

IX International Workshop on Locational Analysis and Related Problems

Introduction to planar location with orloca

Cádiz, January 31

M. Muñoz-Márquez

manuel.munoz@uca.es

TeLoYDisRen Research Group

<http://fqm270.uca.es>

Statistics and Operation Research Department

Cadiz University, Spain



Universidad
de Cádiz

G r u p o

**T E L O Y
D I S C E N**

1 Introduction

2 Live demonstration

3 Conclusions and future work

What is orloca?

Orloca is:

- the acronym of Operational Research LOcational Analysis

What is orloca?

Orloca is:

- the acronym of Operational Research LOcational Analysis
- A free package for R: orloca

What is orloca?

Orloca is:

- the acronym of Operational Research LOcational Analysis
- A free package for R: orloca
- A **GUI** to location problem **solver**: RcmdrPlugin.orloca

What is orloca?

Orloca is:

- the acronym of Operational Research LOcational Analysis
- A free package for R: orloca
- A GUI to location problem solver: RcmdrPlugin.orloca
- An **online interactive application**:
<http://knuth.uca.es/shiny/orloca>

What is orloca?

Orloca is:

- the acronym of Operational Research LOcational Analysis
- A free package for R: orloca
- A GUI to location problem solver: RcmdrPlugin.orloca
- An online interactive application:
<http://knuth.uca.es/shiny/orloca>

But it is also designed to be:

- A way to **introduce our students** to location problems

What is orloca?

Orloca is:

- the acronym of Operational Research LOcational Analysis
- A free package for R: orloca
- A GUI to location problem solver: RcmdrPlugin.orloca
- An online interactive application:
<http://knuth.uca.es/shiny/orloca>

But it is also designed to be:

- A way to introduce our students to location problems
- A good approach to make location problems known to potential users

What is orloca?

Orloca is:

- the acronym of Operational Research LOcational Analysis
- A free package for R: orloca
- A GUI to location problem solver: RcmdrPlugin.orloca
- An online interactive application:
<http://knuth.uca.es/shiny/orloca>

But it is also designed to be:

- A way to introduce our students to location problems
- A good approach to make location problems known to potential users
- A tool that can be used by **non expert users**

What is orloca?

Orloca is:

- the acronym of Operational Research LOcational Analysis
- A free package for R: orloca
- A GUI to location problem solver: RcmdrPlugin.orloca
- An online interactive application:
<http://knuth.uca.es/shiny/orloca>

But it is also designed to be:

- A way to introduce our students to location problems
- A good approach to make location problems known to potential users
- A tool that can be used by non expert users
- A good starting point to **research** developing and testing new solvers

Motivation

- Not found an enough **user-friendly** solver

Motivation

- Not found an enough user-friendly solver
- Doesn't exist **software for R**

Motivation

- Not found an enough user-friendly solver
- Doesn't exist software for R
- An interactive **online** software is mandatory

Features

- loca.p is a **new class** for planar location problems

Features

- `loca.p` is a new class for planar location problems
- Can create and **edit** `loca.p` objects

Features

- `loca.p` is a new class for planar location problems
- Can create and edit `loca.p` objects
- **Random generation** of `loca.p` objects

Features

- `loca.p` is a new class for planar location problems
- Can create and edit `loca.p` objects
- Random generation of `loca.p` objects
- **Evaluation** of `distsum` function and it's gradient

Features

- `loca.p` is a new class for planar location problems
- Can create and edit `loca.p` objects
- Random generation of `loca.p` objects
- Evaluation of `distsum` function and it's gradient
- **Solve** minsum location problem

Features

- `loca.p` is a new class for planar location problems
- Can create and edit `loca.p` objects
- Random generation of `loca.p` objects
- Evaluation of `distsum` function and it's gradient
- Solve minsum location problem
- \mathcal{L}_p -norms can be used

Features

- `loca.p` is a new class for planar location problems
- Can create and edit `loca.p` objects
- Random generation of `loca.p` objects
- Evaluation of `distsum` function and it's gradient
- Solve minsum location problem
- l_p -norms can be used
- Can do various types of **graphics**

Let's go on live

Some data

Package	Downloads	Releases	First release
orloca	32.731	11	06/16/2008
RcmdrPlugin.orloca	26.956	6	11/26/2008

Note: Downloads until 01/21/2019 from official cran repositories given by dlstats package.

Conclusions

orloca can be used

- ① by teachers to teach planar location problem

Conclusions

orloca can be used

- ① by teachers to teach planar location problem
- ② by researchers to test new models

Conclusions

orloca can be used

- ① by teachers to teach planar location problem
- ② by researchers to test new models
- ③ by people to solve planar location problems

Future work

- 1 Continue the development of the software

Future work

- ① Continue the development of the software
- ② Include in the package more location models

Future work

- ① Continue the development of the software
- ② Include in the package more location models
- ③ Involve more people in the project

Future work

- ① Continue the development of the software
- ② Include in the package more location models
- ③ Involve more people in the project

Suggestions and collaborations will be very welcome

Do you want to choose one as next developing?

- ① Multi facility location in plane
- ② Single facility in n-dimensional space
- ③ Uncapacitated plant location problem

Vote here:

<http://knuth.uca.es/o>



IX International Workshop on Locational Analysis and Related Problems

Introduction to planar location with orloca

Cádiz, January 31

Thank you for your attention

M. Muñoz-Márquez

manuel.munoz@uca.es

Statistics and Operation Research Department
Cádiz University, Spain



Universidad
de Cádiz

