

Graduate School of Science and Technology Master's Thesis Abstract

Laboratory name (Supervisor)	Natural Language Processing (WATANABE TARO (Professor))		
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Thesis title	Towards Low-Latency Neural Japanese Input Method Editors		
Abstract			
<p>Japanese input method editors (IMEs) are essential tools for inputting Japanese text using a limited set of characters such as the kana syllabary. However, despite their importance, the potential of newer attention-based encoder-decoder neural networks, such as Transformers, has not been fully explored for IMEs due to their high computational cost and low-quality intermediate output in simultaneous settings, leading to high latencies. In this work, inspired by simultaneous machine translation, we propose a simple decoding policy for simultaneous kana-kanji conversion, the main component of Japanese IMEs, leveraging the monotonic nature of the process to achieve incremental anticipation-free conversion. The proposed decoding policy employs online word-boundary predictions using an auxiliary linear layer for aligned prefix decoding, while an additional wait-k auxiliary layer enables backtracking for mismatched boundary predictions. Our experiments show that our approach can achieve a much better quality-latency trade-off compared to baselines while also being able to handle streaming input, making it a more practical approach to IMEs. These findings suggest that neural approaches can be seen as a viable option for improving IMEs.</p>			