Intelligent Notification System: Identifying Opportune Moments For Mobile Phone Alerts

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With the advent of modern smartphones and easily accessible internet, push notifications flood our devices daily. We interact with a large number of notifications each day on our mobile devices, coming from various sources like social media, instant messaging, news, games, and other applications installed. These notifications are not always relevant to our current state and also often received untimely. In this research, we collected data from mobile devices of volunteers and analyzed to learn about opportune moments for a notification. The development and deployment of the android application for data collection were according to our university's ethical research guidelines. The Covid-19 created a unique situation and usage pattern for mobile devices. We saw the contrast from similar previous studies because of the new normal of staying inside and working from home. Exploratory Data Analysis and Statistical Methods performed for identifying features and patterns in the collected data. Supervised machine learning was applied to test the hypotheses around classifying a moment as opportune to deliver a notification. The XGBoost classifier gave the best results for the classification of a moment as opportune or not. Exact time prediction to deliver a notification was inefficient, suggesting the requirement of additional context and content features for a better model.