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

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

Data Engineering

Preprocessing Steps

Handled missing/invalid values

Applied Label Encoding to categorical features

Created derived features like:

AvgChargesPerMonth = TotalCharges / Tenure

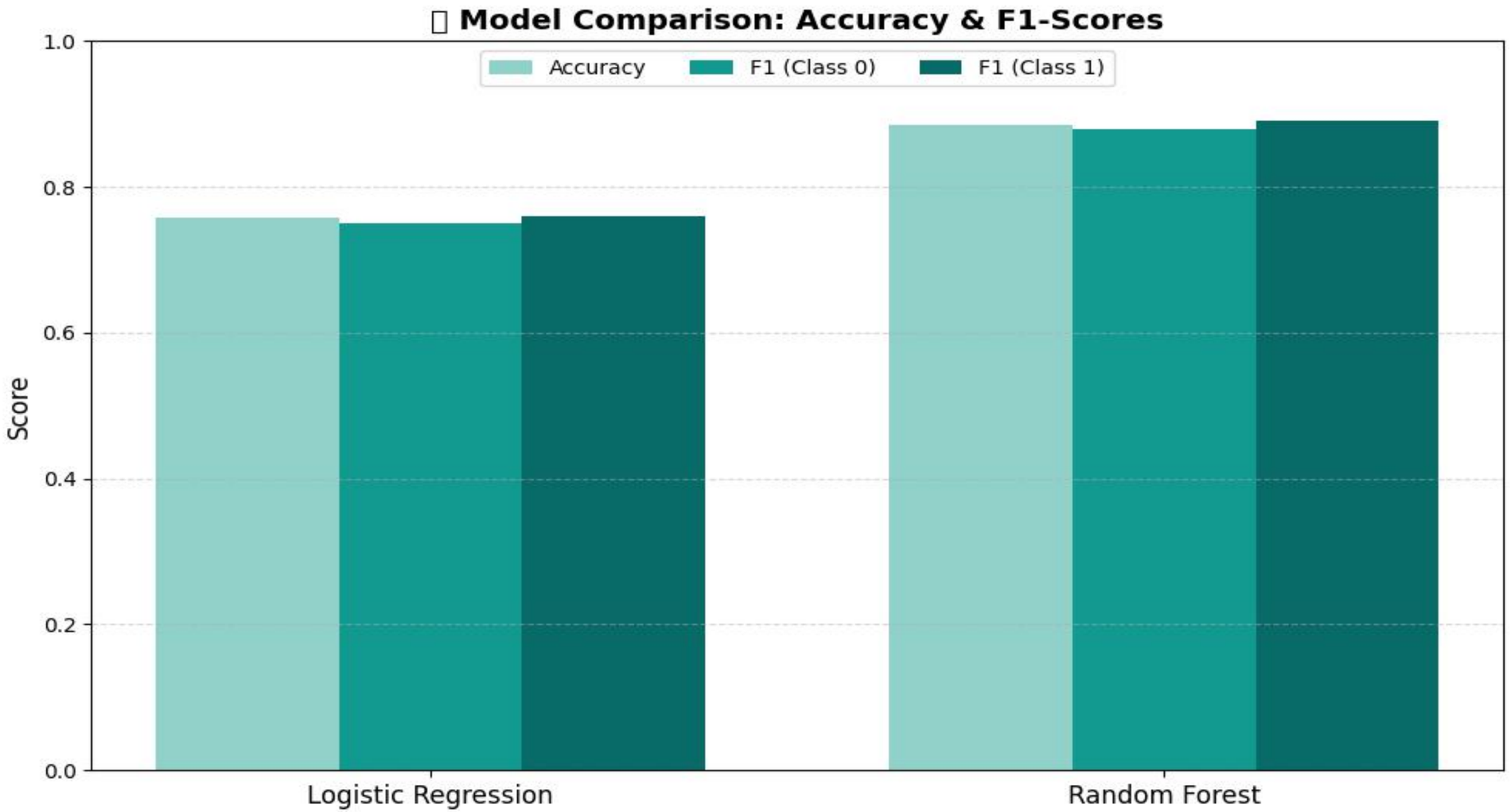
Modeling

Two models tested:

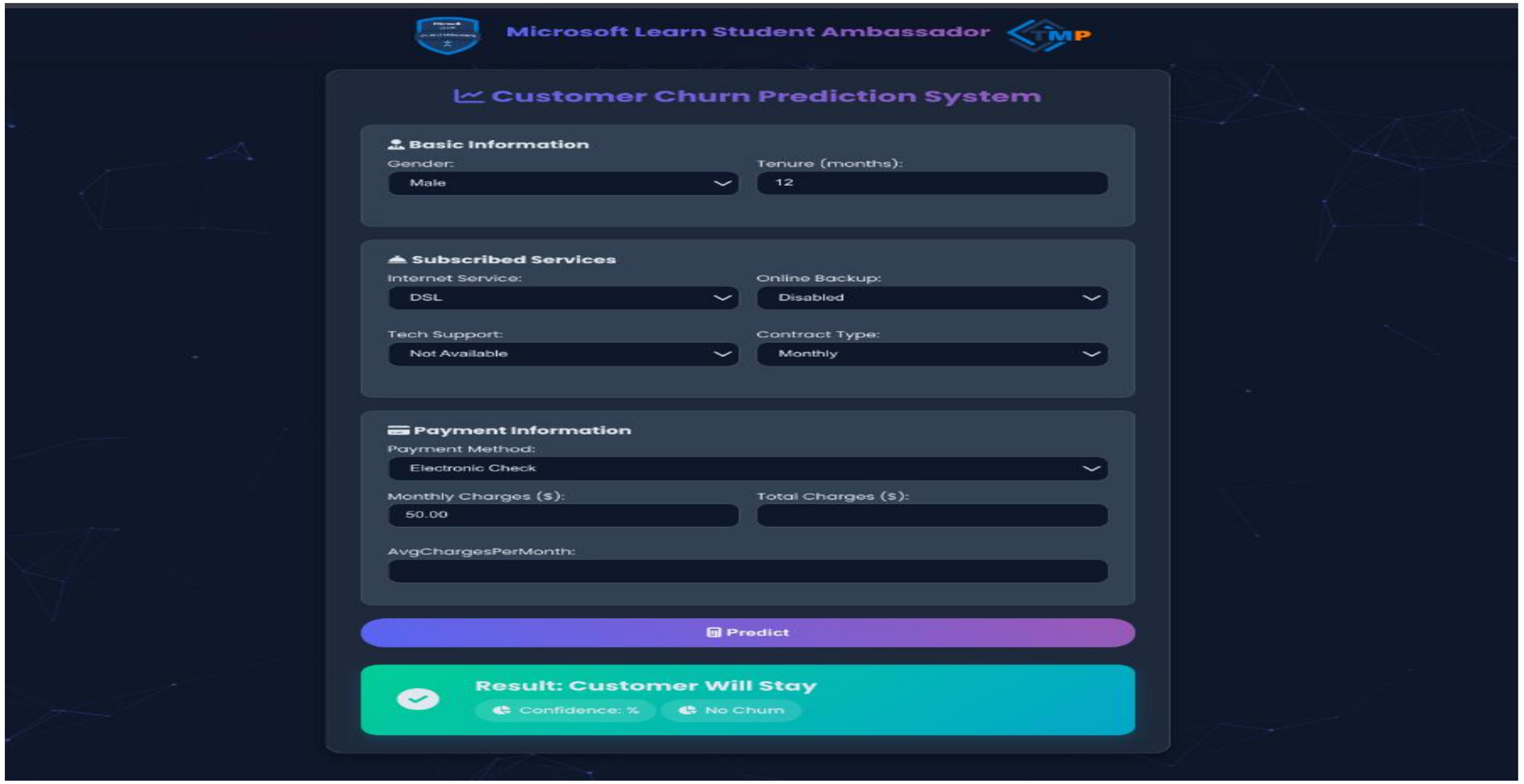
- Logistic Regression (baseline)
- Random Forest Classifier
- Used Scikit-learn with cross-validation
- Evaluated on Accuracy & F1-Score

Results Visualization

Model Performance



Flask Web App


Microsoft Learn Student Ambassador
Customer Churn Prediction System
Basic Information
Gender:
Male
Tenure (months):
12
Subscribed Services
Internet Service:
DSL
Online Backup:
Disabled
Tech Support:
Not Available
Contract Type:
Monthly
Payment Information
Payment Method:
Electronic Check
Monthly Charges ($):
50.00
Total Charges ($):
AvgChargesPerMonth:
Predict
Result: Customer Will Stay
Confidence: %
No Churn

Real Business Value

Why does this matter?

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

What’s Next..?

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

Thank You

Microsoft Learn Student Club