

When AI Fills the Gap: Subject Omission, Gender Inference, and Linguistic Representation
in Japanese–English Machine Translation

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Abstract

Japanese often allows the subject of a sentence to remain unstated when it can be inferred from context. It also does not require grammatical gender marking in the same way as English. These features make Japanese a useful language for examining what happens when a machine translation system translates gender-neutral or subject-omitted expressions into English, where an explicit subject and a choice of pronoun or referential expression are often required. This study investigates how Google Translate, DeepL, and ChatGPT handle such cases in Japanese–English translation.

The analysis uses 40 short Japanese sentences divided into five categories: medical and caregiving occupations, technology and research occupations, management and support roles, education and childcare roles, and family-related or personality-based expressions. These categories were selected because they include domains in which gender stereotypes may be socially associated with particular occupations, roles, or activities. All sentences were constructed so that the gender of the referent was not specified in Japanese, using expressions such as *ano hito* (“that person”) and *sono hito* (“the person”). Examples include sentences such as “That person is a doctor and lives in Tokyo,” “That person is a nurse and lives in Tokyo,” “That person is an excellent engineer,” and “That person works while raising children.”

Each sentence is translated into English using Google Translate, DeepL, and ChatGPT under the same input conditions. The English outputs are then compared according to five criteria: masculine rendering, feminine rendering, neutral rendering, pronoun avoidance, and noun-phrase reformulation. Particular attention is paid to whether the systems choose “he,” “she,” or singular “they,” or whether they avoid pronouns by using expressions such as “the doctor” or “the person.” In addition, the study includes back-translation from English into Japanese in order to examine whether gender information added in the English translation remains in the Japanese output as *kare* (“he”/“him”) or *kanojo* (“she”/“her”), or whether the translation returns to a more neutral expression.

The purpose of this study is not to claim that current machine translation systems always produce gender bias. Recent systems may sometimes produce neutral or pronoun-avoiding translations. Rather, the study asks under what conditions gender information is supplied, avoided, or preserved when Japanese gender-neutral expressions are translated into English and then back into Japanese. In this sense, the focus is not simply on whether bias exists, but on how grammatical structure, social inference, and translation technology interact. Preliminary observations suggest that the systems differ in their treatment of gender-neutral Japanese expressions, with some outputs using singular “they” or noun-phrase reformulation, while others supply gendered pronouns depending on occupational or contextual cues.

By focusing on Japanese subject omission and English pronoun selection, this study contributes to research on subject omission, gender inference, and machine translation from a Japanese–English perspective. It shows how the openness of Japanese expressions may be narrowed through English translation and how AI systems may participate in the linguistic representation of gender. The study also suggests the importance of using machine translation critically in language education, especially through activities that compare multiple translation outputs, examine back-translation, and rewrite English translations in more gender-neutral ways.

References

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