

Take-Home Assignment – Data Science and Analytics Internship

Duration: 2 - 4 days

Introduction

Telecommunications companies generate a wealth of structured and unstructured data from customer interactions, service usage, billing records, and feedback channels. Data science plays a crucial role in helping telcos to make sense of this information to drive smarter business decisions.

This assignment consists of **two independent problems**:

1. Churn Analysis based on structured customer and usage data
2. Customer Feedback Analysis based on unstructured text data.

You may choose to approach them in any order. Treat them as standalone tasks.

Problem 1: Customer Churn Analysis

Objective

Develop a ML pipeline to identify customers who are likely to discontinue their telecom services.

Tasks

- Conduct exploratory data analysis (EDA) and summarize the results.
- Train at least two ML models to compare
- Evaluate model performance

Problem 2: Customer Feedback Analysis

Objective

Analyze free-text feedback submitted by customers to extract sentiment, common themes, and key concerns.

Tasks

- Clean and preprocess the text
- Extract topics/themes and identify frequently mentioned issues or service aspects from the **Ticket Description** (Apply one Topic Modelling Algorithm).
- Visualize sentiment distribution and keyword trends.
- Summarize insights that can help improve customer experience.

Submission Guidelines

- Submit a well-structured notebook for each problem.
- Include all code, visualizations, and interpretations.
- Highlight assumptions, limitations, and next steps.
- Build a 10 minute final presentation slide discussing results and methodology