

Zwei-Stufen-XGBoost - Experiment-Report

Experiment-ID: v4_h4_thr0p5pct_tolerant0p3pct

Dieses Dokument fasst die wichtigsten Parameter, Datenquellen und Metriken eines Zwei-Stufen-XGBoost-Experiments zusammen.

Stufe 1 (Signal): neutral vs. Bewegung ('move'). Stufe 2 (Richtung): down vs. up – nur an Bewegungstagen.

Label-Parameter:

- horizon_days: 4
- up_threshold: 0.005
- down_threshold: -0.005
- strict_monotonic: False

Datensatz & Splits:

- dataset_path: /Users/jeremynathan/Documents/GitHub/hs2025_ml_project/hs2025_ml_project/data/processed/datasets/eurusd_news_training.csv
- test_start: 2025-01-01
- train_frac_within_pretest: 0.8

Features (FEATURE_COLS):

- article_count
- avg_polarity
- avg_neg
- avg_neu
- avg_pos
- pos_share
- neg_share
- intraday_range_pct
- upper_shadow
- lower_shadow
- price_close_ret_1d
- price_close_ret_5d

Legende & Begriffe

Zielvariablen:

- label: 3-Klassen-Ziel auf Basis des 4-Tage-Lookaheads (neutral / up / down).
- signal: 0 = neutral, 1 = Bewegung (up oder down).
- direction: 0 = down, 1 = up; nur definiert, wenn signal == 1.

Wichtige Metriken:

- precision: Anteil der vorhergesagten positiven Fälle, die wirklich positiv sind.
- recall: Anteil der tatsächlichen positiven Fälle, die erkannt wurden.
- f1: harmonischer Mittelwert aus precision und recall (Balance beider Größen).
- support: Anzahl der Beobachtungen in der jeweiligen Klasse.

Feature-Abkürzungen (Auswahl):

- article_count: Anzahl News-Artikel pro Tag.
- avg_polarity / avg_neg / avg_neu / avg_pos: durchschnittliche Sentiment-Werte.
- pos_share / neg_share: Anteil positiver bzw. negativer Sentiment-Komponente.
- intraday_range_pct: (High - Low) / Close – relative Tages-Spanne (Volatilität).
- upper_shadow / lower_shadow: obere/untere Dochte der Kerzen (High/Low vs. Körper).
- month / quarter: Kalendermonat und Quartal.

Modell-Parameter (XGBoost)

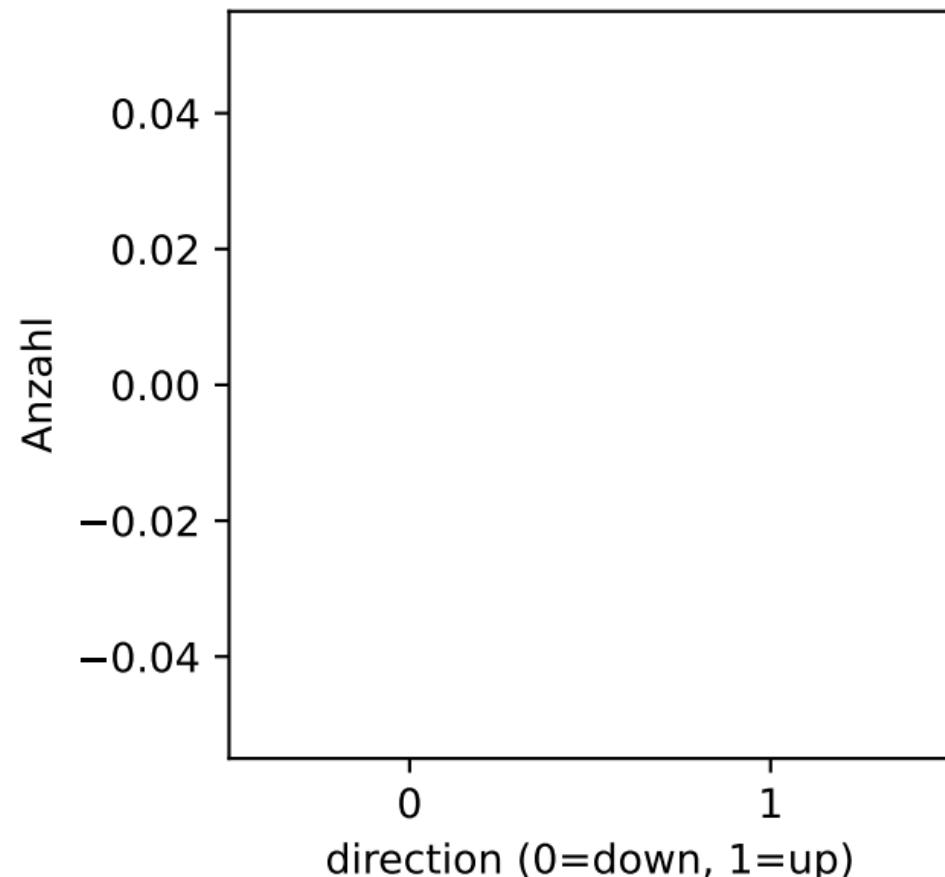
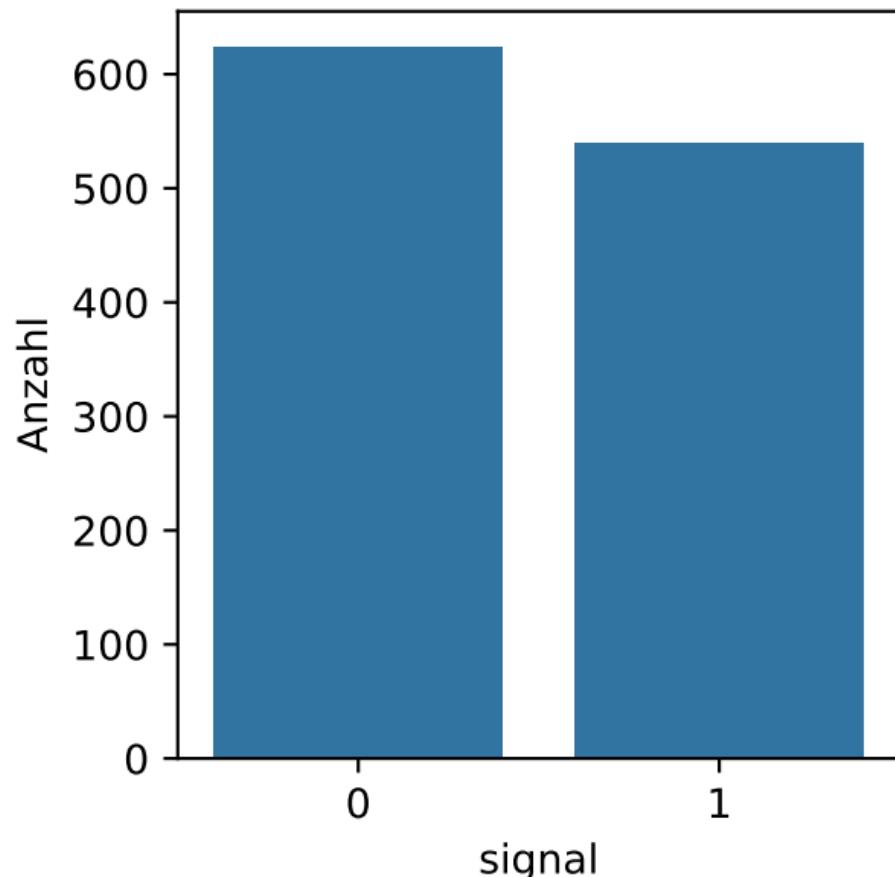
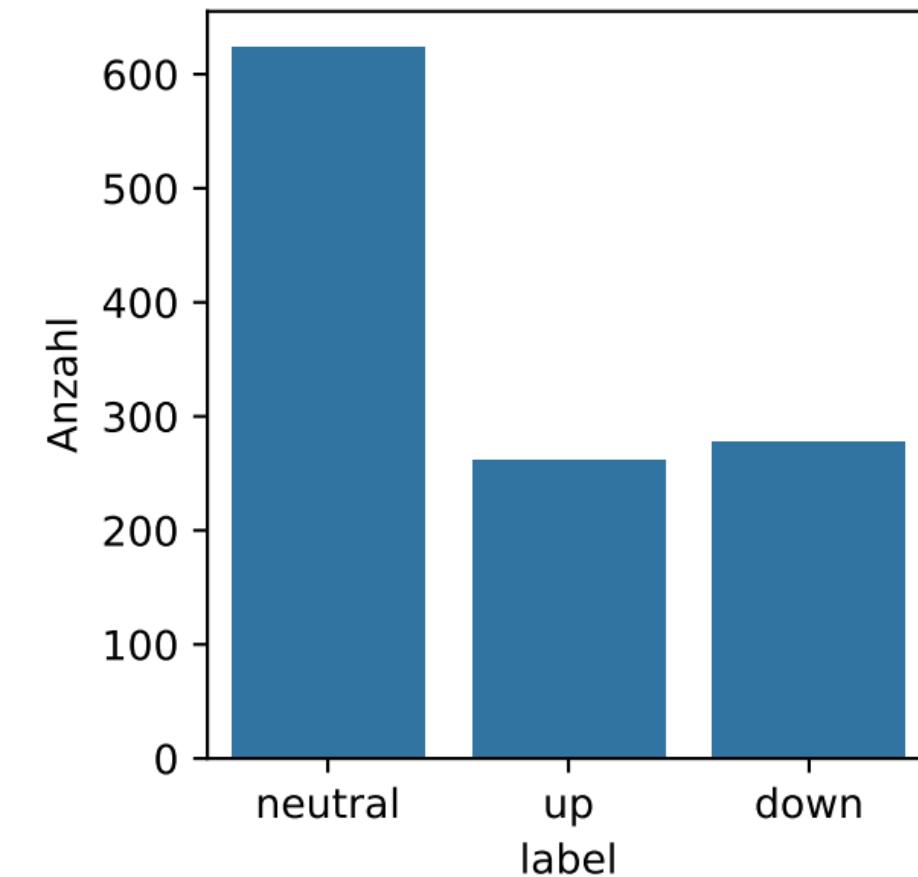
Signal-Modell (Stufe 1):

- objective: binary:logistic
- max_depth: 3
- learning_rate: 0.05
- n_estimators: None
- subsample: 0.9
- colsample_bytree: 0.9
- scale_pos_weight: 1.2366863905325445

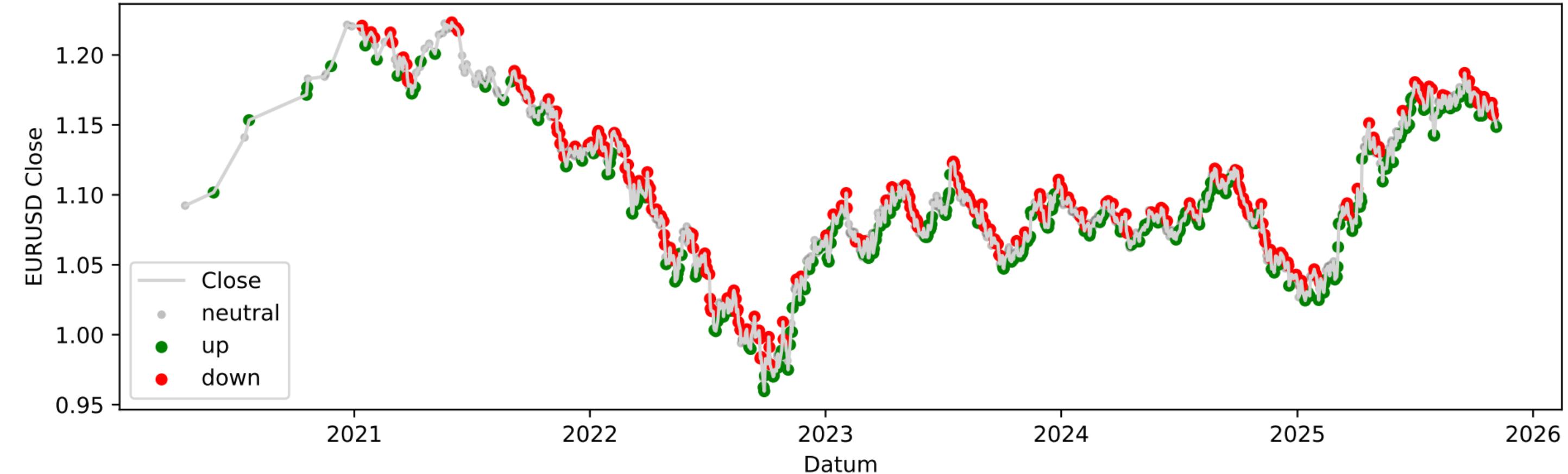
Richtungs-Modell (Stufe 2):

- objective: binary:logistic
- max_depth: 3
- learning_rate: 0.05
- n_estimators: None
- subsample: 0.9
- colsample_bytree: 0.9
- scale_pos_weight: 1.0

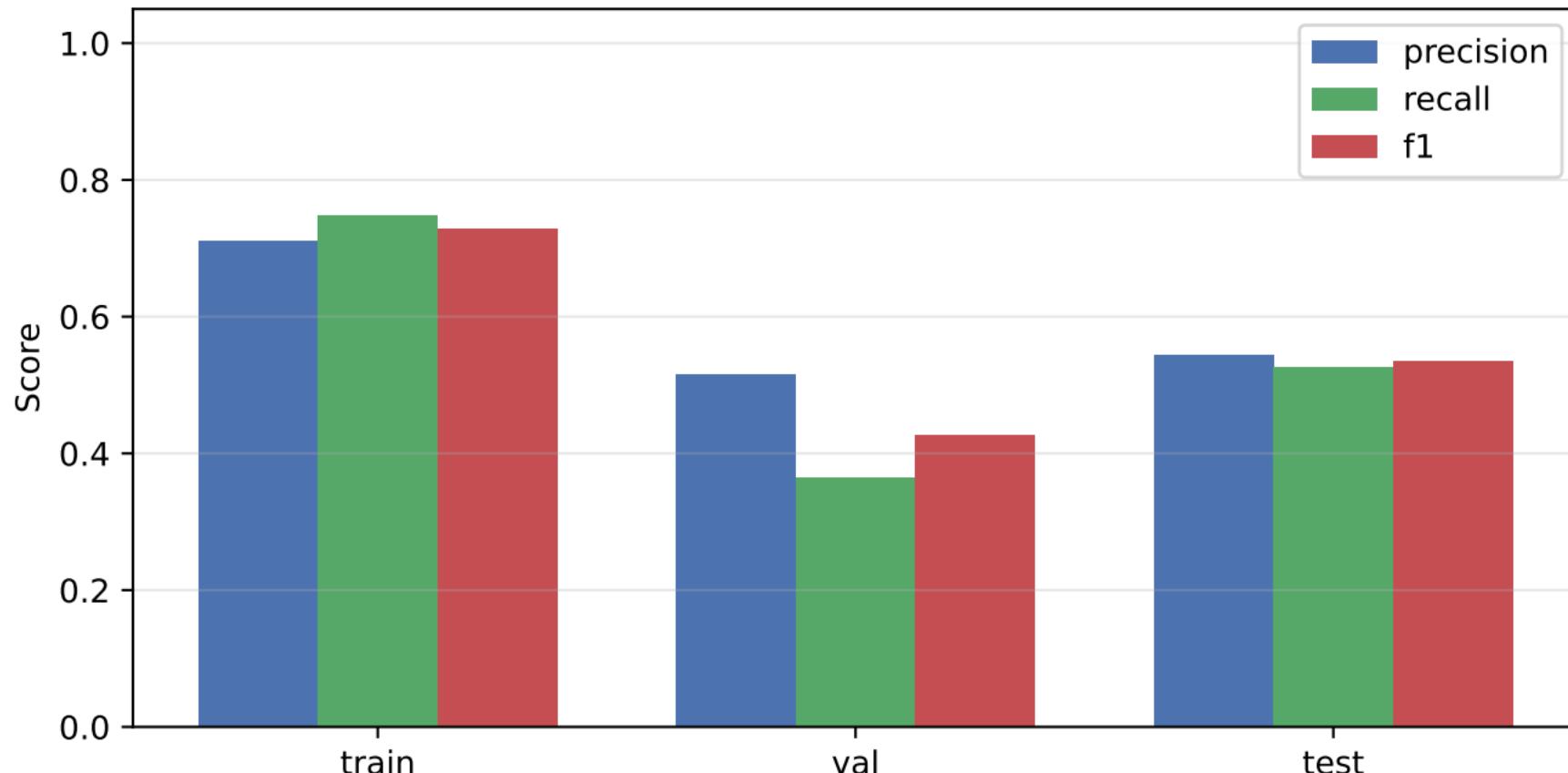
Label-Verteilung (neutral / up / down) Signal-Verteilung (0=neutral, 1=move) Richtung-Verteilung (nur signal==1)



EURUSD-Zeitreihe mit hervorgehobenen up/down-Tagen (ab 2020)



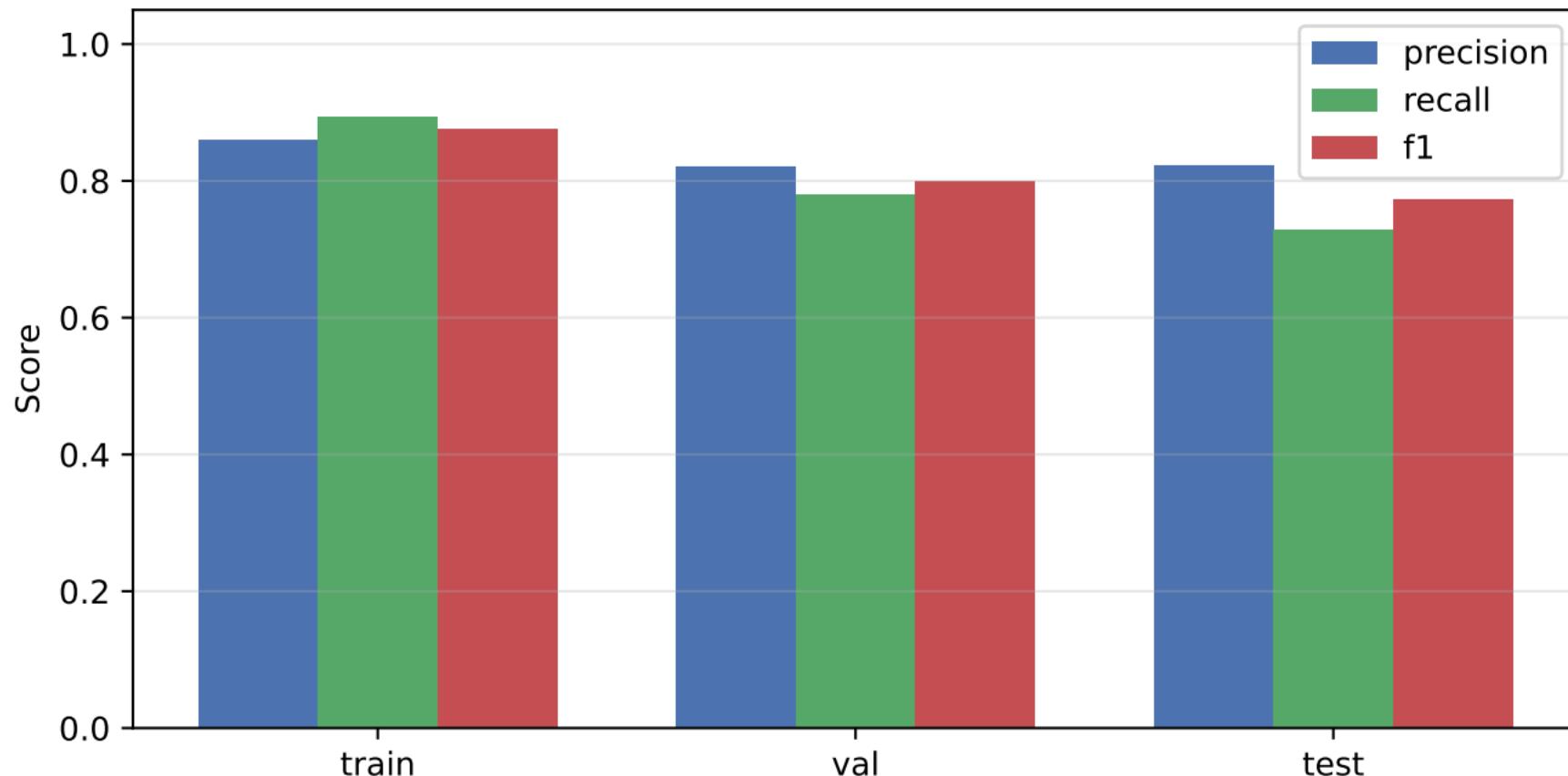
Signal-Modell - Kennzahlen für Klasse 'move' (train/val/test)



Signal-Modell - Tabelle (Klasse 'move')

split	precision	recall	f1	support
train	0.711	0.749	0.729	338.000
val	0.517	0.365	0.428	85.000
test	0.545	0.526	0.535	116.000

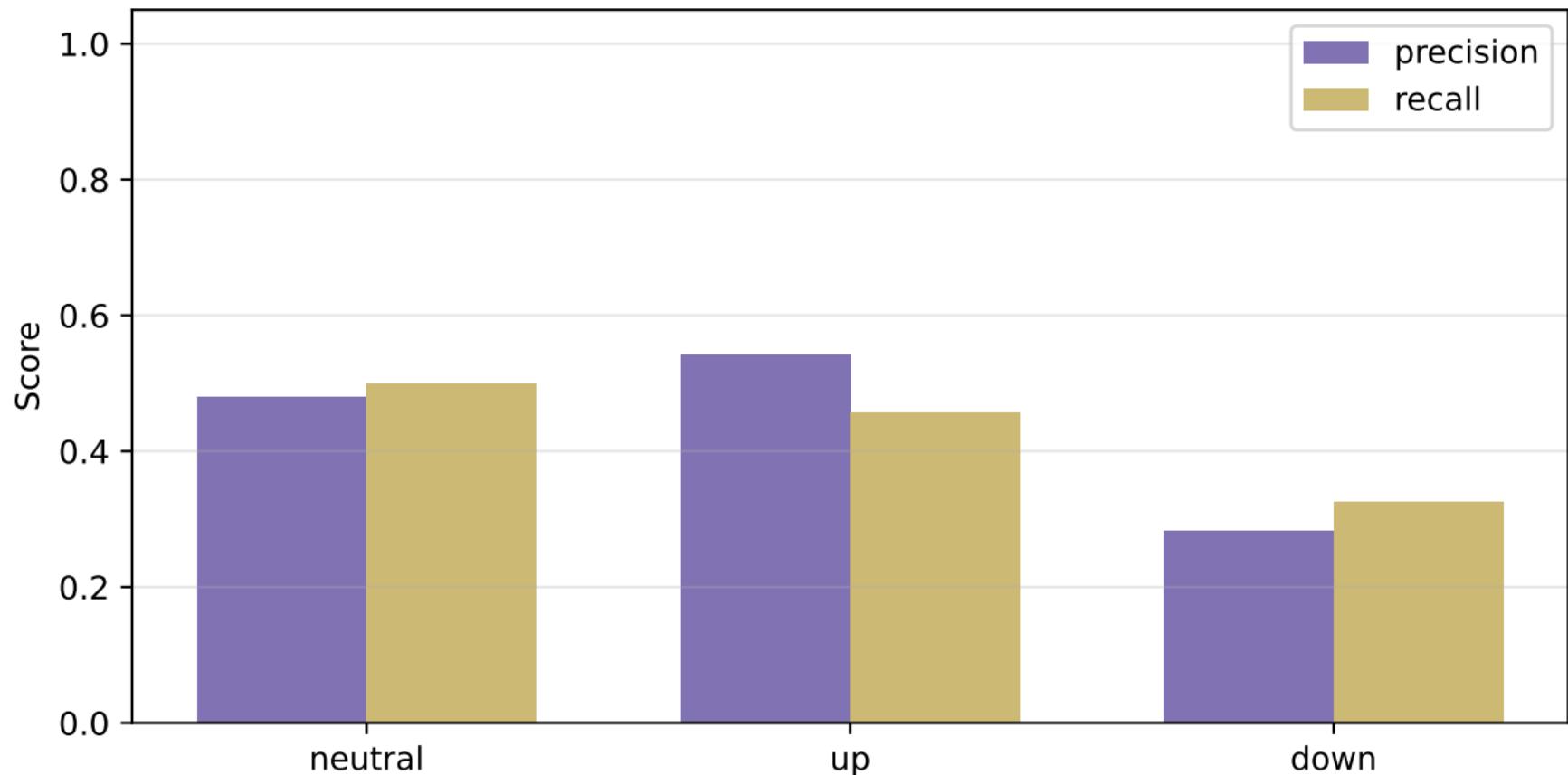
Richtungs-Modell – Kennzahlen für Klasse 'up' (train/val/test)



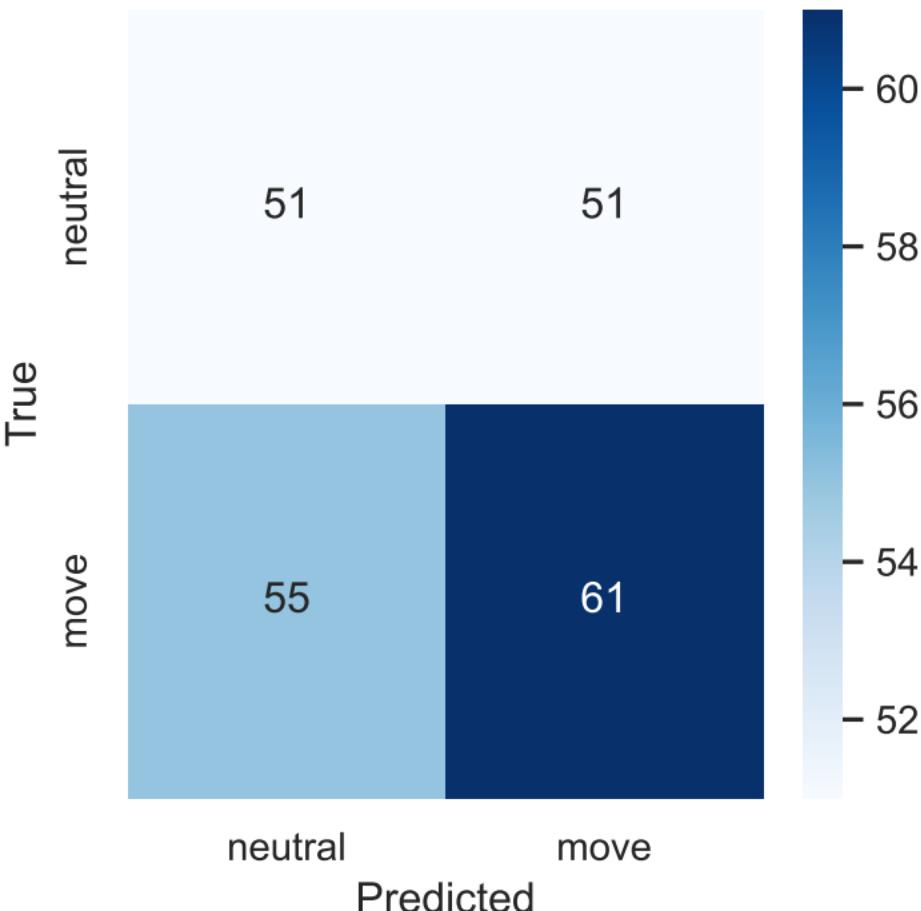
Richtungs-Modell - Tabelle (Klasse 'up')

split	precision	recall	f1	support
train	0.860	0.894	0.877	151.000
val	0.821	0.780	0.800	41.000
test	0.823	0.729	0.773	70.000

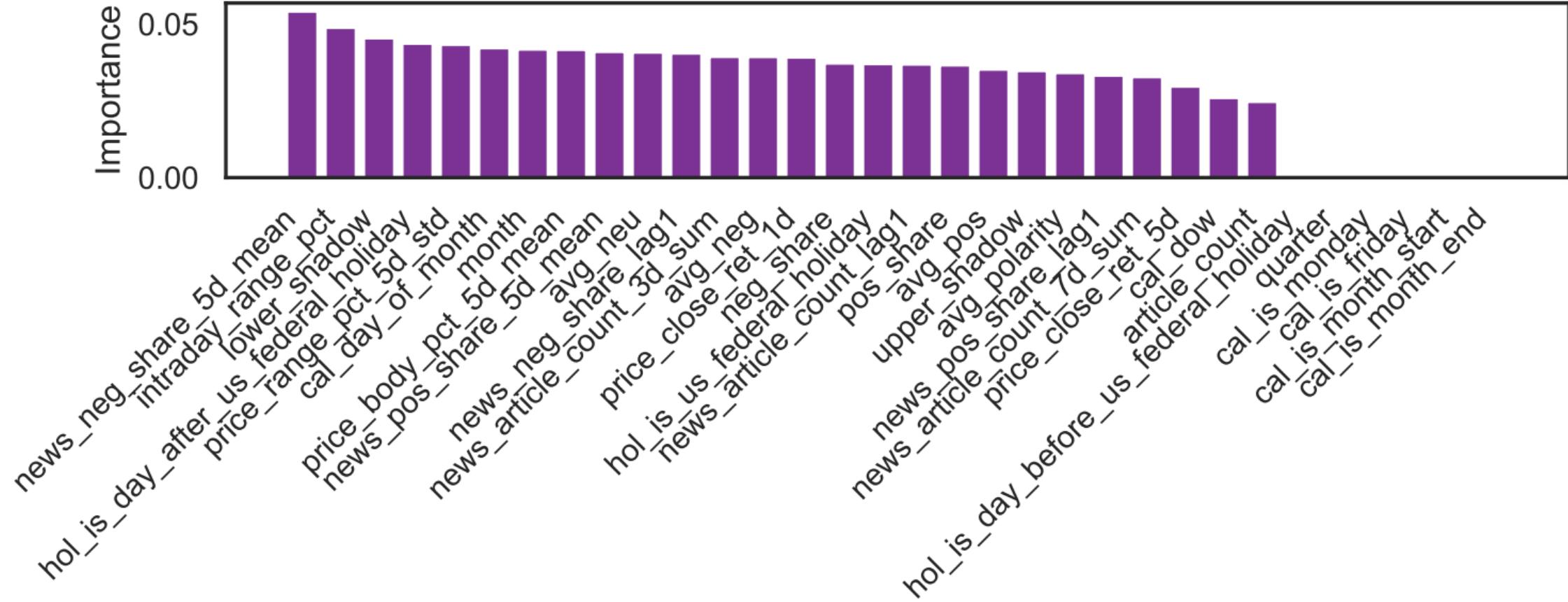
Kombinierte Test-Auswertung - neutral / up / down



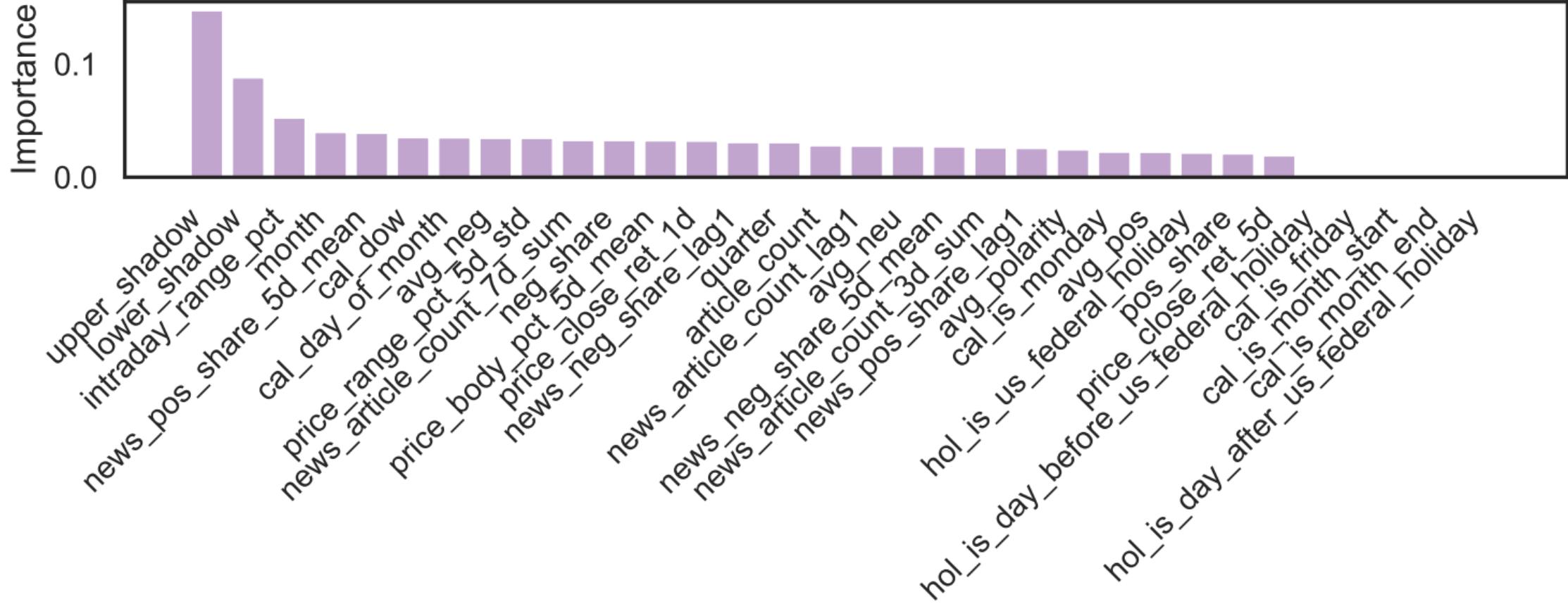
Confusion Matrix – Test (Signal: neutral vs. move)



Feature Importance – Signal-Modell



Feature Importance – Richtungs-Modell



Confusion Matrix – Test (Richtung: down vs. up)

