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**arXiv:2010.00904** (cs)
[Submitted on 2 Oct 2020 ([v1](https://arxiv.org/abs/2010.00904v1)), last
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# Title: Autoregressive Entity Retrieval
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Cao](https://arxiv.org/search/cs?searchtype=author&query=De+Cao,+N), [Gautier
Izacard](https://arxiv.org/search/cs?searchtype=author&query=Izacard,+G),
[Sebastian
Riedel](https://arxiv.org/search/cs?searchtype=author&query=Riedel,+S), [Fabio
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Petroni](https://arxiv.org/search/cs?searchtype=author&query=Petroni,+F)

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- Abstract:Entities are at the center of how we represent and aggregate
 knowledge. For instance, Encyclopedias such as Wikipedia are structured by
- > entities (e.g., one per Wikipedia article). The ability to retrieve such
- > entities given a query is fundamental for knowledge-intensive tasks such as
- > entity linking and open-domain question answering. Current approaches can be
- > understood as classifiers among atomic labels, one for each entity. Their
- > weight vectors are dense entity representations produced by encoding entity
- > meta information such as their descriptions. This approach has several
- > shortcomings: (i) context and entity affinity is mainly captured through a
- > vector dot product, potentially missing fine-grained interactions; (ii) a
- > large memory footprint is needed to store dense representations when
- > considering large entity sets; (iii) an appropriately hard set of negative
- > data has to be subsampled at training time. In this work, we propose GENRE,
- > the first system that retrieves entities by generating their unique names,
- > left to right, token-by-token in an autoregressive fashion. This mitigates
- > the aforementioned technical issues since: (i) the autoregressive
- > formulation directly captures relations between context and entity name,
- > effectively cross encoding both; (ii) the memory footprint is greatly
- > reduced because the parameters of our encoder-decoder architecture scale
- > with vocabulary size, not entity count; (iii) the softmax loss is computed

- > without subsampling negative data. We experiment with more than 20 datasets
- > on entity disambiguation, end-to-end entity linking and document retrieval
- > tasks, achieving new state-of-the-art or very competitive results while
- > using a tiny fraction of the memory footprint of competing systems. Finally,
- > we demonstrate that new entities can be added by simply specifying their
- > names. Code and pre-trained models at [this https
- > URL](https://github.com/facebookresearch/GENRE).

Comments: | Accepted (spotlight) at International Conference on Learning Representations (ICLR) 2021. Code at [this https://github.com/facebookresearch/GENRE). 20 pages, 9 figures, 8 tables

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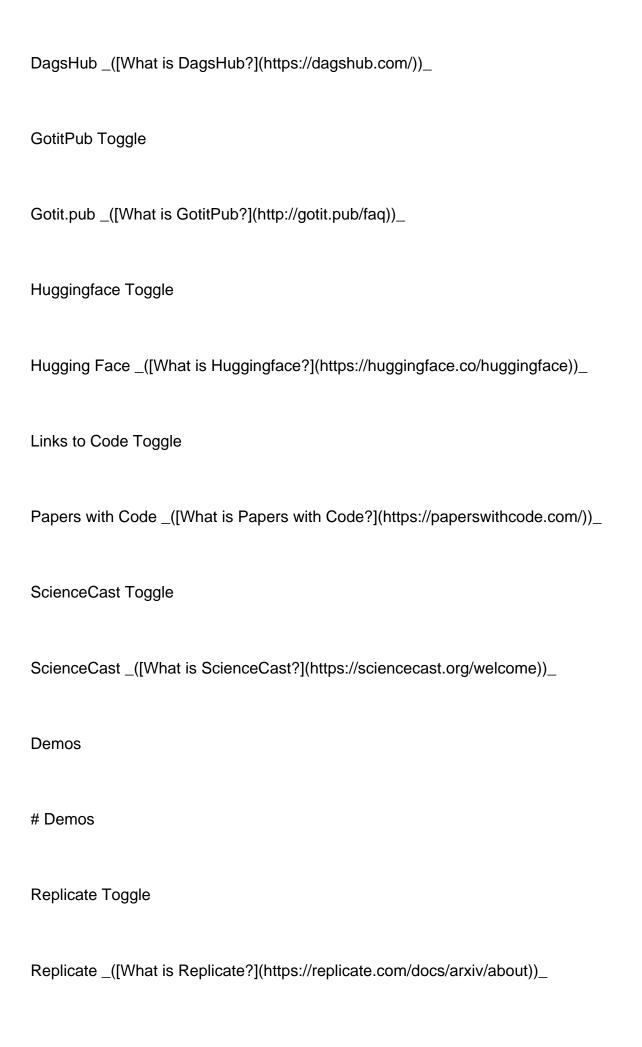
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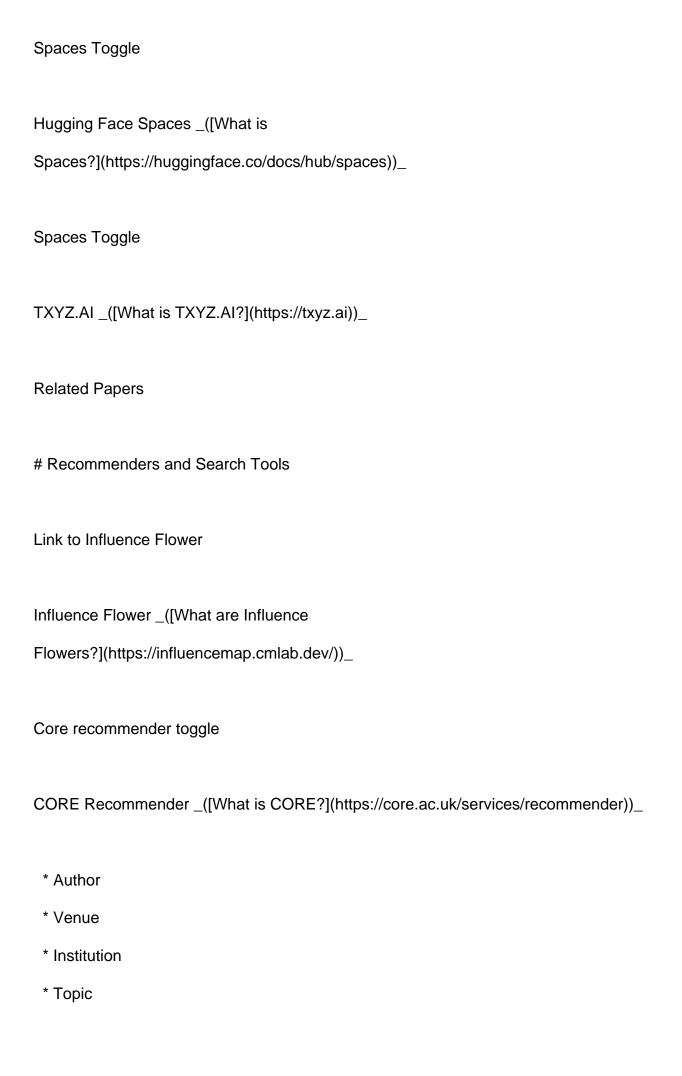
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