

PREDICTIVE ANALYTICS WITH MACHINE LEARNING Preventing SLA Breaches

Data Source : Telecom Company Data

Data Type : Incident Management Data

Application : Analance







PROOF OF CONCEPT – POWERED BY ANALANCE

Service-level breaches are costly and can trigger something as simple as failing to respond to an incident within an agreed-upon time or failing to define a SLA priority. Not only do organizations compensate through penalties and credit fees, they also have to consider the negative impression left on the brand reputation, dip in customer satisfaction, and loss of customer trust.

Preventing SLA breaches from happening is a top priority for any service industry. For a major Canadian Telco, Ducen implemented a predictive engine using its enterprise analytics platform Analance[™]. The predictive model was trained to **identify tickets nearing a SLA breach** to alert agents for timely resolution.



LEVERAGING ML TO REDUCE THE NUMBER OF BREACHES

Using a telco company's incident management data set, Analance predicted the likelihood of a ticket breaching its SLA — with summaries and findings easy to explore through dashboards and reports.

By leveraging Analance machine learning (ML), the telco classified incoming ticket incidents based on their risk of being breached. With built-in automations, smart alerts were scheduled to notify agents with a specific skillset to prioritize and resolve high-risk tickets. This allowed the organization to stay on top of potential breaches and manage customer satisfaction effectively.



The incident management data used contained information on ticket incidents raised in 2019. There were a total of 659,875 tickets. Different predictor variables were considered for the model such as the incident number, day of incident, business hour, service name, customer severity, and more.

To effectively categorize tickets, a text clustering analysis was conducted using the data from the descriptions provided by the customer. Five ticket clusters were identified: SNMP tickets, test tickets, Wi-Fi tickets, DNS/VLAN tickets, and tickets on router and other connection issues. These clusters were then included as a predictor for the algorithm.

All other variables available were also studied to understand distributions. Data was cleaned by the means of handling outlying values, missing values, and looking for interrelationships between predictors before looking to see if any data had a significant relationship with the outcome. A Bivariate Analysis was done for all predictor-outcome combinations, which helped in restricting the analysis to only those predictors that majorly influence SLA breaches.



DATA MODELING AND FINDINGS

A total of 5 different regression models were built but the Random Forest Model was chosen as the winning model based on the R-square and Mean Absolute Percentage Error (MAPE).

- The accuracy value is 0.69, meaning the model has a high chance to distinguish between the breached and non-breached tickets.
- 72.6% of breached tickets have been classified correctly.
- 73.9% of non-breached tickets have been classified correctly.
- There is about 26% of misclassifications of breached as non-breached and 27% of misclassifications of non-breached as breached tickets.



INTERPRETATION

Based on the predicted data, it can be inferred that:

- Tickets from the MISN service, created in July/August on a Friday/Thursday during business hours, with a customer severity of 4, are more likely to **breach SLAs**.
- Tickets from either the IPVPN / MISN service, created in January/February/March on a Saturday during business hours, with a customer severity of 1 or 3, are more likely to **meet SLAs**.

Aside from the difference in customer severity between both criteria (higher-severity tickets are more likely to breach SLA), it's worth noting that the tickets at risk of SLA breaches come in during particular months, which can be interpreted as the company's peak season.



The SLA breach prediction system can be used as an alerting system. This allows agents on the floor to tag and prioritize tickets to resolve based on the risk of breach. Because of the clusters that group similar tickets together, telco organization can easily categorize and resolve future tickets quicker, using insights from historically similar tickets. The prediction system can also inform staffing and scheduling decisions, ensuring that qualified agents are available when there's a higher risk of an SLA breach.

ABOUT DUCEN

Ducen is a trusted technology solutions provider that aims to empower Fortune 1000 companies through quality solutions and services. We work with organizations across various verticals to drive business outcomes and enhance their customer experience. Through our enterprise analytics platform, we build and manage data-driven digital platforms including business intelligence and advanced analytics solutions. We also offer a comprehensive services portfolio covering data management and cyber security to help clients stay ahead of the technology curve.