

Predicting Customer Churn in Telecom Industry using Classification Models



Student name -----

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Research Question & Anticipated Product(s)

- Develop machine learning models to accurately predict customer churn in the telecom sector
- Compare performance of different classification algorithms on predicting churn
- Identify the key factors/features influencing customer churn behavior
- Anticipated product: Churn prediction model deployed in telecom CRM system +1. Provide interpretable insights to mitigate customer churn

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Background Context of the Proposed Research

- Customer churn (attrition) is a major issue that impacts revenue for telecom companies
- Churn analysis helps identify dissatisfied customers before they terminate services
- Traditional statistical methods have limited predictive power on large customer datasets
- Recent studies show potential of machine learning models for churn prediction (Amin et al. 2017). Exploring deep learning models like RNNs for sequential churn patterns



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Research Methodology

- **Data:** Telecom customer dataset with churn labels and demographic/usage features
- **Techniques:** Logistic regression, decision trees, random forests, gradient boosting
- Handling imbalanced data through under sampling, oversampling techniques
- Dimensionality reduction using feature selection/extraction methods. Explaining black-box models with techniques like SHAP, LIME



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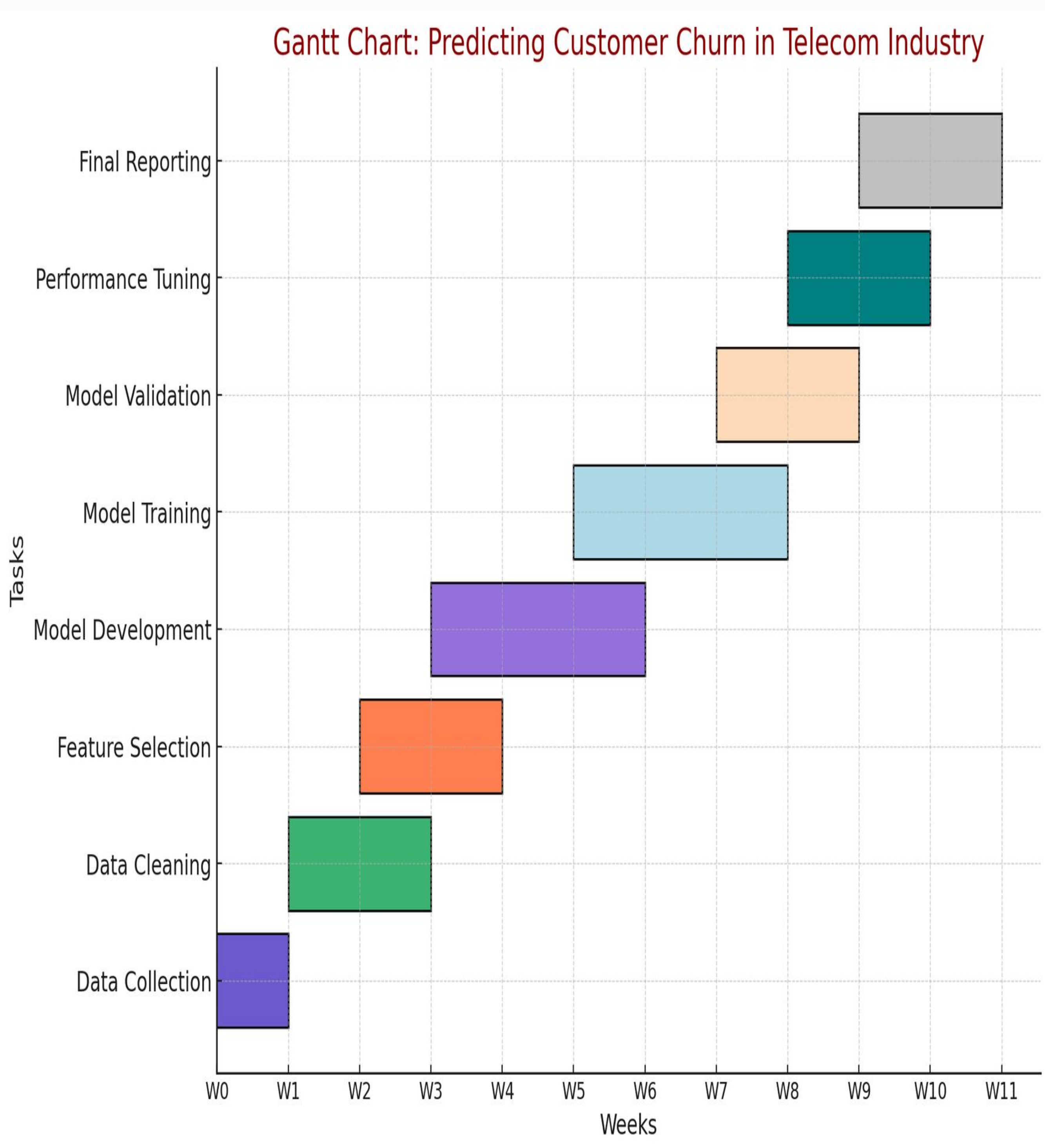
Evaluation Methodology

- Quantitative: Metrics like accuracy, precision, recall, F1-score, AUC-ROC
- K-fold cross validation for robust model evaluation
- Compare model performance against naive baselines +1. Cost-sensitive evaluation factoring in costs of customer churn.

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Schedule and Dissemination Plans

- By this way, we have done this project as shown in the Gantt chart.



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Conclusion

- Literature review highlighted valuable research on using classification models for telecom churn prediction. The vast amount of research demonstrates the industry's interest and ongoing efforts. Filtering relevant studies and limited access to some publications posed challenges. Despite these, the review identified key factors like feature engineering and advanced techniques for improving churn prediction accuracy.



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Professional, Legal & Ethical Considerations

- **Pros:** Retain customers, target marketing, boost profits.
- **Legal:** Data privacy (e.g., GDPR), fairness in model development (avoid bias).
- **Ethical:** Transparency in data usage, avoiding customer profiling for manipulation.



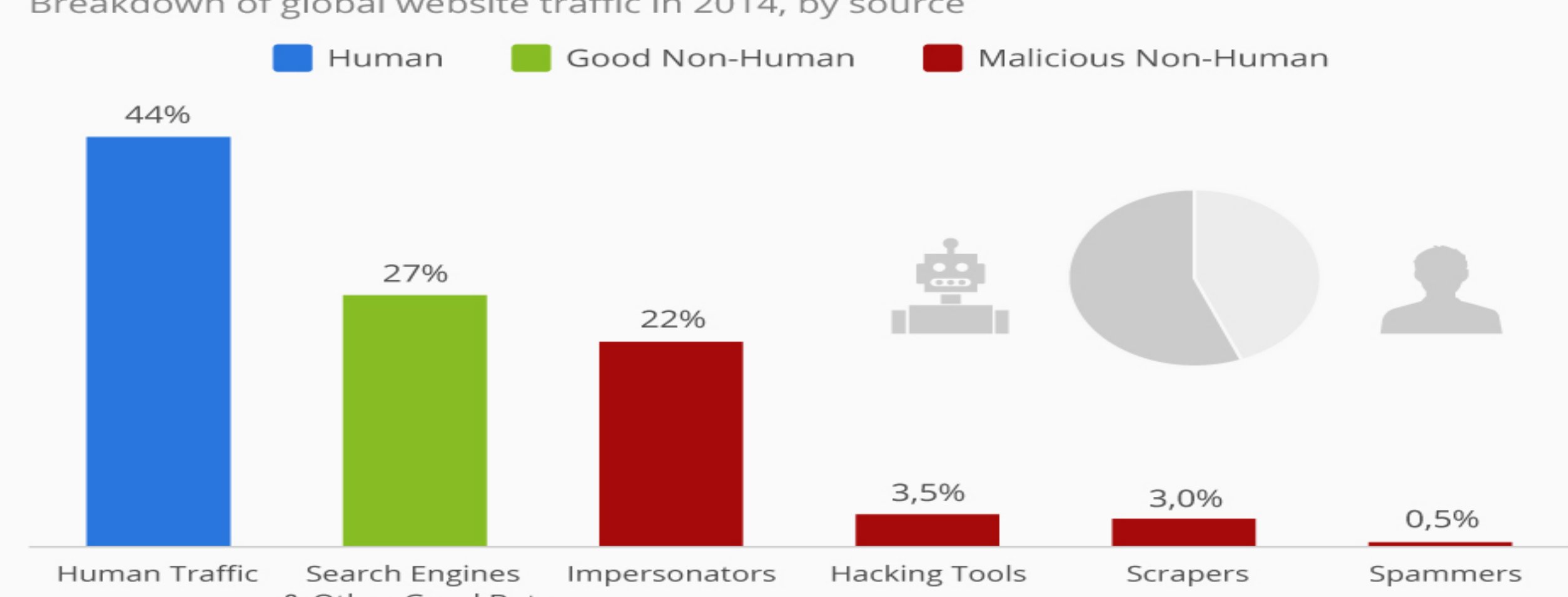
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References

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Humans Account for Less Than Half of Global Web Traffic



* based on a sample of 1.5 billion visits collected from 20,000 websites worldwide
Source: Incapsula

statista