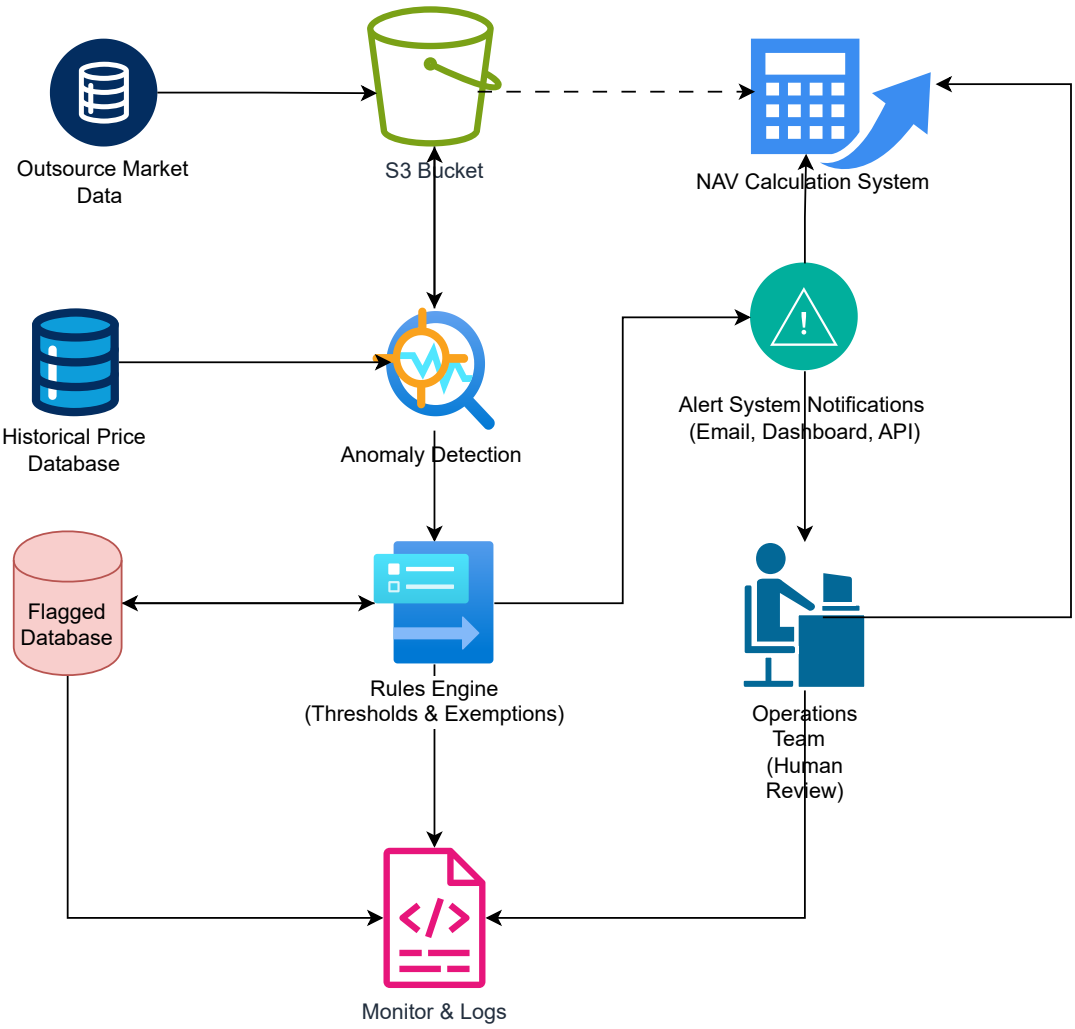
Stock Price Anomaly Detection System Architecture



The anomaly detection system is designed to sit between our data ingestion and NAV calculation processes to proactively catch pricing errors. Here's a breakdown of how it works:

- **Market Data Ingestion**: Daily stock price data is sourced from an external provider and stored in an **S3 bucket**.
- **Historical Price Database**: Maintains a record of past stock close prices, which is used for 7-day moving average comparisons.
- **Anomaly Detection Engine**: Scans incoming price data using business rules (e.g. large price changes, nulls, missing tickers). It references the historical database to detect anomalies.
- **Rules Engine**: Applies thresholds and exemption logic to evaluate severity and filter known acceptable patterns. Validated anomalies are stored in a **Flagged Database**.
- **Alert System**: Triggers real-time alerts (email, dashboard, or API) for detected issues.
- **Operations Team**: Reviews flagged anomalies and takes corrective actions before prices are used in the **NAV Calculation System**.
- **Monitoring & Logging**: Tracks anomalies, rules applied, and system behavior for audits and future improvements.