The MTxGames Project: Creative Video Games and Machine Translation – Different Post-Editing Methods in the Translation Process

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Abstract

MTxGames is a doctoral research project examining three different machine translation (MT) post-editing (PE) methods in the context of translating creative texts from video games, focusing on translation speed, cognitive effort, quality, and translators' preferences. This is a mixed-methods study, eliciting quantitative data through keylogging, eye-tracking, and error evaluation as well as qualitative data through interviews. To create realistic experimental conditions, data elicitation takes place at the workplaces of freelancing professional game translators.

1 Introduction

In terms of revenue, the global video games market has been growing for more than a decade (Wijman, 2024). Due to this growth, more and more texts in and about video games need to be translated in ever shorter periods of time (Anselmi and Rubio, 2020). Rising volumes, increasingly tighter deadlines, and the emerging popularity of generative artificial intelligence (AI) in tech-savvy fields have led to more interest by game publishers and developers in applying MT to speed up the translation processes, either in the form of dedicated neural machine translation (NMT) systems or large language models (LLMs) prompted for MT. However, as their multi-modal features and creative characteristics make game texts more complex compared to other text types, PE of NMT suggestions may have counter effects when translating creative texts. For example, Guerberof Arenas and Toral (2022) found that PE might reduce productivity and hinder the creative process. Instead of post-editing MT suggestions, novel approaches for using MT in video game translation are needed that take these creative aspects into account.

Additionally, there might be differences for each individual game translator. Prior research on (statistical) MT has found, for example, individual differences in PE productivity (Koehn and Germann, 2014) and personal preferences (Daems, 2016). Considering recent technological advancements, MTxGames aims to investigate how PE practices can be adapted to accelerate the process of translating video games while maintaining high-quality, creative translations and accommodating for translators' preferences regarding the use of NMT and LLMs. Therefore, three PE methods are compared against each other: 1) Traditional post-editing, where pre-translated machine-generated texts are provided by an NMT system customised for game texts and which are then post-edited by the translator. 2) MT-assisted translation without pre-translation, allowing the translator to pull suggestions for individual sentences from a customised NMT system on demand. 3) Interactive MT, which involves the translator to prompt an LLM for a translation which can then be further fine-tuned through more prompting. While 1) is prevalent in video game translation, 2) is rare, and 3) is still a novel concept requiring further development.

By focusing on the translator's point of view, this project represents a shift in MT research and moves the field toward human-centred augmented translation as proposed by O'Brien (2023).

2 The Project

This doctoral research is affiliated with University of Eastern Finland in cooperation with Technische Hochschule Köln (TH Köln – University of Applied Sciences), Germany. The project started in January 2022 and is expected to take four years. A personal grant by the Finnish Kone Foundation was awarded for three years, from 2023 to 2025 (project number 202202303). Data elicitation is funded by the EAMT Sponsorship of Activities, Students' Edition 2023, covering expenses for travel to participants' offices.

MTxGames is realised in collaboration with two industry partners that are localisation service providers for the video games industry, who have asked to remain unnamed at the current stage of the project. These industry partners provide resources such as setting up realistic projects in the translation management system of choice (memoQ), access to their production-ready MT system customised for game texts,[1] a pool of freelancers for recruiting study participants, source texts from a real game localisation project as well as well-maintained translation memories and terminology databases.

3 Data Elicitation and Analysis

To ensure comparability of the three PE methods, all participants work with the same game texts unknown to them at the time of the experiment. The game texts are selected based on their units of creative potential as described by Guerberof Arenas and Toral (2020). The source language is English, the target languages French, Italian, German, and Spanish, representing the main target languages of the industry partners.

Researchers of eye-tracking studies point out that translation process research in the translator's typical work environment leads to more realistic insights (Macken et al., 2020; Saldanha and O'Brien, 2014; Teixeira and O'Brien, 2018). Therefore, data elicitation is conducted in the offices of the study participants, who are freelancing professional video game translators. This way they are observed in the work environment they are used to, with their usual equipment, ambient temperature, and background noises, eliminating environmental disturbance factors, and with as minimal changes to their usual work as possible. Due to research constraints, the number of study participants is limited to 10–12. While this does not result in sufficient data for an inferential statistical analysis, it allows uncovering causal mechanisms between the translation condition and the factors of temporal and cognitive effort, quality, and preference.

Temporal and cognitive effort as well as quality are measured quantitatively and analysed descriptively, and the translators' preferences are measured and analysed qualitatively. To determine temporal effort, keylogging gives exact edit times for each translation segment. Cognitive effort is derived from gaze fixations gathered by eye-tracking, as several scholars have shown that gaze fixations are indicators for cognitive effort (see Saldanha and O'Brien, 2014). Quality is measured by the number and types of errors in the post-edited translation, based on the MQM (Multidimensional Quality Metrics) framework[2] tailored to the specific requirements for a high-quality, creative game translation. Additionally, a spot check of the MT output helps to understand whether errors originated in the MT output or were introduced by the translator. The fourth factor, preference, is measured by conducting interviews with all study participants. These interviews cover subjective perception of the PE method's usefulness, resulting quality, and productivity-enhancing capabilities. Methodological triangulation of objective data and subjective perception is expected to lead to strong insights on which PE method is favourable for productive, satisfied translators who produce quality game translations.

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[1] The decision for the MT system will be made after submitting this paper but before the EAMT conference in June 2024.

[2] https://themqm.org/