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A Multi-factor Approach of Spot Price Forecasting via Deep Learning

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The potential cost savings and the high scalability behind the spot instances benefit the cloud customers compared to On-demand instances fit for workloads that need uninterrupted compute power. However, the termination of instances by the cloud provider whether exceeds the customer's bid or the unpredictable availability based on supply and demand needs remedies such as appropriate forecasting to optimize bidding strategies.To handle the expansion in instance types and regions as vast datasets, effectiveness in using the history data of different research exhibits a significant range of instability in prediction accuracy. The demand for profit optimization and resource analysis entices to upgrade the traditional methods to improve the accuracy. Resolving these challenges and limitations, this research investigates the Amazon Spot instance forecasting adopting different Deep Neural Networks (DNNs) considering multi-factor approach involving encoding techniques for improvement. Multi-factor strategy ensured compatibility and optimized model selection. Encoding converts those categorical features into unique integers and ensures consistent data representation. The cloud provider's expansion leads to changing datasets and difficult handling of DNN model running mandating a user-friendly application for the customers. To facilitate model interaction and enhance accessibility, a graphical user interface (GUI) is developed where customers select his/her required resources with the date and time they demand, and then the predicted price will be displayed.In both past and future contexts, bidirectional processing shows superior performance in BiLSTM. This assists the user in finding the predicted price in a user-friendly environment with the outperforming DNN.

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