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Chronos-2: From Univariate to Multivariate Forecasting

Pretrained time series models have enabled inference-only forecasting systems that produce accurate predictions without task-specific training. However, existing approaches largely focus on univariate forecasting, limiting their applicability in real-world scenarios where multivariate data and covariates play a crucial role. We present Chronos-2, a pretrained model capable of handling univariate, multivariate, and covariate-informed forecasting tasks in a zero-shot manner. Chronos-2 employs a group attention mechanism that facilitates in-context learning (ICL) through efficient information sharing across multiple time series within a group, which may represent sets of related series, variates of a multivariate series, or targets and covariates in a forecasting task. These general capabilities are achieved through training on synthetic datasets that impose diverse multivariate structures on univariate series. Chronos-2 delivers state-of-the-art performance across three comprehensive benchmarks: fev-bench, GIFT-Eval, and Chronos Benchmark II. On fev-bench, which emphasizes multivariate and covariate-informed forecasting, Chronos-2's universal ICL capabilities lead to substantial improvements over existing models. On tasks involving covariates, it consistently outperforms baselines by a wide margin. Case studies in the energy and retail domains further highlight its practical advantages. The in-context learning capabilities of Chronos-2 establish it as a general-purpose forecasting model that can be used "as is" in real-world forecasting pipelines.