Package ‘ChannelAttribution’

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Type Package
Title Markov Model for the Online Multi-Channel Attribution Problem
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Description Advertisers use a variety of online marketing channels to reach consumers and they want to know the degree each channel contributes to their marketing success. It’s called the online multi-channel attribution problem. This package contains a probabilistic algorithm for the attribution problem. The model uses a k-order Markov representation to identifying structural correlations in the customer journey data. The package also contains three heuristic algorithms (first-touch, last-touch and linear-touch approach) for the same problem. The algorithms are implemented in C++. For customizations or interest in other statistical methodologies for web data analysis please contact <davide.altomare@gmail.com>.
License GPL (>= 2)
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ChannelAttribution-package ........................................... 2
Data ............................................................................. 3
heuristic_models .......................................................... 3
markov_model .............................................................. 4

Index 6
Description

Advertisers use a variety of online marketing channels to reach consumers and they want to know the degree each channel contributes to their marketing success. It’s called the online multi-channel attribution problem. In many cases, advertisers approach this problem through some simple heuristics methods that do not take into account any customer interactions and often tend to underestimate the importance of small channels in marketing contribution. This package provides a function that approaches the attribution problem in a probabilistic way. It uses a k-order Markov representation to identifying structural correlations in the customer journey data. This would allow advertisers to give a more reliable assessment of the marketing contribution of each channel. The approach basically follows the one presented in Eva Anderl, Ingo Becker, Florian v. Wangenheim, Jan H. Schumann (2014). Differently for them, we solved the estimation process using stochastic simulations. In this way it is also possible to take into account conversion values and their variability in the computation of the channel importance. The package also contains a function that estimates three heuristic models (first-touch, last-touch and linear-touch approach) for the same problem. For customizations or interest in other statistical methodologies for web data analysis please contact <davide.altomare@gmail.com>.

Details

Package: ChannelAttribution
Type: Package
Version: 1.3
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License: GPL (>= 2)

Package contains two functions: markov_model which estimates a k-order Markov model and heuristic_model which estimates three heuristic models (first-touch, last-touch and linear-touch) from customer journey data.

Author(s)

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References

Data

**Customer journeys data**

**Description**

Customer path data with conversions and conversion value.

**Usage**

`data(PathData)`

**Format**

`data` is a data.frame with 10,000 rows and 4 columns: "path" containing customer paths, "total_conversions" containing total number of conversions, "total_conversion_value" containing total conversion value and "total_null" containing total number of paths that do not lead to conversion.

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heuristic_models

**Heuristic models for the online attribution problem**

**Description**

Estimate three heuristic models (first-touch, last-touch, linear) from customer journey data.

**Usage**

`heuristic_models(Data, var_path, var_conv, var_value=NULL)`

**Arguments**

- **Data**: data.frame containing paths and conversions.
- **var_path**: name of the column containing paths.
- **var_conv**: name of the column containing total conversions.
- **var_value**: name of the column containing total conversion value.

**Value**

An object of class data.frame with the estimated number of conversions and the estimated conversion value attributed to each channel for each model.

**Author(s)**

Davide Altomare (<davide.altomare@gmail.com>).
Examples

data(PathData)

# uncomment the following lines to run the examples

# heurCistic_models(Data,"path","total_conversions")
# heurCistic_models(Data,"path","total_conversions",var_value="total_conversion_value")

markov_model

Markov model for the online attribution problem

Description

Estimate a k-order Markov model from customer journey data.

Usage

markov_model(Data, var_path, var_conv, var_value=NULL, var_null=NULL,
order=1, nsim=1e+06, n_boot=1e+06, n_single_boot=30, out_more=FALSE)

Arguments

Data       data.frame containing paths and conversions.
var_path   name of the the column containing paths.
var_conv   name of the column containing total conversions.
var_value  name of the column containing total conversion value.
var_null   name of the column containing total paths that do not lead to conversions.
order      order of Markov Model.
sim        number of total simulations from transition matrix.
n_boot     number of bootstrap samples from the empirical distribution of the maximum
            number of steps between channels.
n_single_boot dimension of the bootstrap sample.
out_more    if TRUE returns the transition probabilities between channels and removal effects.

Value

An object of class data.frame with the estimated number of conversions and the estimated conversion value attributed to each channel.

Author(s)

Davide Altomare (<davide.altomare@gmail.com>).
Examples

data(PathData)

#uncomment the following lines to run the examples

#markov_model(Data, "path", "total_conversions")
#markov_model(Data, "path", "total_conversions",
  #    var_value="total_conversion_value")
#markov_model(Data,"path","total_conversions",
  #    var_value="total_conversion_value", var_null="total_null")
#markov_model(Data, "path", "total_conversions",
  #    var_value="total_conversion_value", var_null="total_null", out_more=TRUE)
Index

*Topic channel attribution *heuristic_models, 3
  ChannelAttribution-package, 2
  markov_model, 4
*Topic channel marketing
  ChannelAttribution-package, 2
*Topic customer journey dataset *Data, 3
*Topic customer journey
  ChannelAttribution-package, 2
*Topic customer path data *Data, 3
*Topic dataset
  Data, 3
*Topic first touch
  heuristic_models, 3
*Topic last touch
  heuristic_models, 3
*Topic linear touch
  heuristic_models, 3
*Topic marketing attribution
  ChannelAttribution-package, 2
*Topic markov graph
  markov_model, 4
*Topic markov model
  markov_model, 4
*Topic multi channel funnel
  ChannelAttribution-package, 2
*Topic multi channel marketing
  ChannelAttribution-package, 2
*Topic online attribution
  ChannelAttribution-package, 2
*Topic web marketing
  ChannelAttribution-package, 2
*Topic web statistics
  ChannelAttribution-package, 2

ChannelAttribution
  (ChannelAttribution-package), 2
ChannelAttribution-package, 2

Data, 3