# Monotonic Constraint Models

*Enforcing Logical Relationships in Predictions*

## ⚠ Non-Monotonic Model



Credit Score →

❌ Counter-intuitive: Higher score

## ✓ Monotonic Model



Credit Score →

✓ Logical: Higher credit score

## Key Features

**Logical Constraints**
Enforces domain knowledge relationships

**Trust Building**
Predictions follow expected behavior patterns

**Implementation**
XGBoost, LightGBM, monotonic NNs

**Trade-offs**
May slightly reduce accuracy for interpretability

**Critical For:**
• Regulated industries
• Financial decisions

sometimes decreases approval

consistently increases approval

- Healthcare applications
- High-stakes predictions