

8138 - SARANATHAN COLLEGE OF ENGINEERING

Department of CSE

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DAC Phase-2 Project Submission

Team-6 Customer Churn Prediction

INNOVATION:

The complete steps involve the following:

1. Project Objective Refinement:

- Review and refine the project objectives to ensure they are well-defined and aligned with the business goals.
- This includes clarifying what constitutes customer churn and the specific factors to be examined

2. Data Collection and Preprocessing:

- Collect historical customer data including demographics, transaction history, customer service interactions, and any other relevant information.
- Preprocess the data: Cleanse, normalize and handle missing values to ensure data quality. Feature engineering might also be necessary.

3. Feature Selection and Engineering:

- Identify and select relevant features that can impact churn prediction.
- Create new features if needed, such as customer lifetime value, customer segmentation, or product usage patterns.

4. Model Selection and Development:

- Choose appropriate machine learning algorithms for the problem. The ensemble learning method used in this project is Random Forest
- Develop a baseline model using a portion of the data and evaluate its performance using appropriate metrics like accuracy, precision, recall, and F1-score.

5. Incorporate Innovation:

a. Predictive Analytics: Incorporate predictive analytics techniques to forecast future churn probabilities based on historical data. Time series analysis or survival analysis can be applied.

b. Customer Segmentation: Implement advanced clustering algorithms to segment customers into different groups with distinct churn patterns. This allows for tailored intervention strategies.

c. Anomaly Detection: Deploy anomaly detection algorithms to identify unusual customer behavior that might indicate imminent churn.

6. Model Training and Evaluation:

- Train your chosen models on the labeled dataset, making sure to use techniques like cross-validation to prevent overfitting.
- Continuously evaluate and fine-tune the models using appropriate evaluation metrics. Consider using AUC-ROC or area under the precision-recall curve to account for class imbalance.

7. Deployment and Integration:

- Integrate the churn prediction model into your existing customer relationship management (CRM) or customer support systems.
- Ensure real-time or batch predictions can be made depending on the use case.

8. Monitoring and Feedback Loop:

- Set up a monitoring system to continuously track model performance in production.

- Establish a feedback loop where the model's predictions are compared to actual churn events, and the model is retrained periodically to adapt to changing patterns.

9. Interpretability and Explainability:

- Implement techniques to make model predictions interpretable and explainable, especially if the model will be used for decision-making regarding customer retention strategies.

10. Business Process Integration:

- Collaborate with business stakeholders to align the churn prediction system with existing customer retention and marketing strategies.

11. Scale and Optimize:

- As the system matures, consider scalability and optimization to handle increasing data volumes and ensure efficient model inference.

12. Feedback Loop and Continuous Improvement:

- Continuously collect feedback from business users and customers to refine the model and adapt to changing customer behaviors and preferences.

By following these steps and incorporating innovative techniques, we can transform the initial design for customer churn prediction into a highly effective and adaptive solution that addresses the problem of customer churn more effectively. The key is to combine domain expertise with data-driven insights to drive innovation and ongoing improvement.