

# Package: outrigger (via r-universe)

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**Type** Package

**Title** Outrigger Regression

**Version** 1.1.0

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**Description** Performs outrigger local polynomial regression/  
distributional adaptation, using a score-matching spline  
estimator of the conditional score function. Details of the  
method can be found in Young, Shah and Samworth (2026)  
<[doi:10.48550/arXiv.2603.11282](https://doi.org/10.48550/arXiv.2603.11282)>.

**License** GPL-3

**Encoding** UTF-8

**Imports** Rcpp, np, mgcv, RColorBrewer

**LinkingTo** Rcpp

**Suggests** testthat (>= 3.0.0)

**RoxygenNote** 7.2.3

**NeedsCompilation** yes

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**Repository** <https://cran.r-universe.dev>

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 outrigger

*Performs outrigger regression at a point x*


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## Description

Performs outrigger regression at a point x

## Usage

```
outrigger(
  formula,
  data,
  xtest,
  degree = 0,
  bandwidth = NULL,
  kernel = "epan",
  lambda = NULL,
  folds = 5,
  scoregranality = 1,
  score_df = 10,
  verbose = TRUE
)
```

## Arguments

formula	formula (as in e.g. lm).
data	data frame.
xtest	datapoint(s) for local estimation.
degree	degree of polynomial.
bandwidth	bandwidth parameter. If NULL a rule-of-thumb bandwidth is selected by least-squares cross-validation for the standard local polynomial estimator.
kernel	kernel for local polyomial. Default is epanechnikov kernel.
lambda	orthogonalisation parameter. By default takes $\lambda = 4(1 + 0.5 \log(n))$ .
folds	number of folds for cross-fitting. Default is 5.
scoregranality	the number of bins to split covariate-space $ X - x  \leq \lambda h$ for conditional score estimation.
score_df	number of degrees of freedom for score matching splines used for conditional score estimation. Input can be a numeric value (e.g. 10 on larger datasets, 6 on smaller datasets) or "cross-validation" or "cross-validation-quick", in which case score-matching-CV will be performed (may be computationally costly).
verbose	suppresses messages of progress. Default is TRUE.

**Value**

If  $x$  is a single point, return a list containing:

`prediction` The outrigger local polynomial estimator  $\hat{f}(x)$  at  $x$ .

`fitted_vector` For the local linear outrigger estimator, the full fitted vector at  $x$

`standardlocpol_fitted_vector` The fitted vector for the standard local polynomial

`score_plot_metadata` Data used for score\_plotting to plot the fitted conditional score functions

If  $x$  is a vector of points, return a dataset with points  $x$  and associated outrigger fitted values.

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`score_plots`

*Plots the fitted score functions learnt in an outrigger fit.*

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**Description**

Plots the fitted score functions learnt in an outrigger fit.

**Usage**

```
score_plots(fitted_outrig, plot_together = TRUE)
```

**Arguments**

`fitted_outrig` a fitted object from `outrigger`

`plot_together` a logical denoting whether all score function estimators (across all covariate bins) should be plotted together. Default is TRUE.

**Value**

No return value, called for plotting the estimated score function.

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