pipeline for robotweath.com post

Table of contents

1 robotwealth.com

The goal of robotwealth.com is build a `{targets}` pipeline of a blog post from robotwealth.com.

- [https://robotwealth.com/how-to-model-features-as-expected-returns/]

2 expected return models

./R/robotwealth.com/expected_returns_models.R

- features ~ expected returns
  - objective
    - predict then capitalise on future returns
  - intuitive optimisation and implementation
  - direct comparison of features
  - framework to add/eval old/new signals
- common *risk* models
  - e.g. covariance estimates
- expected return & risk models
  - direct comparison with trading costs
  - optimisation techniques to trade-off
    - return, risk, and turnover given constraints

2.1 Installation

Install the development version of robotwealth.com from GitHub with:

```
# install.packages("devtools")
devtools::install_github("JohnGavin/
robotwealth.com")
```

2.2 Project structure

2.2.a Tree structure

```
#> .
#> ├── DESCRIPTION
#> ├── LICENSE
#> ├── NAMESPACE
#> ├── R
#> ├── README.pdf
#> ├── README.qmd
#> ├── README.rmarkdown
#> ├── README.typ
#> ├── _extensions
#> ├── _quarto.yml
#> ├── _targets.yaml
#> ├── check.env
#> ├── data
#> ├── data-raw
#> ├── default.nix
#> ├── exp_ret_mdl.R
```

```
#> ├── exp_ret_mdl.yaml
#> ├── exp_ret_mdl_store
#> ├── man
#> ├── robotwealth.com.Rproj
#> ├── run.R
#> ├── run.sh
#> └── sub_shell
```

2.2.b File sizes

```
#> # A tibble: 73 × 3
#>                              path
size modify_date
#>                        <fs::path>
<fs::bytes> <date>
#>    1  data/perps_2301_2402.rda
2.98M 2024-02-28
#>            2        README.pdf
287.49K 2024-03-01
#>    3  _extensions/coatless/webr/
webr.lua                    19.64K
2024-03-01
#>            4        README.typ
15.84K 2024-03-01
#>    5  R/scripts/turnover_costs.R
14.9K 2024-02-26
#>    6 R/tar_plans/robotwealth.com/
tar_06_feat_evol.R          9.54K
2024-02-26
#>    7  _extensions/coatless/webr/
qwebr-compute-engine.js     9.44K
2024-03-01
#>    8 R/tar_plans/plan__preamble.R
8.97K 2024-02-23
#>    9  _extensions/coatless/webr/
qwebr-cell-elements.js       8.7K
2024-03-01
#>           10        R/scripts/
expected_returns_models.R
8.66K 2024-02-27
#> # i 63 more rows
```

2.3 Pipeline example

2.3.a `targets::tar_make`

```
#>     ✔      skipped     target
rolling_days_since_high_20
#> ✔ skipped target aprms
#>      ►      dispatched    target
url_stables_llama_files
#>      ●      completed     target
url_stables_llama_files [0 seconds]
#> ► dispatched target url_csv_files
#> ● completed target url_csv_files
[0 seconds]
#> ✔ skipped target gg_stepwise1
#>      ►      dispatched    branch
url_stables_llama_6411c91e
#>      ●      completed     branch
url_stables_llama_6411c91e       [0
seconds]
#>      ●      completed    pattern
url_stables_llama
#> ✔ skipped branch url_csv_db06cf58
#> ✔ skipped pattern url_csv
#>      ►      dispatched    branch
stables_llama_lst_61b26602
#>      ●      completed     branch
stables_llama_lst_61b26602    [0.132
seconds]
#>      ●      completed    pattern
stables_llama_lst
#>      ✔      skipped       branch
perps_lst_61b26602
#> ✔ skipped pattern perps_lst
#> ✔ skipped target stables_llama
#> ✔ skipped target perps_all
#> ✔ skipped target perps_ex_stbls
#> ✔ skipped target universe
#> ✔ skipped target features
#> ✔ skipped target gg_univ_size
#> ✔ skipped target model_df
#> ✔ skipped target start_date
#> ✔ skipped target gg_carry
#> ✔ skipped target gg_mome_by_yr
#> ✔ skipped target gg_mome
#> ✔ skipped target gg_breakout1
#> ✔ skipped target roll_xs_coeffs_df
#> ✔ skipped target roll_ts_coeffs_df
#> ✔ skipped target xs_coefs
#> ✔ skipped target df_roll_xs_coeffs
#> ✔ skipped target ts_coefs
#> ✔ skipped target df_roll_ts_coeffs
```

```
#> ✔ skipped target xs_coefs_df
#> ✔ skipped target ts_coefs_df
#> ✔ skipped target df_xs_coefs
#> ✔ skipped target gg_xs_coefs_df
#> ✔ skipped target exp_return_df
#> ✔ skipped target df_ts_coefs
#> ✔ skipped target gg_ts_coefs_df
#> ✔ skipped target strategy_df
#> ✔ skipped target backtest_funding
#> ✔ skipped target backtest_prices
#> ✔ skipped target backtest_weights
#> ✔ skipped target gg_returns_plot
#> ✔ skipped target gg_weights_plot
#>     ✔     skipped     target
backtest_funding_head
#>     ✔     skipped     target
backtest_prices_head
#>     ✔     skipped     target
sharpes_trade_buffers
#> ✔ skipped target results_df_1
#> ✔ skipped target results_df_2
#>     ✔     skipped     target
orig_res_with_costs
#>     ✔     skipped     target
backtest_weights_head
#> ✔ skipped target gg_rets_wghts
#> ✔ skipped target gg_trd_buf_param
#> ✔ skipped target gg_eq_curve_1
#> ✔ skipped target gg_eq_curve_2
#> ✔ skipped target gg_turnover
#> ✔ skipped target gg_orig_yes_cost
#> ▶ ended pipeline [0.541 seconds]
```

2.3.b Print data

```
#> # A tibble: 187,251 × 11
#>   ticker date        open  high
low  close dollar_volume num_trades
#>   <chr>  <date>      <dbl> <dbl>
<dbl> <dbl>       <dbl>      <dbl>
#>  1 BTCUSDT 2019-09-11 10172. 10293.
9884. 9992.    85955369.      10928
#>  2 BTCUSDT 2019-09-12  9992. 10365.
9934. 10327.   157223498.      19384
#>  3 BTCUSDT 2019-09-13 10327. 10450.
10239. 10297.  189055129.      25370
#>  4 BTCUSDT 2019-09-14 10295. 10396.
10154. 10358   206031349.      31494
```
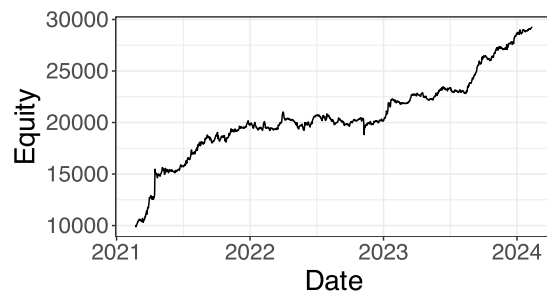
```
#>  5 BTCUSDT 2019-09-15 10356. 10420.
10025. 10306.    211326874.     27512
#>  6 BTCUSDT 2019-09-16 10307. 10354.
10115  10120.    208211376.     29030
#>  7 BTCUSDT 2019-09-17 10117. 10329.
10081. 10201.    223930859.     31866
#>  8 BTCUSDT 2019-09-18 10201. 10271.
10098. 10173.    221746132.     30440
#>  9 BTCUSDT 2019-09-19 10173. 10212.
9530.  9880.     225183077.     36439
#> 10 BTCUSDT 2019-09-20  9882 10332.
9875. 10181.     261266607.     37161
#> # i 187,241 more rows
#>     #     i     3     more
variables: taker_buy_volume <dbl>,
taker_buy_quote_volumne <dbl>,
#> #   funding_rate <dbl>
```
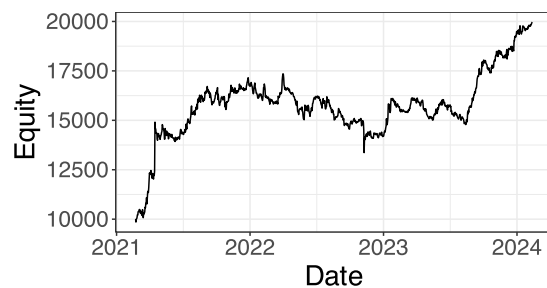
2.3.c Plot graphs

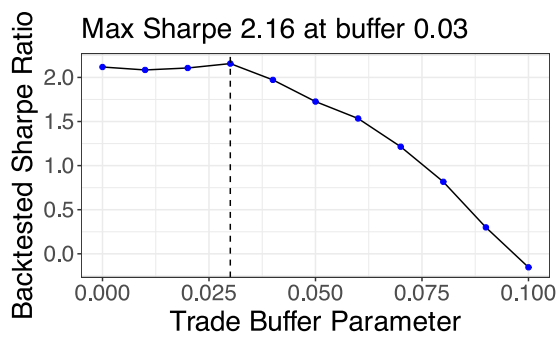Figure 1: Equity curve 2/2)

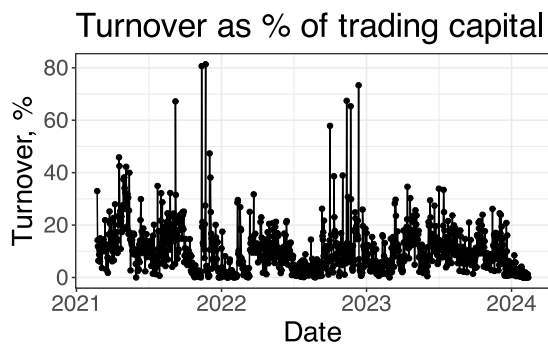Figure 2: Trade buffer parameter

Figure 5: Returns

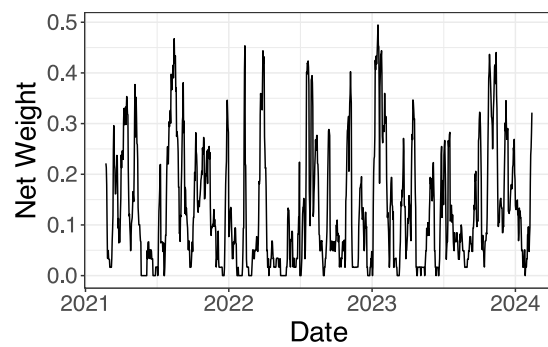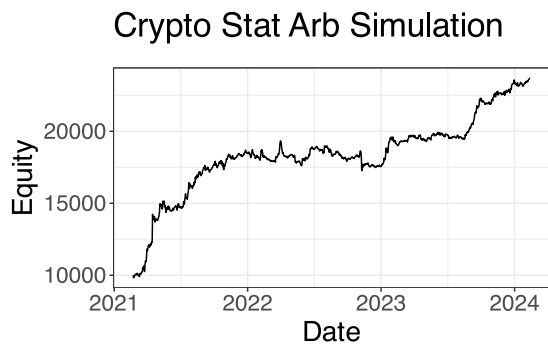Figure 3: Trade buffer parameter

Figure 6: weights
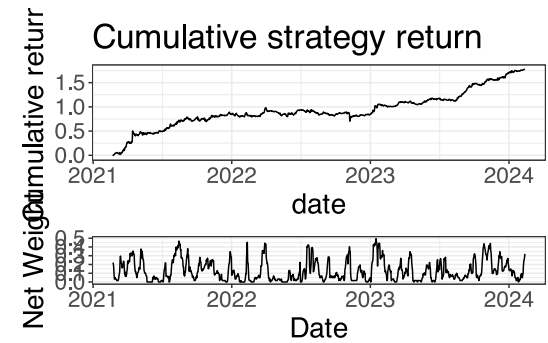

Figure 4: Orig with costs

Figure 7: Returns and weights

```
# sessionInfo
#
```

```
#> foo
```

Some text

This is a block with gray background and slightly rounded corners.

https://quarto.org/docs/output-formats/typst.html#typst-blocks