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Open-world continual learning via knowledge transfer

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Propositions

Accompanying the thesis

Open-world Continual Learning via Knowledge Transfer

1. Prompt-enhanced knowledge transfer provides an effective and theoretically grounded mechanism for balancing stability and plasticity in open-world continual learning, enabling models to retain prior knowledge while efficiently adapting to new information. [Chapter 4]
2. Few-shot open-world continual learning can be realized through adaptive knowledge spaces that jointly address data scarcity, open-set detection, and continual adaptation, thereby bridging the gap between theoretical models and real-world learning constraints. [Chapter 5]
3. Open-world continual learning is a distinct and unified paradigm, not merely an incremental improvement on existing learning frameworks [Chapter 6].
4. Knowledge-centric continual learning systems outperform data-centric or architecture-centric approaches in the stability of the dynamic environment of real-world applications [Chapter 7].
5. Balancing adaptation and retention is the primary obstacle of open-world continual learning systems.
6. The ability to handle novel, unforeseen data represents the most meaningful criterion for artificial intelligence.
7. For an AI system to be truly intelligent and ethically responsible, the capacity to unlearn is as fundamental as the capacity to learn.
8. The ultimate test for an open-world continual learning system is its ability to power a generative model that evolves over time without performance collapse.
9. In both science and life, open-mindedness is the foundation of continual growth.
10. People's ultimate legacy, and therefore their meaningful existence, is dependent on being remembered by the living.