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Kolmogorov Arnold Network (KAN) Privacy-preserving collaborative forecasting

Abstract: Distributed time series data can improve forecasting accuracy but requires privacy measures. Current literature on data privacy focuses on horizontal federated learning (FL), where agents share features across instances. Vertical FL, where agents observe different features in the same instances, poses challenges due to indeterminate coefficients. Methods like adding random noise or using cryptography techniques are available but computationally intensive with numerous time series. As AI regulation advances, interpretable solutions also become crucial. Many successful models rely on neural networks which are often black-box models. Recent advances show that Kolmogorov-Arnold Networks (KANs [1]), an interpretable neural network designed for complex function fitting, can match or exceed the accuracy of larger MLPs with smaller architectures. This document explores KANs and fusion architectures to protect privacy, aiming to improve model accuracy and data privacy in AI systems while avoiding heavy encryption protocols.