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arXiv:2311.13534 (cs)

[Submitted on 22 Nov 2023 ([v1](https://arxiv.org/abs/2311.13534v1)), last revised 8 Dec 2023 (this version, v4)]

Title:LM-Cocktail: Resilient Tuning of Language Models via Model Merging

Authors:[Shitao Xiao](https://arxiv.org/search/cs?searchtype=author&query=Xiao,+S), [Zheng Liu](https://arxiv.org/search/cs?searchtype=author&query=Liu,+Z), [Peitian Zhang](https://arxiv.org/search/cs?searchtype=author&query=Zhang,+P), [Xingrun Xing](https://arxiv.org/search/cs?searchtype=author&query=Xing,+X)

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> Abstract:The pre-trained language models are continually fine-tuned to
> better support downstream applications. However, this operation may result
> in significant performance degeneration on general tasks beyond the targeted
> domain. To overcome this problem, we propose LM-Cocktail which enables the
> fine-tuned model to stay resilient in general perspectives. Our method is
> conducted in the form of model merging, where the fine-tuned language model
> is merged with the pre-trained base model or the peer models from other
> domains through weighted average. Despite simplicity, LM-Cocktail is
> surprisingly effective: the resulted model is able to achieve a strong
> empirical performance in the whole scope of general tasks while preserving a
> superior capacity in its targeted domain. We conduct comprehensive
> experiments with LLama and BGE model on popular benchmarks, including FLAN,
> MMLU, MTEB, whose results validate the efficacy of our proposed method. The
> code and checkpoints are available at [this https
> URL](https://github.com/FlagOpen/FlagEmbedding/tree/master/LM_Cocktail).

Comments:	Work is in progress
Subjects:	Computation and Language (cs.CL); Artificial Intelligence (cs.AI); Information Retrieval (cs.IR)

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