consult their trainer's feedback and track their progress across tasks.

2.1 MTPE task creation

MTPE tasks in postedit.me consist of three components: the source text (ST) selected by the trainer, its MT (generated by the trainer) and a set of post-editing guidelines for the task. Trainers are asked to input some metadata related to the ST (domain, genre, target readership, etc.), MT (MT tool used, glossary integration, date, etc.) and post-editing task (task conditions, timing, marking, etc.).

2.2 MT error annotation

Once a task is created, the trainer will error-annotate the MT. MT error annotation relies on the taxonomy of the Translation-oriented Annotation System (TAS) developed for translator education (Granger and Lefer, 2021), i.e., *mechanics*, *grammar and syntax*, *lexis and terminology*, *discourse and pragmatics*, *register and style*, *content*, *culture* and *brief*. MT annotation does not rely on an absolute notion of translation error. Rather, it is dependent on the pedagogical context in which the task is to be performed. In certain cases, for instance, trainers can decide to restrict their annotation to the most serious MT errors, leaving minor errors unannotated since students are not expected to edit them (e.g. because they are at an early stage of their MTPE training). The MT error annotation is only shared with students when they have completed the task and accessed their trainer's feedback.

2.3 MTPE quality evaluation

Once students have performed the MTPE task in a CAT tool, they submit their final post-edited text, together with some personal and task-related metadata, on the student interface. Students' assignments are then automatically made available on the teacher annotation interface, which features a four-column display: (1) the ST, (2) the error-annotated MT, (3) the student's raw post-edited text, and (4) the 'autocompare' version of the post-edited text and the MT, where word-level differences (additions, deletions and substitutions) are

highlighted in different colours. MTPE quality evaluation relies on the taxonomy of the Machine Translation Post-Editing Annotation System (MTPEAS; Lefer et al., 2022), which contains seven categories: *value-adding edit*, *successful edit*, *unnecessary edit*, *incomplete edit*, *error-introducing edit*, *unsuccessful edit* and *missing edit*. Missing edits are automatically identified in the tool on the basis of the prior MT error annotation performed by the trainer. The other MTPE tags are inserted by the trainer. All annotations can be augmented with comments. There is also a dedicated box for general feedback. A grade is automatically computed on the basis of the annotations, using a customizable formula (with bonuses and penalties).

2.4 MTPE quality statistics reports

Statistics reports are generated automatically, at different levels (students, individual tasks, language pairs), and are made available as raw figures and relative frequencies per 1,000 tokens, in the form of both tables and graphs. Students can access their own personal statistics on the student interface. This makes it possible to identify their main weaknesses and track their progress throughout the MTPE tasks.

2.5 Search tool

Postedit.me features automatic sentence-level alignment of ST, MT and post-edited text. On the basis of the sentence-aligned database, it is possible to query words, phrases, TAS annotations and MTPE annotations. The search tool can be used to devise data-informed tailored exercises for students and to carry out empirical research on the post-editing data collected through the app.

3 Technologies used

Postedit.me is a server application with a web interface that runs on any system supporting docker containers, primarily modern Linux. The technology stack of the app consists of several components which are all interfaced by python 3. The interface of the application is implemented in `django-framework`. The app benefits especially from the built-in Object-Relational Mapper model and the ability to easily generate forms from data models. For handling asynchronous tasks (text alignment, POS tagging), the `celery` library is used with `RabbitMQ` broker. For MT and MTPE annotation, the `LabelStudio` library is used. The app uses `SpaCy` with appropriate pre-trained models for generating POS tags and lemmas. The text alignment is quite innovative as it supports alignment of three language versions. For this reason, it mostly uses original, dedicated code, although it also calls on a few methods from `sentence_transformers` and `nltk` packages. Finally, the annotated and aligned texts are stored in a custom XML format, which is processed by the `BeautifulSoup` library. The search function is based on `ElasticSearch`, where a custom token mapping is defined, which stores a token context (N neighboring tokens) together with each token from the text. While this solution is heavy on data storage, it maximizes the speed of the concordance and supports multi-argument queries (e.g. a specific POS followed by a specific word with a specific annotation). Load-balancing is currently achieved by distributing computation-heavy tasks (alignment, POS tagging) of individual texts between computer cores.

4 App availability and licensing

The postedit.me app is made freely available to universities for teaching and internal research purposes. A custom licence agreement must be signed by both parties before the code, documentation and user guides are shared. On-demand custom commercial licences can be prepared for other partners, depending on the particular needs of interested parties (e.g. interoperability with specific CAT tools).

Acknowledgements

We gratefully acknowledge the financial support of UCLouvain's *Fonds de Développement Pédagogique* (2021–2023).

References

Granger, Sylviane, and Marie-Aude Lefer. 2021. *Translation-oriented Annotation System manual (Version 2.0). CECL Papers 3*. Louvain-la-Neuve: CECL/UCLouvain. https://uclouvain.be/en/research-institutes/ilc/cecl/cecl-papers.html

Lefer, Marie-Aude, Justine Piette, and Romane Bodart. 2022. *Machine Translation Post-Editing Annotation System (MTPEAS) manual*. OER-UCLouvain. https://oer.uclouvain.be/jspui/handle/20.500.12279/829

Mutal, Jonathan, Pierrette Bouillon, Perrine Schumacher, and Johanna Gerlach. 2020. COPECO: a Collaborative Post-Editing Corpus in Pedagogical Context. In *Proceedings of the 1st Workshop on Post-Editing in Modern-Day Translation*, 61–78, virtual.

Vanroy, Bram, Arda Tezcan, and Lieve Macken. 2023. MATEO: MAchine Translation Evaluation Online. In Mary Nurminen et al. (eds.), *Proceedings of the 24th Annual Conference of the European Association for Machine Translation*, 499–500, Tampere, Finland.