Fraud Detection Pipeline Architecture

Real-time (<100ms)

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Data Ingestion → **Feature Engineering** → **ML Models** → **Rule Engine** → **Decision**

Data Ingestion	Feature Engineering	ML Models	Rule Engine	Decision
- Transaction Data	- Velocity Features	- Random Forest	- Business Rules	- Approve
- User Behavior	- Aggregations	- Neural Network	- Velocity Checks	- Decline
- Device Info	- Anomaly Flags	- Ensemble	- Blacklists	- Review
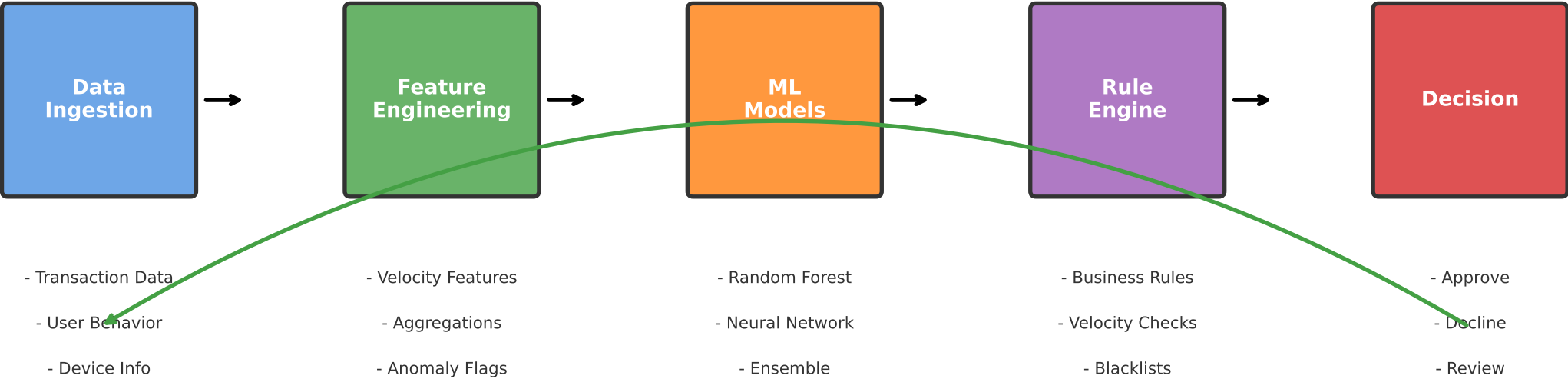
Model Retraining Feedback Loop