# Package: ModLR (via r-universe)

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**Type** Package

**Title** Information-Theoretic Approach for Moderation Analysis

**Version** 0.1.29

**Description** Provides a robust implementation of information-theoretic moderation analysis using multi-model inference based on Akaike's Information Criterion (AIC) and its small-sample corrected form (Corrected AIC). The package enables researchers to compare competing model specifications and helps distinguish true interaction effects from nonlinear relationships that may produce spurious moderation. The methods build on Daryanto (2019) <doi:10.1016/j.jbusres.2019.06.012>.

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**Encoding** UTF-8

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**URL** https://github.com/ahdar1/ModLR

**Imports** stats, ggplot2, broom, lmtest, sandwich, rlang

**Suggests** knitr, rmarkdown

**VignetteBuilder** knitr

**NeedsCompilation** no

**Author** Ahmad Daryanto [aut, cre]

**Maintainer** Ahmad Daryanto <ahdar_2000@yahoo.com>

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**Repository** https://ahdar1.r-universe.dev

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`compare_models` *Compare Moderation Models*

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## Description

Compares candidate moderation models using information criteria (AIC/AICc).

## Usage

```
compare_models(object, models = NULL, corrected = TRUE)
```

## Arguments

| | |
|---|---|
| `object` | A "modlr" object |
| `models` | Optional numeric vector specifying which models to compare. If NULL (default), all candidate models are evaluated. |
| `corrected` | Logical; whether to use AICc |

## Value

A data frame with model comparison results

## Examples

```
set.seed(123)

n <- 100
x <- rnorm(n)
z <- 0.5 * x + sqrt(1 - 0.5^2) * rnorm(n)

y <- 0.3 * x + 0.3 * z + 0.8 * x * z + rnorm(n)

data <- data.frame(x, z, y)

result <- moderated_regression(data, iv = "x", moderator = "z", dv = "y")

compare_models(result)
compare_models(result, models = c(1, 2))
```

## johnson_neyman *Johnson-Neyman Analysis*

### Description

Computes regions of significance for an interaction effect.

### Usage

```
johnson_neyman(object, alpha = 0.05, robust = NULL)
```

### Arguments

| | |
|---|---|
| object | A fitted model (modlr object) |
| alpha | Significance level |
| robust | Logical; use HC3 robust standard errors |

### Value

A data.frame of Johnson-Neyman results

### Examples

```
set.seed(123)

n <- 100
x <- rnorm(n)
z <- 0.5 * x + sqrt(1 - 0.5^2) * rnorm(n)
y <- 0.3 * x + 0.3 * z + 0.8 * x * z + rnorm(n)

data <- data.frame(x, z, y)

result <- moderated_regression(data, iv = "x", moderator = "z", dv = "y")

johnson_neyman(result)
johnson_neyman(result, robust = TRUE)
```

## moderated_regression *Moderated Regression Model*

### Description

Fits a moderated regression model with optional extensions.

## Usage

```
moderated_regression(
  data,
  iv,
  moderator,
  dv,
  covariates = NULL,
  center = TRUE,
  quadratic = FALSE,
  robust_se = FALSE
)
```

## Arguments

| | |
|---|---|
| data | A data frame |
| iv | Independent variable |
| moderator | Moderator variable |
| dv | Dependent variable |
| covariates | Optional character vector of covariate names. Defaults to NULL (no covariates). |
| center | Logical; whether to center variables |
| quadratic | Logical; include quadratic terms |
| robust_se | Logical; use HC3 robust standard errors |

## Value

A fitted model object

## Examples

```
set.seed(123)

n <- 100
x <- rnorm(n)
w1 <- rnorm(n)
w2 <- rnorm(n)
z <- 0.5 * x + sqrt(1 - 0.5^2) * rnorm(n)

y <- 0.3 * x + 0.3 * z + 0.8 * x * z + rnorm(n)

data <- data.frame(w1, w2, x, z, y)

result <- moderated_regression(
 data,
 iv = "x",
 moderator = "z",
 dv = "y",
 covariates = c("w1", "w2")
 )
```

plot_moderation *Plot Moderation Effect*

## Description

Produces a plot of the moderation effect.

## Usage

```
plot_moderation(object)
```

## Arguments

| | |
|---|---|
| object | A fitted model |

## Value

A ggplot object

## Examples

```
set.seed(123)

n <- 100
x <- rnorm(n)
z <- 0.5 * x + sqrt(1 - 0.5^2) * rnorm(n)

y <- 0.3 * x + 0.3 * z + 0.8 * x * z + rnorm(n)

data <- data.frame(x, z, y)

result <- moderated_regression(data, iv = "x", moderator = "z", dv = "y")

plot_moderation(result)
```

`simple_slopes` *Simple Slopes Analysis*

## Description

Computes simple slopes for moderation analysis.

## Usage

```
simple_slopes(object, values = NULL)
```

## Arguments

| | |
|---|---|
| `object` | A fitted model |
| `values` | Moderator values at which to compute slopes |

## Value

A data frame of slopes

## Examples

```
set.seed(123)

n <- 100
x <- rnorm(n)
z <- 0.5 * x + sqrt(1 - 0.5^2) * rnorm(n)

y <- 0.3 * x + 0.3 * z + 0.8 * x * z + rnorm(n)

data <- data.frame(x, z, y)

result <- moderated_regression(data, iv = "x", moderator = "z", dv = "y")

simple_slopes(result)
```

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