

GAMETRAPP: Training app for post-editing neural machine translation using gamification in professional settings

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Abstract

The GAMETRAPP project, funded by the Spanish Ministry for Science and Innovation, aims to facilitate professionals from technical fields training on full post-editing of neural machine translation by means of a gamified environment.

1 Introduction

Digital transition refers to the actual effect of digitization—the technical conversion of analog information into digital form—and digitalization—the actual process of change in industries—on society (Chaume Varela, 2019). Human language technologies are of paramount importance in this process because the digital transition is incomplete until it is multilingual.

In this context, machine translation, and mainly Neural Machine Translation (NMT), is gaining ground since it helps to meet the communicative needs of an increasingly demanding digital society. The real potential and correct use of NMT is only achieved through professional post-editing (PE) by human translators and/or post-editors. However, considering the multilingual needs imposed by digital transition, especially in the technical and technological domains, demand for NMT plus full PE carried out in part by non-professional translators will increase exponentially in the coming years. Consequently, initiatives for training non-professional translators on NMT plus full PE are expected to be demanded in the near future.

Previous studies have explored professional engineers' (Temizöz, 2013) or academics' (Parra Escartín & Goulet, 2020) performance as post-editors. However, apart from MultitraiNMT (Forcada et al., 2022), designed for language learners,

as far as the author is aware, no proposal has yet been made in the training of non-professional translators on full PE.

To fill that gap, the main contribution of GAMETRAPP project is to bring training in NMT and full PE closer to professionals from technical fields using an innovative training approach: gamification. Based on the application of play elements affecting motivation and knowledge apprehension (Toukourmidis & Maeöts, 2019), gamification is nowadays widely used in enterprises to motivate employees' involvement in the company as well as in corporate and lifelong learning training (Iacono et al., 2020).

2 Project description

The GAMETRAPP project is funded by the Spanish Ministry for Science and Innovation (TED2021-129789B-I00). It started in December 2022, and it will last for two years.

The GAMETRAPP team is an international and inter-university group formed by 19 researchers from 9 Universities, 7 from Spain (University of Málaga, University of Córdoba, University Pablo Olavide, University of Alcalá, University Autónoma de Madrid, University of Valladolid and Valencia International University) and 2 from United States (Kent State University and Utah Valley University). In addition, an outsourced company will help design, develop, and create the gamified environment.

The main hypothesis is that *in the English-Spanish language combination, gamification can help professionals from technical fields having a high English proficiency acquire basic PE literacy skills*. Specifically, the project will pursue the following seven goals:

1. Establishing potential patterns of full PE by professionals from technical fields.

2. Evaluating the quality of professionals' full PE.
3. Comparing the full PE solutions between translators and professionals from technical fields.
4. Identifying the challenges that full PE of NMT of technical texts translated from English into Spanish poses.
5. Proposing PE guidelines for NMT in technical texts machine-translated from English into Spanish.
6. Addressing the impact of a gamified environment as a learning approach in a life-long learning context.
7. Analysing the number, type, and frequency of gender-inclusive solutions in full PE of NMT of technical texts translated from English into Spanish.

Professionals will post-edit segments from texts of their expertise that have been machine-translated. The post-edited segments will be compared to a corpus of the same segments post-edited by professional translators and/or post-editors using fuzzy matches and, depending on the results, users will get points and rewards. Two issues are to be tackled: percentage similarity for fuzzy matches and overcorrection. In addition, users are expected to compete and assess results.

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References

- Chaume Varela, F. (2019). Audiovisual translation in the age of digital transformation: Industrial and social implications. In *Reassessing dubbing: Historical approaches and current trends*, pages 104–124, John Benjamins, Amsterdam.
- Iacono, S., Vallarino, M., & Vercelli, G. (2020). Gamification in Corporate Training to Enhance Engagement: An Approach. *International Journal of Emerging Technologies in Learning (iJET)*, 15(17), 69–84.
- Forcada, M. L., Sánchez-Gijón, P., Kenny, D., Sánchez-Martínez, F., Pérez Ortiz, J. A., Superbo, R., Ramírez

The gamified environment will be designed to be used in a responsive app.

Regarding methodology and work plan, GAMETRAPP encompasses 3 phases (I. Pre-use of gamified environment, II. Use of gamified environment, and III. Post-use of gamified environment) divided into the following 7 subphases:

1. Surveys design and preparation of informed consents.
2. Definition of theoretical concepts such as PE literacy.
3. Training of NMT engine and translation of source texts: selection of source texts and NMT engine, training of NMT engine and translation of source texts (machine translation and human translation).
4. Post-editing of machine translated texts.
5. Gamified environment and app prototype design and development.
6. App use by professionals from technical fields.
7. Analysis of results: qualitative analysis of surveys, analysis and comparison of PE patterns, and evaluation of post-edited texts.

Sánchez, G., Torres-Hostench, O., & Rossi, C. (2022). MultitraiNMT Erasmus+ project: Machine Translation Training for multilingual citizens (multitrainmt.eu). *Proceedings of the 23rd Annual Conference of the European Association for Machine Translation*, pages 291–292, Ghent, Belgium.

Parra Escartín, C., & Goulet, M. J. (2020). When the Post-Editor is not a Translator: Can machine translation be post-edited by academics to prepare their publications in English? In *Translation Revision and Post-Editing*, pages 89–106. Routledge, London.

Temizöz, O. (2013). Post-editing Machine Translation Output and its Revision: Subject-Matter Experts versus Professional Translators. Universitat Rovira i Virgili, Tarragona. <https://www.tdx.cat/handle/10803/128204>

Toukoumidis, A. L. T., & Maeöts, M. (2019). Implementation of Gamification Strategies for the Enhancement of Digital Competences. *INTED2019 Proceedings 13th International Technology, Education and Development Conference*, pages 9510–9518, Valencia, Spain.