Package 'RcppHungarian'

January 20, 2025

Type Package

Title Solves Minimum Cost Bipartite Matching Problems

Version 0.3

Date 2023-09-05

Maintainer Justin Silverman <JustinSilverman@psu.edu>

Copyright See file COPYRIGHT for details

Description Header library and R functions to solve minimum cost bipartite matching problem using Huhn-Munkres algorithm (Hungarian algorithm; <https://en.wikipedia.org/wiki/Hungarian_algorithm>; Kuhn (1955) <doi:10.1002/nav.3800020109>). This is a repackaging of code written by Cong Ma in the GitHub repo <https://github.com/mcximing/hungarian-algorithm-cpp>.

License GPL (>= 2)

Imports Rcpp (>= 1.0.1)

LinkingTo Rcpp

Suggests testthat (>= 2.1.0), knitr, rmarkdown, ggplot2

RoxygenNote 7.2.3

VignetteBuilder knitr

URL https://github.com/jsilve24/RcppHungarian

NeedsCompilation yes

Author Justin Silverman [aut, cre],
Cong Ma [ctb, cph],
Markus Buehren [ctb, cph]

Repository CRAN

Date/Publication 2023-09-05 22:40:02 UTC

Contents

HungarianSolver   *Hungarian Algorithm Solver*

Description

Solves weighted bipartite matching problems (e.g., optimal matching of people to cars or optimal matching of students to colleges, etc...)

Usage

```
HungarianSolver(costMatrix)
```

Arguments

costMatrix   matrix giving cost of each possible pairing - can be rectangular

Details

this is a copy/wrapper for the code developed by Cong Ma and made available as a github repository (mcximing/hungarian-algorithm-cpp). Code was changed to a header only file for use in other Rcpp packages.

Value

List with cost and parings, pairings are given as an Nx2 matrix giving edges that are matched (1-indexed rather than 0-indexed as it will be returned to R)

Examples

```
cost <- rbind(c(1, 2, 0),
              c(2, 0, 1),
              c(1, 4, 19))
soln <- HungarianSolver(cost)
soln
```

RcppHungarian_package   *RcppHungarian*

Description

Header Library and R Functions to Solve Minimum Cost Bipartite Matching Problem using Huhn-Munkres algorithm (Hungarian algorithm; <https://en.wikipedia.org/wiki/Hungarian_algorithm>; Kuhn (1955) doi:10.1002/nav.3800020109). This is a repackaging of code written by Cong Ma in the GitHub repo <https://github.com/mcximing/hungarian-algorithm-cpp>.

Index