

**Moorkens, J., Way, A., & Lankford, S.**  
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### **Book review**

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Machine Translation (MT) technologies are evolving at an unprecedented pace, with new advances constantly reshaping the translation landscape. Much of the latest scholarship around MT has revolved around Neural Machine Translation (NMT), but they have now extended to newer forms of Artificial Intelligence (AI) such as Generative AI, broadening the spectrum of MT solutions. In today's AI-driven world, it is more important than ever for translators to be part of the conversation around MT, to be technologically competent, to adapt, and to critically engage with such inevitable advances. Nevertheless, translators aspiring to venture into the world of MT may struggle in where to begin and how to navigate the vast array of resources, many of which are highly technical and not tailored to their specific backgrounds or needs. This is where *Automating Translation* steps in. This comprehensive and compelling book brings together the essential knowledge and practical guidance that students of translation and practicing translators interested in MT need—all in one place. From exploring the history of MT and handling data to building NMT systems and Multilingual Large Language Models (MLLMs), as well as evaluating MT performance, it covers it all and more.

The book is structured into 11 chapters. Each chapter opens with a set of key questions to spark curiosity and ends with follow-up tasks (except for Chapter 1) and curated resources to support readers in exploring the topics

further. Chapters are self-contained, allowing readers to start at any point without disrupting their overall reading experience. However, I personally recommend that readers interested in learning how to build their own MT systems start with Chapter 2, which focuses on data, then proceed to Chapter 4 for insights into the inner workings of NMT, and later explore the more advanced topics in Chapters 6, 7, and 10. Following this sequence will, I hope, develop an incremental and comprehensive understanding of building, training, and optimizing MT systems. As we see throughout the book, the role of translators becomes more crucial than ever in this critical data-driven AI age. The authors thus point to some open issues in MT in the *afterword*, where human input is not just supplementary but rather indispensable.

In Chapter 1, the authors begin by taking us on a seventy-odd-year journey through MT history, starting from Warren Weaver’s 1949 memorandum, moving to rule-based and statistical MT, and leading to the more recent developments of NMT and Large Language Models (LLMs). The authors touch on the shortcomings of previous MT paradigms and remind us at the end of the chapter that even with recent breakthroughs in AI, MT is still far from being a solved problem, as some commentators would claim. Both NMT and LLMs are data-driven and in need of large-scale high-quality resources, something that is not equally guaranteed for the roughly 7,000 languages spoken today. The paucity of resources is one reason for the authors’ belief that AI advances will not replace translators, a stance they firmly maintain through the entire book.

Having introduced MT in the first chapter, the authors shift their focus in Chapter 2 to data, the cornerstone of any MT system development. In a very accessible language, the authors present various sources of data that could be used for building MT systems including translation memories, open-access repositories, data harvested from the web, and synthetic data. Data-related issues such as alignment, toxicity, bias, ownership, and data insufficiency are also discussed, along with a few data postprocessing steps. Dedicating an entire chapter to data is a commendable aspect of the book, as it addresses key questions that readers are likely pondering. Where can one find reliable data? How much data is sufficient for building a well-performing MT system? Who holds ownership of the data? And what options are available when large volumes of high-quality data are simply out of reach? By tackling these foundational points upfront, the book paves the way for a smoother transition into the more advanced chapters on building MT systems.

Expanding on the discussions from the previous chapter, Chapter 3 revolves around Computer-Assisted Translation (CAT) tools and translation memories which, as Chapter 2 shows, are a useful source of parallel data to be leveraged in the development of MT systems and any other data-driven technologies. Here, readers get to learn about the origins of CAT tools, some of their primary functions, and their architectures. The authors aptly explain the distinction between MT and translation memories, which to novice translators could be quite perplexing. The use of Generative AI within CAT tools makes an appearance in this chapter, a topic sure to captivate readers eager to explore AI's potential within CAT workflows. As with all chapters in the book, the authors conclude by directing readers to a wealth of valuable resources for further exploration.

Moving to the inner workings of NMT, Chapter 4 introduces neural networks, guiding readers through the progression of their architectures — from feed-forward to recurrent neural networks, culminating in the more advanced Transformer architecture. The last one has revolutionized the natural language processing field, including MT, as a result of its attention mechanisms. The authors nicely illustrate this by showing readers how this mechanism is used in practice with some examples, all without getting too technical. Since NMT is still error-prone and not entirely reliable, readers are presented with a number of persistent challenges in NMT, such as inconsistent terminologies, hallucinations, and difficulties in moving beyond mirroring the lexical items of the source text to capturing its cultural and idiomatic nuances.

Evaluation lies at the heart of any meaningful conversation about MT, and it is Chapter 5 that charts some of the common automatic metrics and human evaluation methods for assessing MT. For automatic evaluation, the chapter draws on both the strengths and limitations of string-based and pre-trained neural metrics. It then proceeds to a discussion on some human evaluation methods, inter-annotator agreement, crowdsourcing evaluation, among other relevant topics. The chapter does not leave readers there; in fact, it goes a step further, introducing readers, who may not necessarily possess technical skills, to some user-friendly platforms like MATEO<sup>1</sup> as a practical starting point for performing automatic MT evaluation. This can empower translators, the intended audience of the book, by involving them in the evaluation process, reducing any potential frustrations caused by technical challenges and fostering a sense of agency.

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<sup>1</sup> <https://mateo.ivdnt.org> [Last accessed: 09/12/2025].

Chapter 6 focuses on the critical decision of whether to build or purchase an NMT system. Readers get to learn about the three options available: using freely available MT solutions, seeking bespoke offerings from specialized companies, and building their own systems. Given that building an NMT system is a challenging undertaking, the authors explore this option in detail and offer readers an overview of various open-source NMT toolkits, explaining their core focus and key features so readers can make informed decisions and choose a toolkit best suited to their needs. Particular attention is devoted to one such toolkit, `adaptNMT`,<sup>2</sup> by exploring its architecture, customization of models, and modes of operation, among other relevant aspects. The chapter ends with a use case demonstrating the effectiveness of the `adaptNMT` toolkit in training an NMT system for a low-resource language pair. It is worth mentioning here that this toolkit is particularly well-suited for newcomers to the field of MT as it was initially developed to streamline NMT development processes; this may offer practical value to the book's intended audience, empowering them to navigate the world of NMT with hopefully greater ease and confidence.

Building on the discussion of self-built NMT systems from the previous chapter, Chapter 7 offers a step-by-step practical guide to developing MT systems using Google Colab. The chapter begins with a description of Jupyter Notebooks, highlighting their key role in machine learning tasks, including MT. It then presents several cloud-based platforms that support writing and executing code in Jupyter Notebooks, one of which is Google Colab, the primary platform discussed in the chapter. The platform's key features are showcased with a clear comparison of its plans, making it easier for readers to find the one that fits their needs best. Moreover, AI is increasingly being integrated into numerous platforms, and Google Colab is no exception. The authors thus seize this opportunity to touch upon the potential of AI coding within the platform in, for example, code completion and natural language-to-code generation. Having established the core functionalities of Google Colab, readers are then guided through a step-by-step process for training MT systems with different models in a way that is both clear and easy to follow. Carefully curated links and resources are provided to readers as well, with the hope that they make the most of these valuable tools.

Since human-machine parity has not been achieved yet, post-editing of MT outputs remains necessary if they are to be used for dissemination

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<sup>2</sup> <https://github.com/adaptNMT> [Last accessed: 09/12/2025].

purposes. Chapter 8 therefore paints a broad picture of the key facets of post-editing, one of the earliest forms of human-machine interaction. Some of the topics covered in the chapter include post-editing guidelines, translators' attitudes of the process, the effort exerted in post-editing, end-users' perceptions of post-edited texts, and post-editing literature. One of the critical points the authors highlight is the impracticality of the distinction of light and full post-editing guidelines with the current state of MT which calls into question the relevance of light post-editing. The chapter was focused on (human) post-editing and could have featured a discussion on automatic post-editing (by LLMs), but this might not have been feasible at the time of writing the book as this budding area of research was —and still is— in its infancy.

Moving beyond text, Chapter 9 centers around the use of MT and other forms of automation in multimedia translation and localization, offering a glimpse into their application across video games, software, websites, subtitling, and dubbing. Primarily embraced for its velocity and cost-cutting potential, automation has undoubtedly made significant inroads into various forms of media. Nevertheless, the authors remind us of the potential repercussions on the very heart of this ecosystem: the consumers of the end products, be they users, viewers, or game players —who, for obvious reasons, seek a seamless and satisfying experience that careless use of, or overreliance on, MT could compromise. The authors also give due consideration to the workers themselves when automation technologies are imposed in their workflows with no regard to their perspectives and preferences which could potentially lead to reduced job satisfaction and motivation.

LLMs have emerged as a key topic in discussions about MT, and it is Chapter 10 that highlights their potential alongside that of MLLMs, prompting the question: is this the future of MT? Before embarking on their capabilities, the authors first establish how such AI models are purely statistical in nature and lack the cognitive abilities or comprehension inherent to human reasoning. Then, similar to how they learn about building NMT systems in previous chapters, readers here are guided step by step through the process of creating translation models by either using a custom GPT or fine-tuning ChatGPT to meet their personalized needs. The adaptMLLM<sup>3</sup> toolkit is also introduced, showcasing some of its key features and demonstrating a use case in which fine-tuning an MLLM for a low-resource language pair delivers better translation performance compared to a baseline MLLM. This is very promising

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<sup>3</sup> <https://github.com/adaptNMT/adaptMLLM> [Last accessed: 09/12/2025].

and could help readers experiment with other languages and domains for which only limited data is available.

Building nicely on the previous chapters, Chapter 11, the final chapter of the book, shifts focus to broader and more serious ethical issues involving MT and LLMs, such as environmental and social sustainability, along with concerns over copyright and the translation data fed into such systems. The authors thoroughly explain the repercussions of building large models like GPT-4 on the environment by emphasizing their high energy consumption and substantial carbon dioxide emissions, which in turn exacerbate climate change and pollution. Such critical risks could affect us all, and it was such a commendable facet of the book to bring them to the readers' attention, as they are, sadly, underdiscussed in academic circles within the field of translation studies.<sup>4</sup> Briefly touched upon in Chapter 9, concerns over social sustainability are further elaborated in this chapter, with a focus on translators who are often tasked with fragmented texts and tedious work, as well as end users who could be exposed to biased and less diverse translations. Finally, the chapter discusses MT for good, where MT has the potential to empower vulnerable users such as asylum seekers and save lives in crises, when employed with care.

Reflecting on this work as a whole, this book serves as a valuable resource for readers interested in both the fundamental principles underpinning state-of-the-art MT and the practical steps to building NMT systems and LLMs/MLLMs. The book also contributes to MT literacy by educating readers on the useful applications of MT, scenarios where its use is inadvisable, and the broader repercussions of its use on various stakeholders and the environment. This will not just inform readers about MT technologies but also encourage them to become responsible and critical users of these tools. While primarily intended for practicing translators and translation students, I believe a great deal of the book could appeal to a wider audience, including translation scholars and students from other humanities disciplines. Translation educators who wish to integrate lessons on MT and LLMs/MLLMs into their teaching may also find many of the materials and tasks to be of considerable value. It is hoped that, with all the enriching discussions and up-to-date resources provided throughout the book, readers ready to embark on their journey into the fascinating world of MT find the process more accessible and enjoyable.

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<sup>4</sup> The natural language processing community has become increasingly aware of these risks, and this awareness is reflected in Green AI-inspired initiatives such as the inclusion of sustainability statements at conferences.