Post–Dec 2 Tracking Error Analysis
Lawrence vs Jianan Model

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Context

- Compare Lawrence's executed positions to Jianan's model.
- Focus on post–Dec 2 period: 182 symbol–day observations.
- Correct alignment: signal on day $T \rightarrow$ holdings on $T + 2$.
- Goal: quantify *how* and *why* tracking is broken.

Top-Level Waterfall (Post–Dec 2)

- Categories: MATCHED, MISSING_POSITION, WRONG_SIGN, MAGNITUDE_ERROR.
- Sample: 182 symbol–days.

Category	Count	Share (%)
MATCHED	40	21.9
MISSING_POSITION	84	45.9
MAGNITUDE_ERROR	36	19.9
WRONG_SIGN	22	12.3

- Only **1 in 5** symbol–days match the model.

Missing Positions

- Missing positions split by min notional:

Reason	Count	Share of Missing (%)
BELOW_MIN_NOTIONAL	72	86
ABOVE_MIN_NOTIONAL	12	14

- $\sim 40\%$ of all post–Dec 2 symbol–days are missing solely because the account is too small for exchange minimums.
- $\sim 7\%$ are missing even though notional is above min_usd $\Rightarrow$ genuine execution issues.

Wrong-Sign Positions and Day-Over-Day Flips

- WRONG_SIGN: actual direction disagrees with T+2 signal.
- Re-check sign at T+1 (T-1 offset) and T+3 (delayed execution).
- Post–Dec 2 wrong-sign breakdown (22 cases):
  - $\sim$ 58% DUE_TO_T1_OFFSET.
  - $\sim$ 42% DUE_TO_T3_TIMING.
  - 0% UNEXPLAINED.
- As share of all 182 symbol–days:
  - $\sim$ 7% T1-driven wrong sign.
  - $\sim$ 5% T3-driven wrong sign.

Magnitude Errors

- MAGNITUDE_ERROR: right sign, but $> 2\%$ weight difference.
- Post–Dec 2: 36 / 182 symbol–days ($\sim 20\%$).
- Essentially unchanged from pre–Dec 2 ($\sim 21\%$).
- Likely drivers:
  - Partial fills.
  - Price drift.
  - Discrete lot sizes vs continuous model weights.

Why Post–Dec 2 Is Still Broken

- **Match rate is low:** only 21.9% matched.
- **Structural constraint:** $\sim 40\%$ of symbol–days are untradeable due to min notional vs \$2000 account.
- **Execution + timing:**
  - $\sim 7\%$ missing above min notional.
  - $\sim 12\%$ wrong sign (T-1/T-3 behavior).
  - $\sim 20\%$ magnitude errors.
- Even after the "fix", roughly two-fifths of tracking error is due to execution / timing, and another two-fifths is baked in by account size.

Next Steps

- Enforce a single T+2 alignment across signals, trading, and attribution.
- Increase account size or explicitly zero small weights to avoid untradeable dust.
- Restore detailed trade logging and add monitoring for:
  - Wrong-sign positions.
  - Above-min missing positions.
  - Large magnitude errors.