

December 3, 2025

Editors-in-Chief  
Journal of Machine Learning Research (JMLR)

Dear Editors,

I am pleased to submit the manuscript entitled “ALFM-BEM: Bidirectional Experience Memory for Continuous Learning in Foundation Model Deployments” for consideration as a publication in the Journal of Machine Learning Research.

Foundation models are typically deployed as frozen artifacts, creating a fundamental gap: they cannot learn from their deployment experiences. This paper introduces ALFM-BEM, a unified wrapper architecture that enables continuous learning without modifying backbone weights.

Key contributions of this work include:

- **Bidirectional Experience Memory (BEM):** A unified memory architecture where experiences exist on a continuous outcome spectrum, providing risk signals, success patterns, and out-of-distribution (OOD) detection as emergent properties of a single structure.
- **Consensus Engine with Query Action:** An extension to selective prediction that transforms passive abstention into active learning by requesting specific information when operating outside the experience distribution.
- **Bounded Adapters:** A mechanism for continuous improvement with provable stability guarantees, preventing catastrophic drift during online updates.
- **Empirical Validation:** Rigorous experiments on synthetic data demonstrate effective failure retrieval ( $F1 > 0.99$ ) and strong OOD detection ( $AUC \approx 1.0$ ). Furthermore, a realistic healthcare claims case study shows that ALFM-BEM reduces claim rejection rates by 88% (from 12.5% to 1.5%) by learning latent payer rules from binary feedback alone.

This work bridges the gap between static model training and dynamic deployment needs, offering a practical infrastructure for safe, adaptive foundation model systems.

I confirm that this manuscript is original, has not been published before, and is not currently under consideration for publication elsewhere.

Thank you for your consideration.

Sincerely,

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