

Continual Learning of Large Language Models

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Website: <https://monashnlp.github.io/monashnlp/cl4llm/>

As large language models (LLMs) continue to expand in size and utility, keeping them current with evolving knowledge and shifting user preferences becomes an increasingly urgent yet challenging task. This tutorial offers a comprehensive exploration of continual learning (CL) in the context of LLMs, presenting a structured framework that spans continual pre-training, instruction tuning, and alignment. Grounded in recent survey work and empirical studies, we discuss emerging trends, key methods, and practical insights from both academic research and industry deployments. In addition, we highlight the new frontier of lifelong LLM agents, i.e., systems capable of autonomous, self-reflective, and tool-augmented adaptation. Participants will gain a deep understanding of the computational, algorithmic, and ethical challenges inherent to CL in LLMs, and learn about strategies to mitigate forgetting, manage data and evaluation pipelines, and design systems that can adapt responsibly and reliably over time. This tutorial will benefit researchers and practitioners interested in advancing the long-term effectiveness, adaptability, and safety of foundation models.

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Dr. Tongtong Wu is a Research Fellow at Monash University. His research focuses on enabling AI systems to perceive, memorize, reason, and adapt within evolving environments, based on his long-term work in continual learning and knowledge graphs. He has coauthored foundational survey work on continual learning in LLMs. He is an editorial board member of Data Intelligence and a reviewer for top-tier journals like TKDE. He also serves on the program committees of the top conferences, including ICML, ICLR, NeurIPS, ACL ARR, AAAI, and IJCAI.

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Dr. Trang Vu is a Lecturer in the Department of Data Science and AI at Monash University. Her work focuses on the intersection of NLP and machine learning, particularly in developing models that generalize across tasks and domains, and building trustworthy and efficient learning systems. She has published extensively in NLP and AI venues and is committed to advancing adaptive and robust AI technologies.

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Dr. Linhao Luo is a Research Fellow at Monash University, working on large language models, knowledge graphs, and graph neural networks. His research aims to bridge symbolic and neural representations, with several publications in leading conferences and journals such as ICLR, ICML, ACL, EMNLP, IJCAI, and TKDE.

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