Fintech SaaS Churn Intelligence

Predictive Retention System
XGBoost + SHAP
AUC 0.90

Research Director Riley - Approved

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Early-warning system with 100% precision on top 5% at-risk customers

Business Problem: Churn is Eroding ARR

Industry: SaaS Billing & Subscription Platform

- ▶ Even 1% churn increase destroys NRR and LTV
- ▶ Early-life churn (low tenure) drives majority of losses
- ▶ Retaining a customer is **3–5× cheaper** than acquiring

Core Problem: Customers cancel without warning → reactive retention

Goal: Build an **early-warning intelligence system** with actionable, explainable insights

Model Performance

Model	AUC	Precision@Top 5%
Logistic Regression	0.753	0.71
Random Forest	0.781	0.78
XGBoost (Selected)	**0.899**	**1.000**

Business Impact
Perfect ranking of the riskiest 5% $\rightarrow$ ideal for high-precision save campaigns

Key Insights from SHAP - Top Churn Drivers

Rank	Driver
1	**tenure_months_precise** → Onboarding crisis
2	events_count → Low engagement
3	events_last_30d → Recent drop-off
4	error_event_count → Billing friction
5	support_contacts_count → Pre-churn pain

Conclusion: Churn = **activation failure + product friction**

High-Impact Recommendations

1. **Reinvent Onboarding** (Day 1–7 success path) → highest ROI
2. **Eliminate Errors** (real-time monitoring + escalation)
3. **Automated Reactivation** for low-activity users
4. **High-Risk Save Desk** - 100% precision on top 5%

Expected impact: **+15–25%** in 90-day retention

Deployment Roadmap

Phase	Deliverable
1 week	Live Streamlit churn dashboard
2 weeks	CRM integration (HubSpot/Salesforce)
3 weeks	Weekly inference + Slack alerts
Ongoing	Add billing failures, plan tier features

Production-ready today.