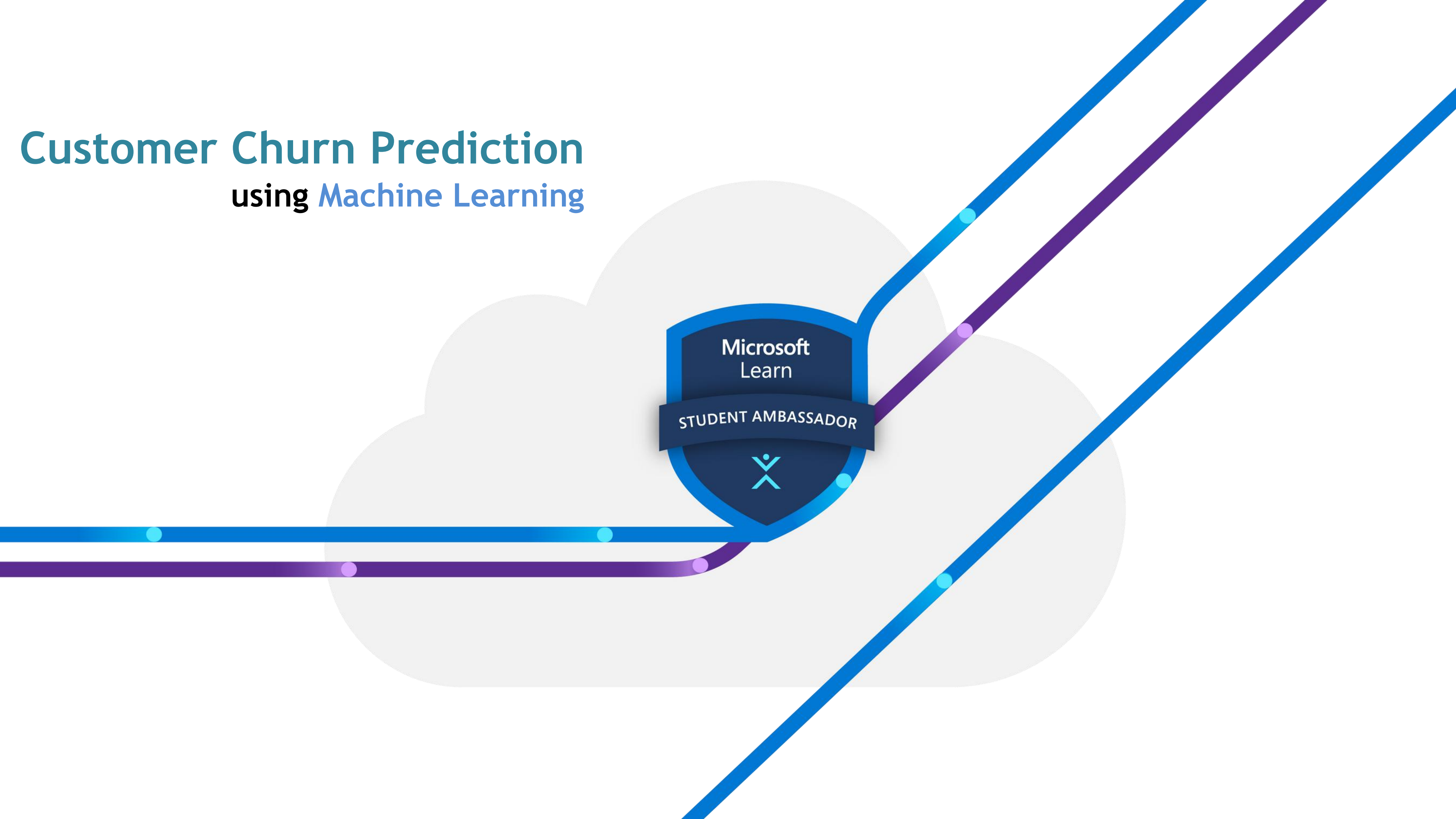


Customer Churn Prediction

using Machine Learning





What's the Problem..?



What is Customer Churn?

Churn happens when customers stop doing business with a company.

High churn = revenue loss

Goal: Predict and prevent churn using data and ML!

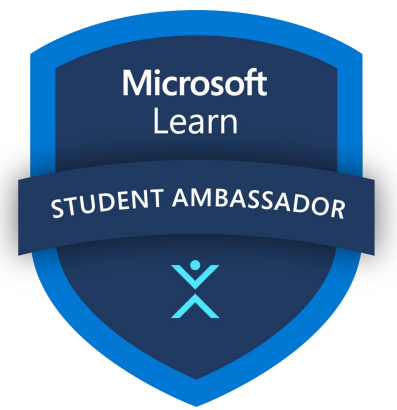


Dataset Overview

The background is a dark blue gradient. On the right side, there is a faint, light blue geometric pattern consisting of various shapes like squares, circles, and lines. Overlaid on this are several thick, stylized lines. A horizontal cyan line runs across the lower third of the image, with a small blue dot on it. Below it is a horizontal blue line, also with a small blue dot. On the right, a thick cyan line curves upwards and then diagonals towards the top right, with a blue dot on it. Another thick blue line curves downwards from the cyan line, with a blue dot on it. The text 'Dataset Overview' is positioned on the left side, centered vertically, in a white sans-serif font.



Understanding the Features Used in Modeling



Column	Description
gender	Male / Female
SeniorCitizen	1 = Yes, 0 = No
Partner, Dependents	Whether the customer has a partner or dependents
tenure	Number of months with the company
InternetService	DSL / Fiber optic / No
Contract	Contract type: Monthly / 1yr / 2yr
PaymentMethod	Electronic check, Bank transfer, etc.
TotalCharges	Total charges over time (float stored as string)
Churn (Target)	Yes = Customer left, No = Stayed

Data Engineering

The background features a dark blue field with a faint, light blue geometric pattern of squares, circles, and lines. Overlaid on this are several thick, stylized lines in shades of blue and cyan. These lines include a horizontal cyan line with a blue dot, a horizontal blue line with a cyan dot, and a diagonal cyan line with two blue dots. A blue line also curves around the diagonal cyan line. The overall aesthetic is modern and technical.



Data Engineering



Preprocessing Steps

Handled missing/invalid values

Applied Label Encoding to categorical features

Created derived features like:

$\text{AvgChargesPerMonth} = \text{TotalCharges} / \text{Tenure}$

Modeling

The image features a dark blue background with a faint, repeating geometric pattern of squares, circles, and lines. Two prominent, thick, curved lines in shades of blue and cyan sweep across the frame from the bottom left towards the top right. These lines intersect and curve in a way that suggests a dynamic or evolving process. Small, solid dots in matching colors are placed at various points along these lines, possibly representing data points or specific stages in a model. The word "Modeling" is written in a clean, white, sans-serif font on the left side of the image.



Two models tested:

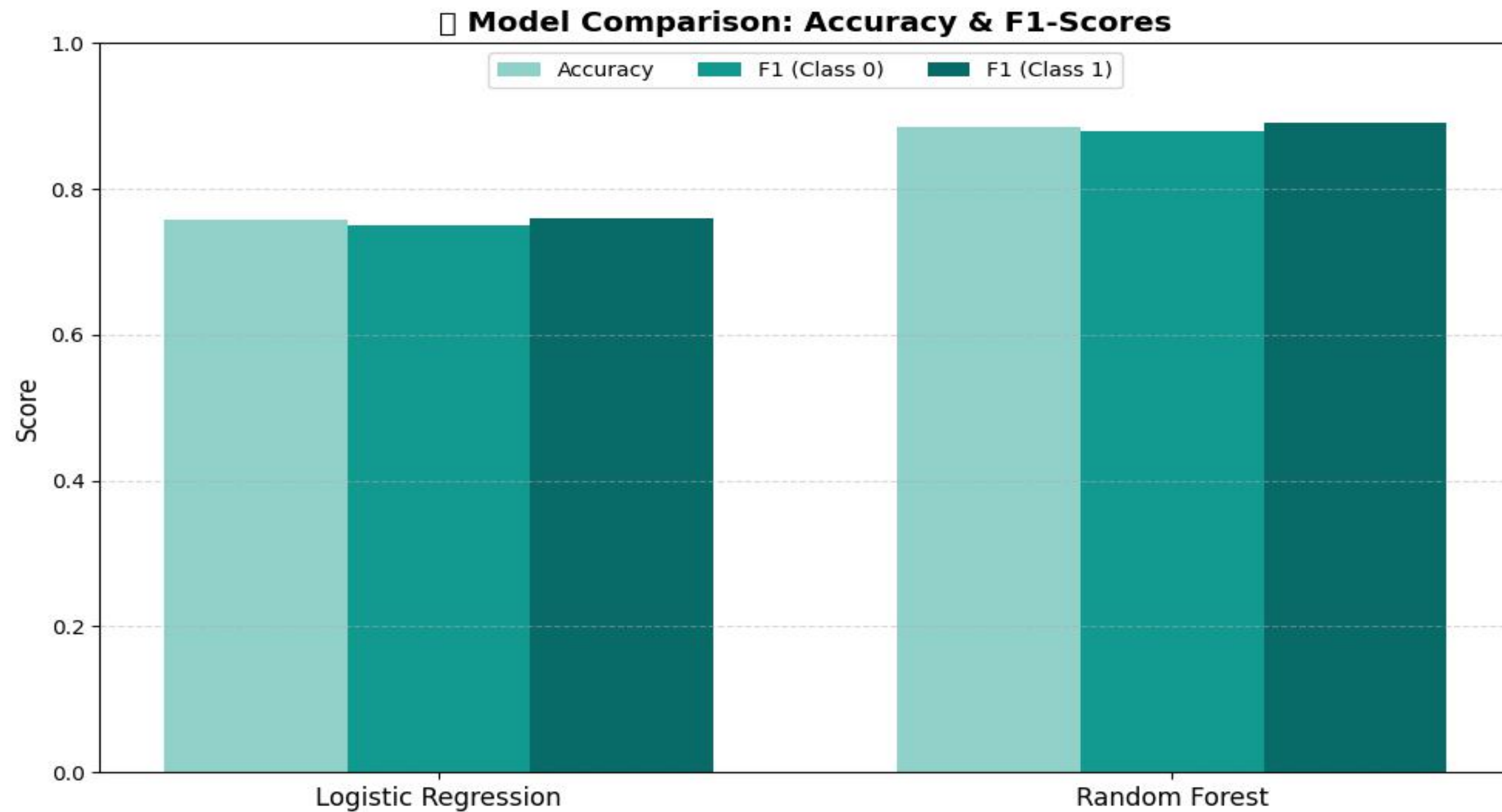


- Logistic Regression (baseline)
- Random Forest Classifier
- Used Scikit-learn with cross-validation
- Evaluated on Accuracy & F1-Score

Results Visualization

An abstract graphic design featuring a dark blue background with a faint, repeating geometric pattern of squares, circles, and lines. Two prominent, thick, curved lines in shades of blue and cyan sweep across the right side of the image. Several small, solid blue and cyan dots are placed along these lines and in the open space. The text 'Results Visualization' is positioned on the left side in a white, sans-serif font.



❖ Model Performance





Flask Web App

The background features a dark blue gradient with abstract, flowing lines in lighter blue and cyan. These lines originate from the bottom left and curve upwards and to the right, creating a sense of movement and depth. Small circular dots are placed along these lines. A faint, light-blue geometric pattern, consisting of various shapes like squares, circles, and lines, is visible in the background, adding a technical or architectural feel to the design.




**Microsoft Learn Student Ambassador**

**Customer Churn Prediction System**

**Basic Information**

Gender:
Male

Tenure (months):
12


**Subscribed Services**

Internet Service:
DSL

Tech Support:
Not Available

Online Backup:
Disabled

Contract Type:
Monthly


**Payment Information**


Payment Method:
Electronic Check

Monthly Charges (\$):
50.00

AvgChargesPerMonth:

Total Charges (\$):

Predict

**Result: Customer Will Stay**

Confidence: %

No Churn

A horizontal bar with a blue and purple gradient, featuring several small white dots.

Real Business
Value

The image features a dark blue background with a faint, repeating geometric pattern of squares, circles, and lines. Two prominent lines, one cyan and one blue, run horizontally across the lower half of the image. The cyan line is positioned slightly above the blue line. Both lines have small dots of their respective colors placed at intervals. On the right side, the lines curve upwards and then downwards, creating a dynamic, flowing shape. The text 'Real Business Value' is written in a clean, white, sans-serif font on the left side, with 'Real Business' on the top line and 'Value' on the bottom line.



Why does this matter?



- Companies can identify high-risk customers
- Take action early: offers, discounts, support
- Reduce churn = Increase revenue

What's Next..?

The image features a dark blue background with a faint, repeating geometric pattern of squares, circles, and lines. Two prominent, thick, curved lines in shades of blue and cyan sweep across the frame from the bottom left towards the top right. Several small, solid dots in matching colors are placed along these lines. The text "What's Next..?" is written in a clean, white, sans-serif font on the left side of the image.



Future Enhancements



- Add more advanced models (e.g., XGBoost, LSTM)
- Integrate sentiment analysis of support chats like this project i have worked on <https://nlp.pixion.tech/>
- Connect to live CRM data

The background is a dark blue gradient. It features several thick, flowing lines in shades of blue and cyan. One line starts horizontally from the left, curves upwards and to the right, then curves downwards and to the right. Another line starts horizontally from the left, curves upwards and to the right, then curves downwards and to the right. A third line starts horizontally from the left, curves upwards and to the right, then curves downwards and to the right. There are also several small, light blue geometric shapes (squares, circles, triangles) scattered across the background, creating a subtle pattern.

Thank You
Microsoft Learn Student Ambassadors