Reproducing ‘Re-Imagining Price Trends’ with Extensions in Volatility Stacking and CNN Architecture

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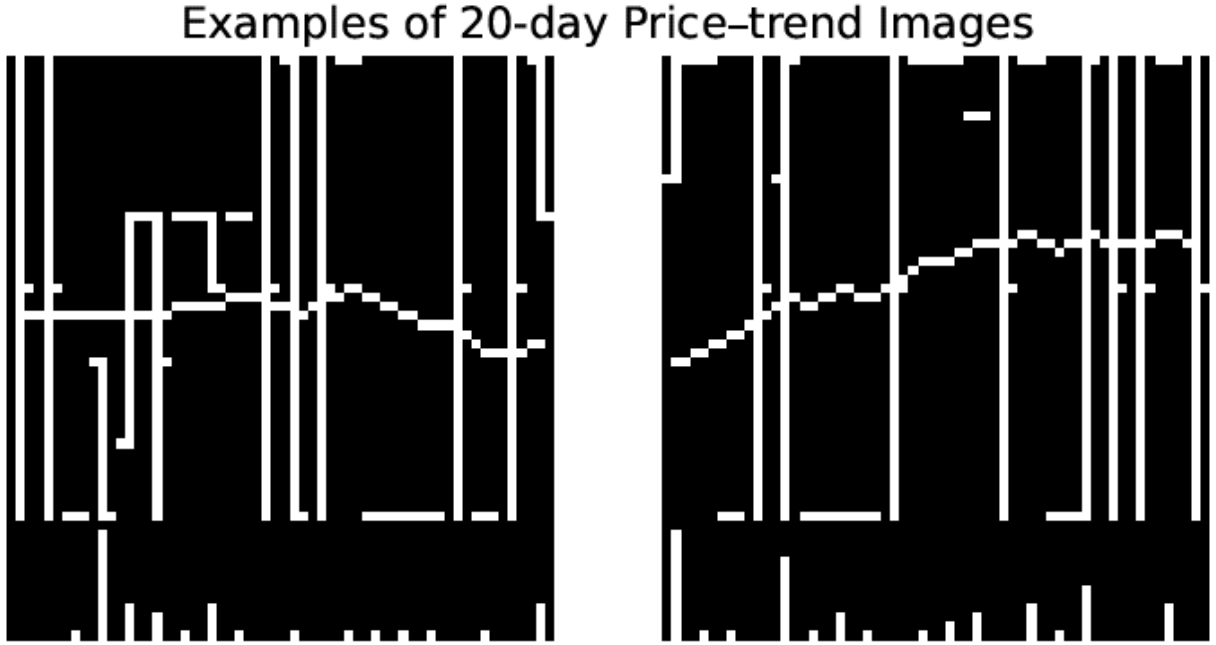
Motivation

- Why image-based trend prediction?
  - Modern ML uses raw data representations
  - Price windows can be encoded as 64×60 images
  - CNNs capture local price patterns
  - Strong results reported in original study

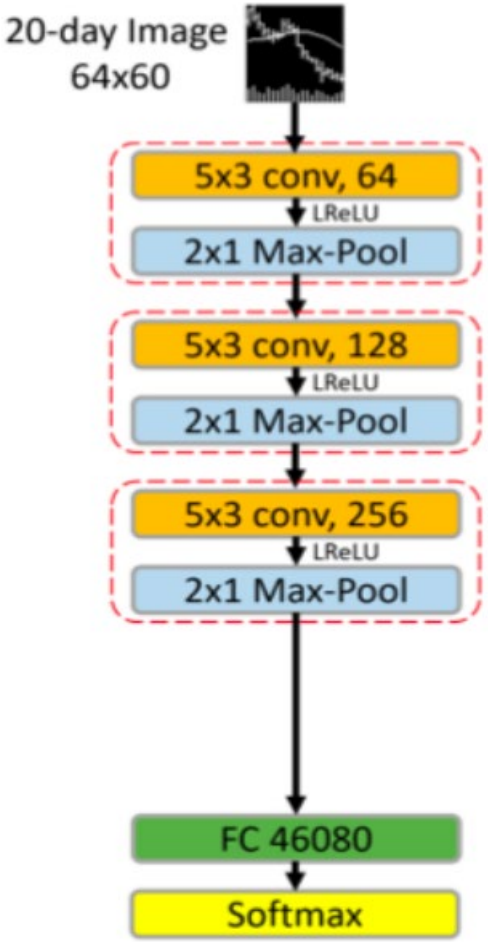
Data & Image Construction

- I20/R20 dataset
  - Generate 64×60 price images
  - OHLCV + MA + volume



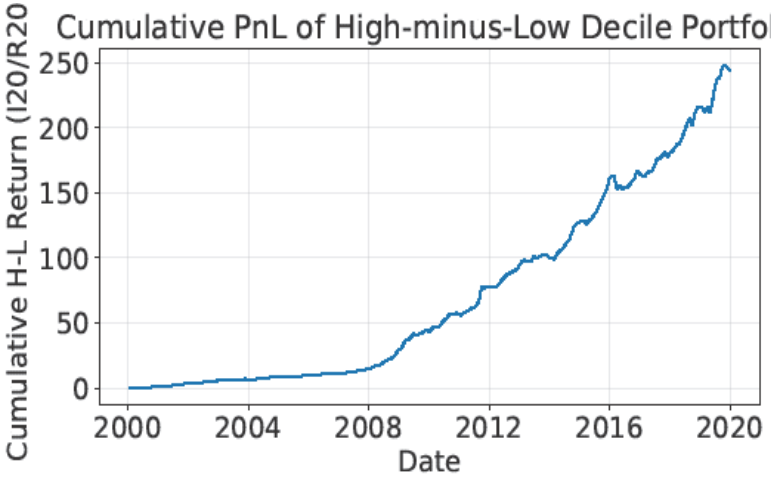
Model Architecture & Training

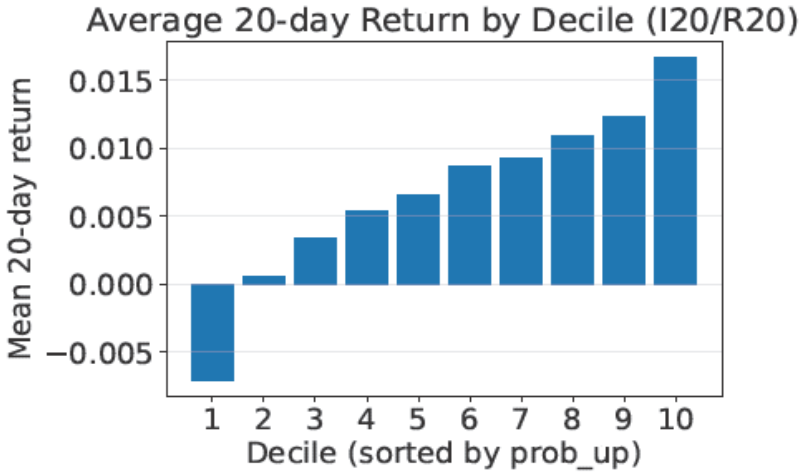
- 3-layer CNN (Conv–BN–ReLU)
  - Adam optimizer + early stopping
  - Temporal split: 1993–1999 / 2000–2019



Main Results: Decile Portfolios

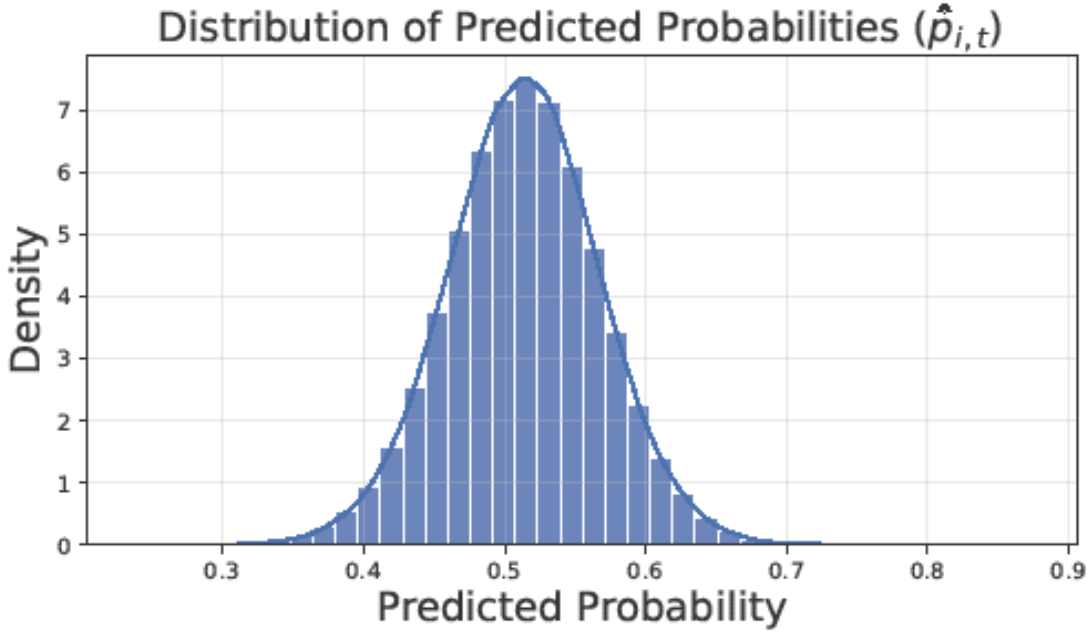
- Sharpe = 2.49 (matches original)
- Turnover = 1.74
- Clean monotonic deciles





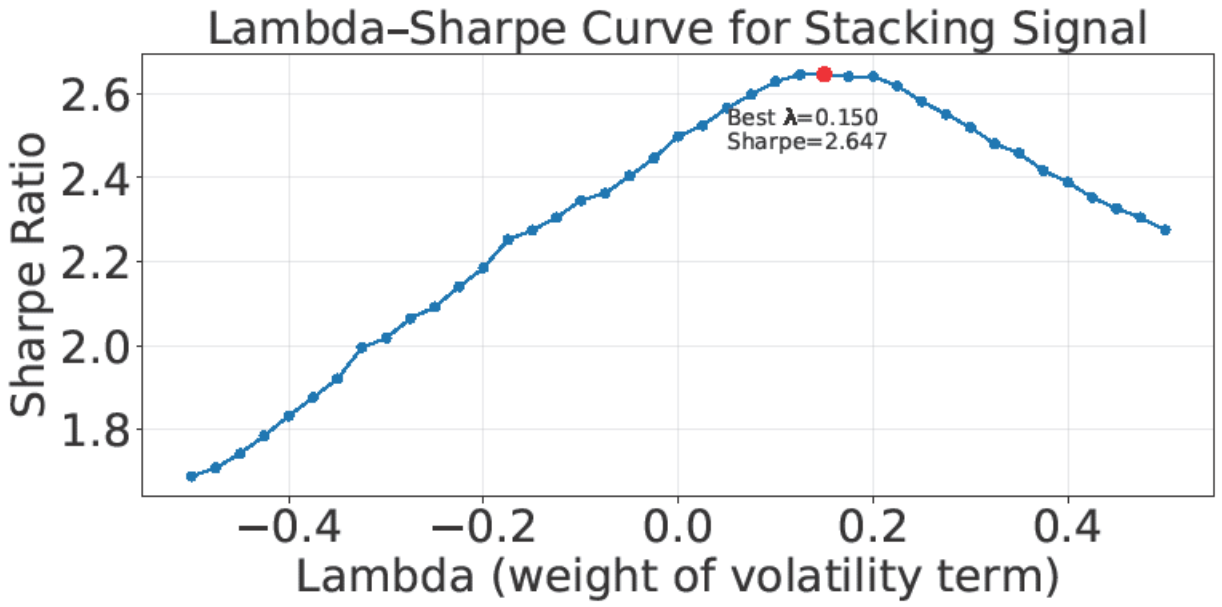
Probability Distribution & Ranking Behavior

- Probabilities cluster around 0.5
- Ranking > classification
- Explains high turnover & low accuracy



Extension: Stacking with EWMA Volatility

- Combine CNN signal with EWMA volatility
- Sharpe improves: 2.49 → 2.63
- Smoother weights, more robustness



Conclusion & Contributions

- Validates original claims
- Highlights key implementation details
- Code available on GitHub:

  https://github.com/siqi-wang25/Imaging-Price-Trends