AWS re:Invent

TLC301

AI-driven self-healing, churn prediction, and fraud detection on AWS

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Agenda

Workshop overview

Telecom fraud overview

Churn-prediction overview

Questions

Build on

Workshop overview

- Workshops are two-hour, hands-on sessions where you work in teams to solve problems using AWS
- Workshops organize attendees into small groups and provide scenarios to encourage interaction, giving you the opportunity to learn from and teach each other
- Each workshop starts with a 10- to 15-minute lecture by the main speaker, and the rest of the time is spent working as a group. Come prepared with your laptop and willingness to learn. AWS will provide credits
- Guy will take over after this short introduction and lead you through the hands-on session

Types of Telecom fraud

PBX fraud: Monitor all call records from all originations, and look for a pattern of calls from a range of telephone numbers to another range of telephone numbers then analyze abnormal patterns for that A/B pair of numbers, especially to premium or international numbers

Premium rate service fraud: Fraud is committed when the operator of a service stimulates or inflates calls into that service to attract higher settlement payments from a mobile operator. AIML enables surveillance systems to analyze calling patterns to premium numbers and the associated analysis of traffic patterns

Subscription fraud: This is broadly fraudulent use of a standard service without having to pay for it. Detection will consist of analysis of billing metadata changes within a defined period of time and variation in usage and service consumption from learned usage profiles to detect outliers

Roaming fraud: Enabling surveillance systems to go beyond pure rules-based monitoring to flag new or emerging threats from VPLMN and HPLMN CDRs while minimizing false positives. Capture scenarios like abnormal voice/data usage, card cloning, risky neighbor country, etc.

Wangiri – One ring and drop: Premium services call then drop, inducing subscribers to call back. Need to process CDR data (ideally) in real time to “fingerprint” numbers and detect short call duration patterns, then alert in real time

Telecom fraud

Telecom fraud is now costing today's mobile operators **US$32.7 billion**

Large-scale voice phishing (sometimes called "vishing") campaigns are also among the most damaging forms of international Telecom fraud. The technique is familiar to anyone in the United States; estimated at **48 billion robocalls**

Source: Europol's European Cybercrime Centre and Trend Micro

Fraud detection and AIML

Traditional fraud detection approach **is rule based and does not align well with fraud**

- Rules are deterministic: if-then-else
- Fraud is hidden in huge amounts of data; what happened before and after?
- Fraud happens in real time; rules are static and don’t “learn” from new patterns
- Fraudsters may change their patterns when they hit these rules
- Fraud is unique by country or even by fraud type
- We cannot detect the *fraud we do not know—it’s designed to look normal*

Churn prediction

Mobile telecommunications markets are saturated. Therefore the focus is on customer retention over acquisition

Customer churn is defined as the loss of subscribers as they voluntarily move service to competitors. It is an expensive problem, as acquiring new customers costs five to six times more than retaining existing ones

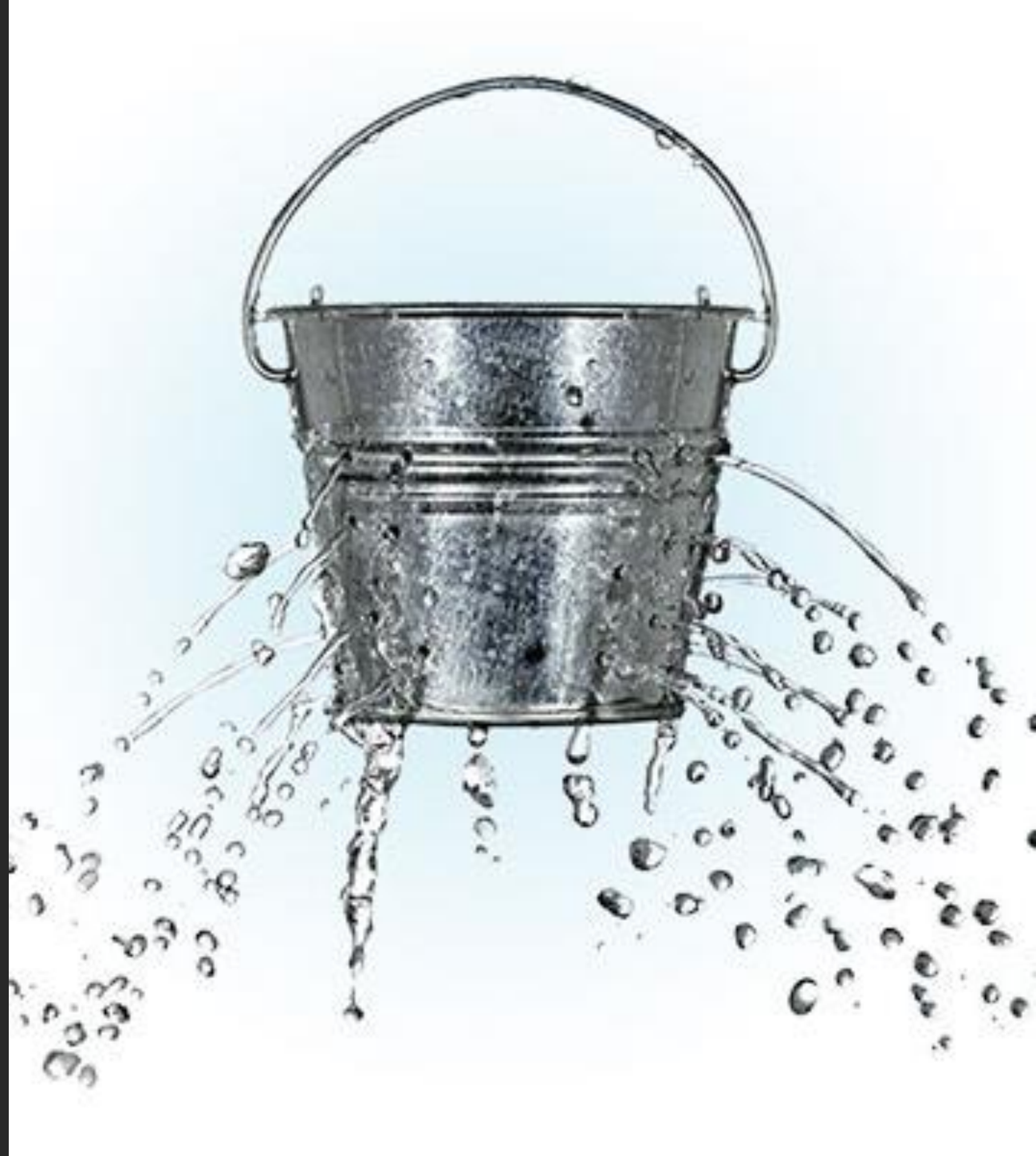
Churn prediction in ML is a classification problem, with the business outcome being the ability to predict a “churner” in advance in order to apply a particular treatment to retain the customer

Churn impact

"The average mobile operator in a mature market spends **15–20% of service revenues** on acquisition and retention, compared with the average Capex spend on infrastructure (networks and IT) of just 15% of revenues.

"Canada's BCE and Telus revealed in 2017 that it cost almost **50 times less** for them to keep an existing mobile customer than to acquire a new one, with retention costs of CAD11.04 and CAD11.74 respectively, while average subscriber acquisition cost weighed in at an eye watering CAD521."

Alex Scroxton
"How churn is breaking the telecoms market – and what service providers can do about it," *ComputerWeekly.com*



Source: https://www.computerweekly.com/blog/The-Full-Spectrum/How-churn-is-breaking-the-telecoms-market-and-what-service-providers-can-do-about-it

Workshop

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Thank you!

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