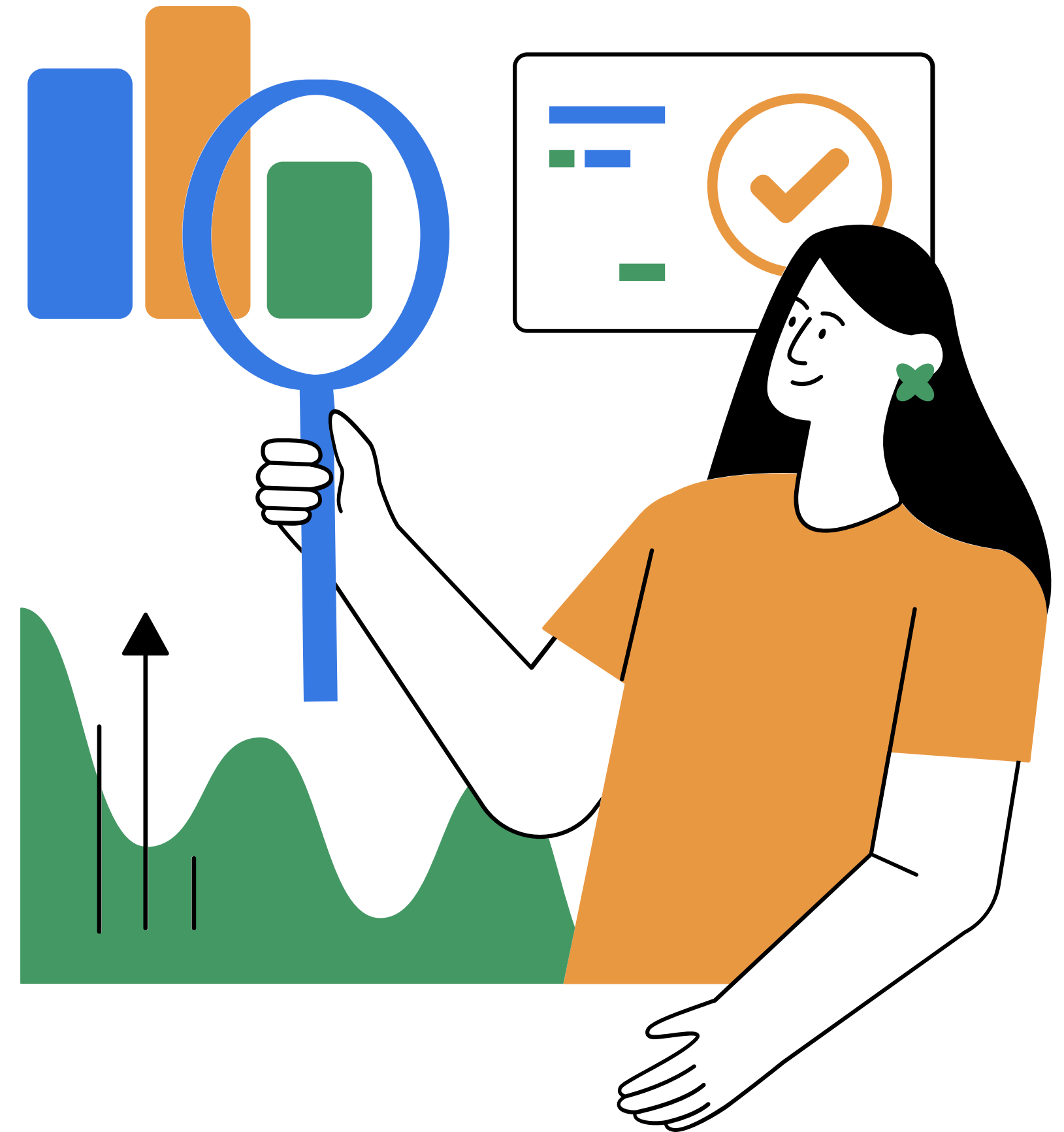
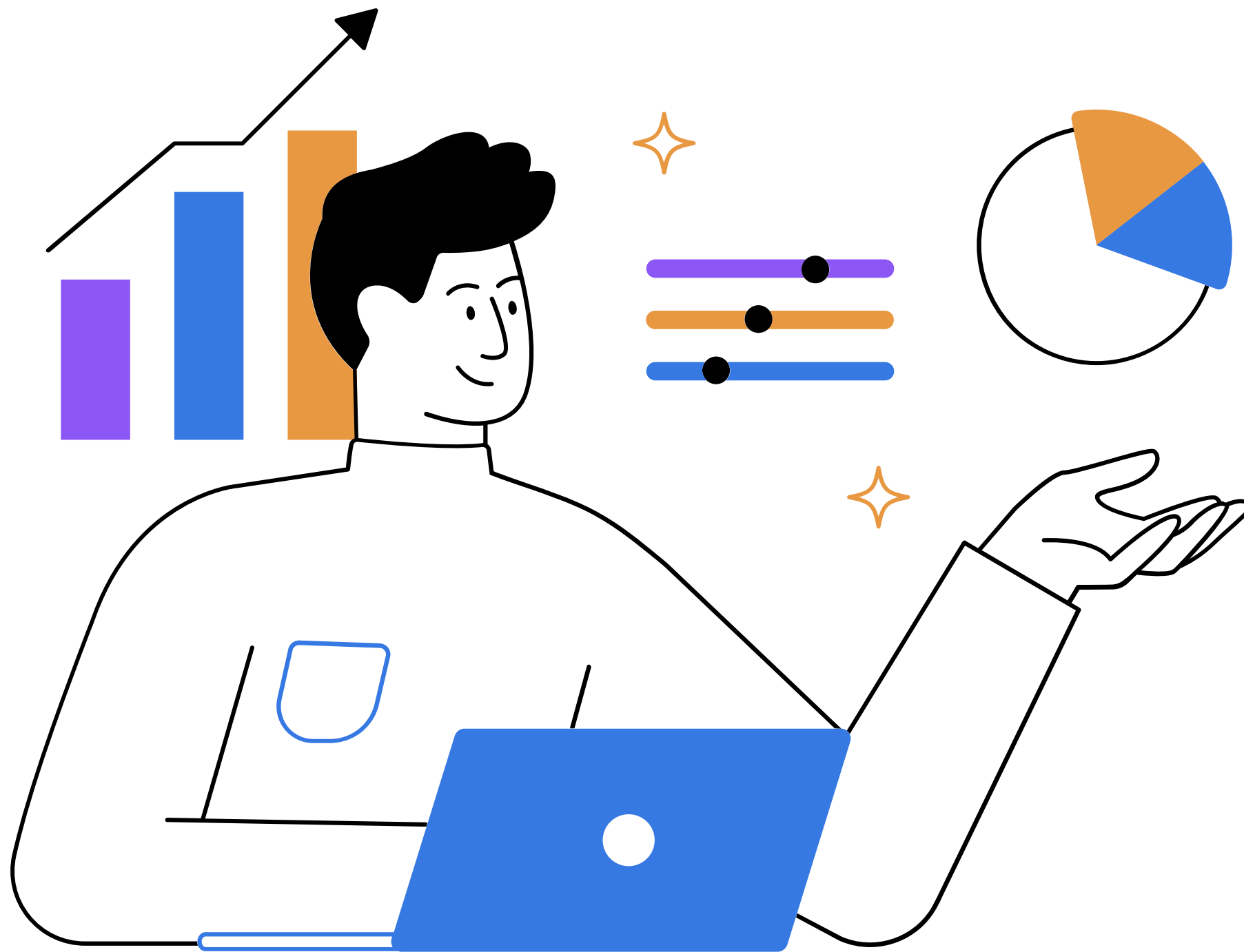


Customer Churn Analysis and Prediction



Presented By- Ishita Sharma

Introduction



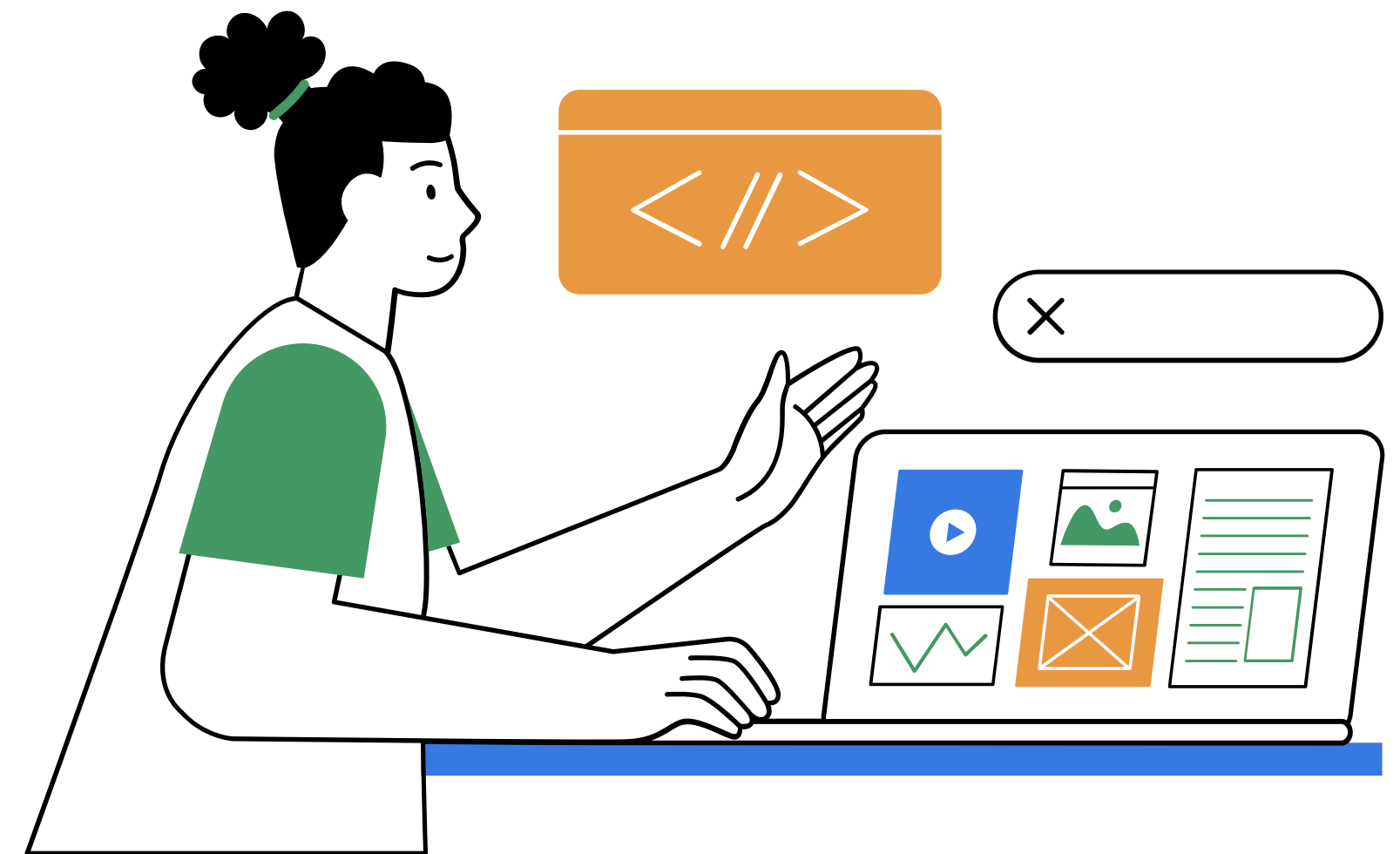
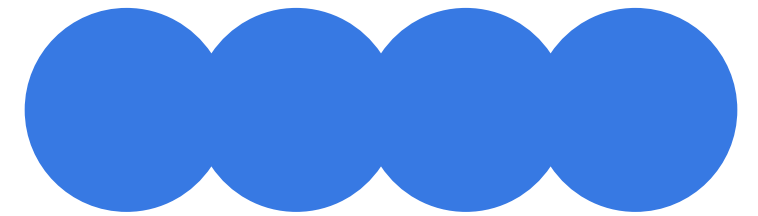
- **Problem Statement:** High customer churn results in revenue loss. Identifying potential churners helps businesses take proactive steps.
- **Solution:** Leverage data analytics and machine learning to predict churn, providing insights for strategic decision-making.
- **Objective:** Analyze customer churn patterns using data analytics and predict future churners with machine learning.
- **Dataset Used:** Telecom customer dataset with various features including demographic data, account info, geographic data, etc.

Design and Architecture

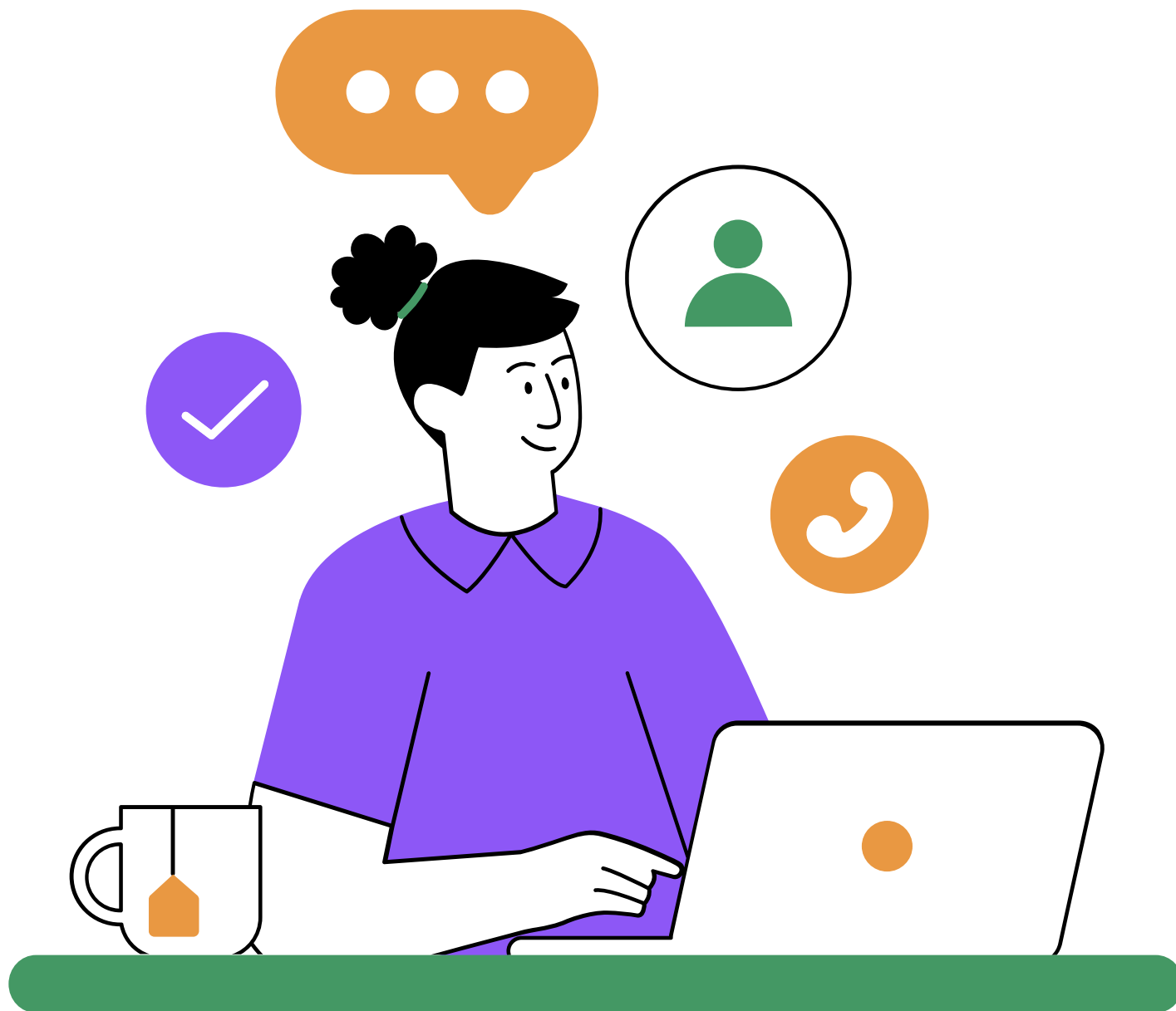
Project Workflow & Pipeline:

- Data Collection: Sourced from a Kaggle dataset.
- Data Preprocessing: Cleaning, handling missing values, and feature engineering in Python.
- EDA: Identifying churn indicators using Matplotlib, Seaborn, and Power BI.
- ML Model: Churn prediction using Random Forest.
- Dashboard Visualization: Power BI dashboards for insights and predicted churners.

Tools Used: Python, Pandas, NumPy, Matplotlib, Seaborn, Scikit-learn, Power BI.



Hardware and Software Used



Hardware Requirements

- **Minimum:** 8GB RAM, i3 Processor, 256GB Storage
- **Recommended:** 16GB RAM, i7 Processor, 512GB SSD

Software and libraries used

- **OS:** Windows 10/11 or Linux
- **Development Tools:** Jupyter Notebook, Power BI
- **Libraries:** Pandas, NumPy, Matplotlib, Seaborn, Scikit-learn

Execution of the Project



Step 1: Data Acquisition and Preprocessing

- Imported telecom customer dataset from Kaggle.
- Cleaned the dataset by handling null values and encoding categorical variables. And performed feature engineering.

Step 2: Exploratory Data Analysis (EDA)

- Used Python libraries and Power BI to explore data.
- Identified patterns and trends linked to churn (e.g., contract types, payment methods).

Step 3: Machine Learning Model

- Built a classification model using Random Forest algorithm.
- Split the data into training and testing sets to evaluate performance.
- Model predicted customer churn probabilities of the recently joined customers.

Step 4: Dashboard Creation

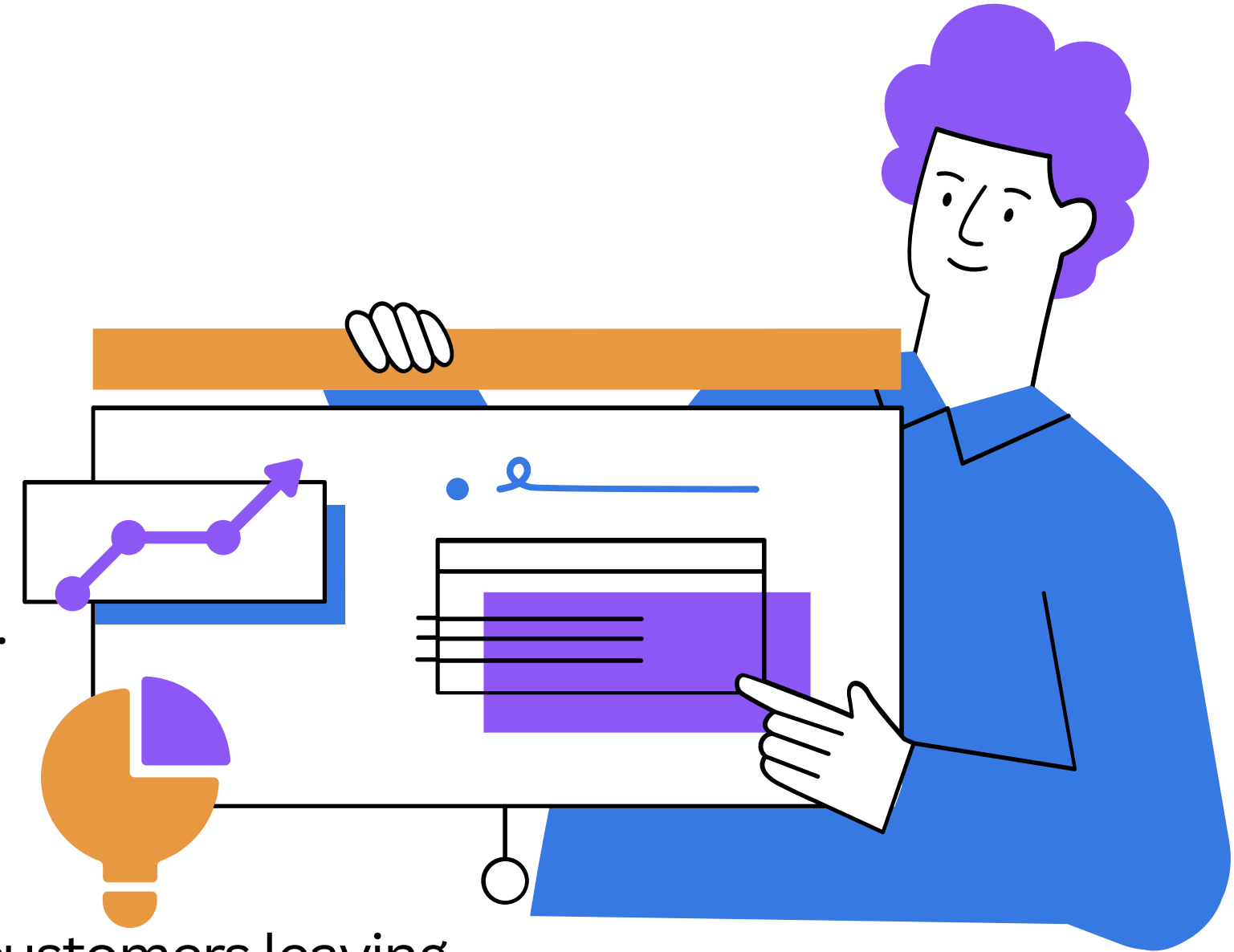
- Designed interactive summary and prediction dashboards in Power BI.
- Visualized key insights and highlighted predicted churners.



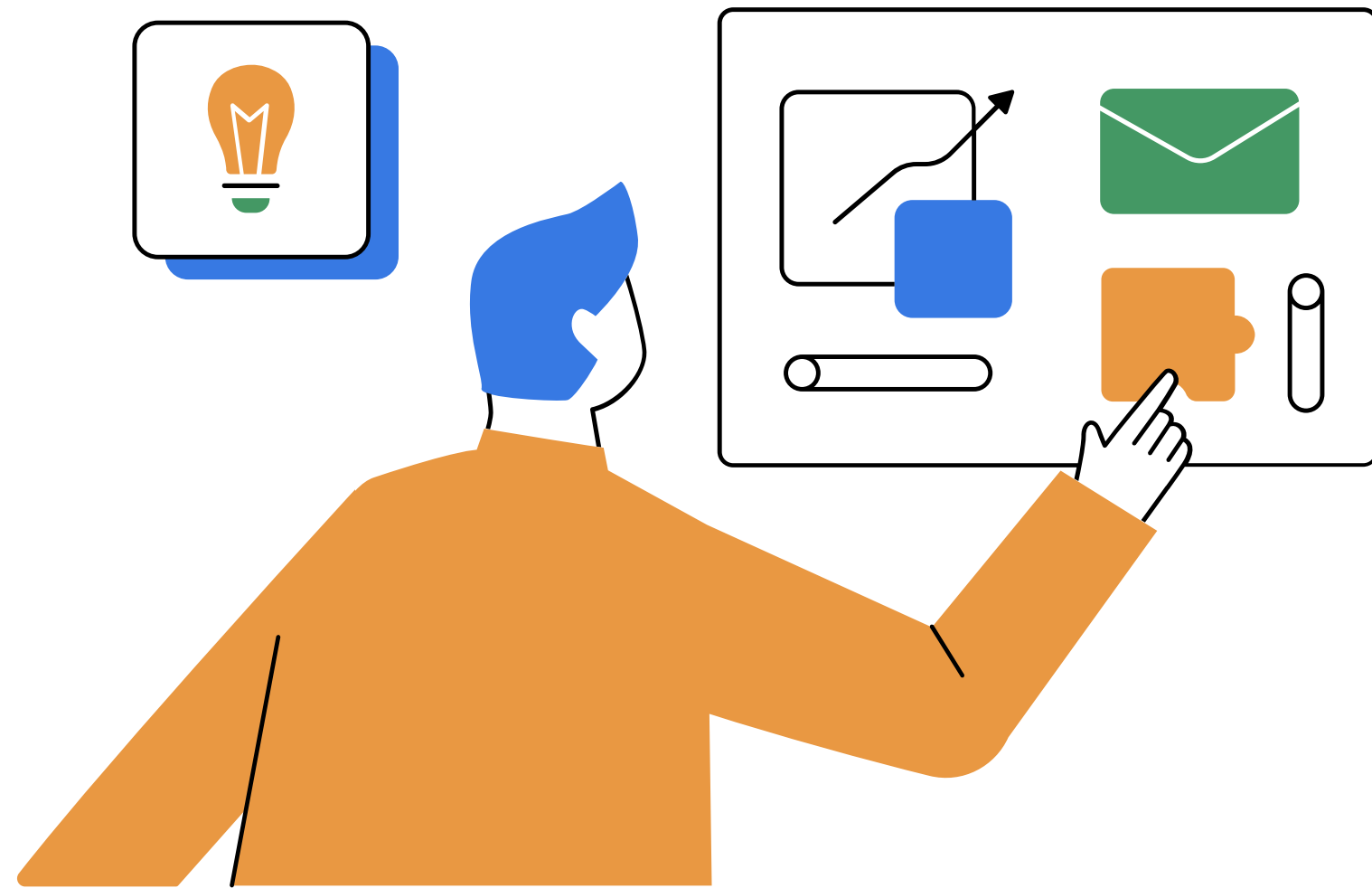
Results

Key Insights from EDA:

- Overall churn rate is 27%.
- 64% of churned customers are female.
- Customers with month-to-month contracts churn the most.
- Competition is reported as the major reason for churn.
- Jammu and Kashmir has the highest churn rate with ~60% customers leaving.
- Senior citizens exhibit a slightly higher churn rate.



Future Work



Point 01

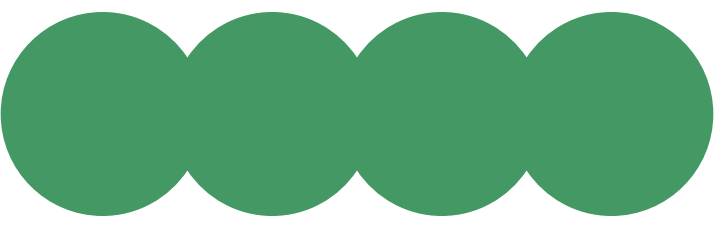
Integrating real-time data for dynamic churn prediction. This will help in continuously monitoring customer behavior and taking timely action.

Point 02

Connecting with business intelligence tools for deeper insights across regions and demographics.

Point 03

Developing retention strategies based on churn likelihood (e.g., personalized offers, loyalty programs). The system can auto-trigger tailored discounts and customer care interventions.



Thank You

