Rserve, renv, flask, Vue.js dans un docker pour intégrer des données omiques avec ASTERICS

Élise Maigné, Nathalie Vialaneix

nathalie.vialaneix@inrae.fr
http://www.nathalievialaneix.eu

R User Group Toulouse
19 octobre 2022

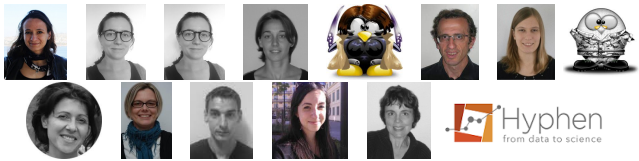
RÉPUBLIQUE FRANÇAISE
Liberté
Égalité
Fraternité

INRAE

What is ASTERICS?

- Genotoul Bioinfo Genotoul Biostat
- project (2020/2023) funded by La Région Occitanie Pyrénées · Méditerranée
- with a case study contribution from GenPhySE

Tool designed for interactive and integrative data analysis, oriented toward omics data.



How does it work?

The most dangerous part of the talk: the live demo...

https://asterics.miat.inrae.fr

Behind the scenes

Backend:  and Rserve

Behind the scenes

Backend:  and Rserve

PyRserve and 

(with 

and 

on the server side)

Behind the scenes

Backend:  and Rserve

↕

PyRserve and Flask (web development, one drop at a time)

(with gunicorn and NGINX on the server side)

↕

Frontend: Vue.js and BULMA

Behind the scenes

Backend:  and Rserve

↕

PyRserve and Flask (web development, one drop at a time)

(with gunicorn and NGINX on the server side)

↕

Frontend: Vue.js and BULMA

Why this choice?

- Opensource & designed to be light
- Vuejs: flexible and modular programming

Behind the scenes

Backend:  and Rserve

↕

PyRserve and Flask (web development, one drop at a time)

(with gunicorn and NGINX on the server side)

↕

Frontend: Vue.js and BULMA

Why this choice?

- Opensource & designed to be light
- Vuejs: flexible and modular programming

Compared to shiny?

- could have been a bit more flexible
- shiny deployment is hard (free shiny server / ShinyProxy)
- But: slower, more complicated to program, Rsessions are frequently hijacking the application

Main technical bottleneck from the R side

Data communications between Rserve and PyRserve is restricted to characters, numbers and vectors including these elements...!

Main technical bottleneck from the R side

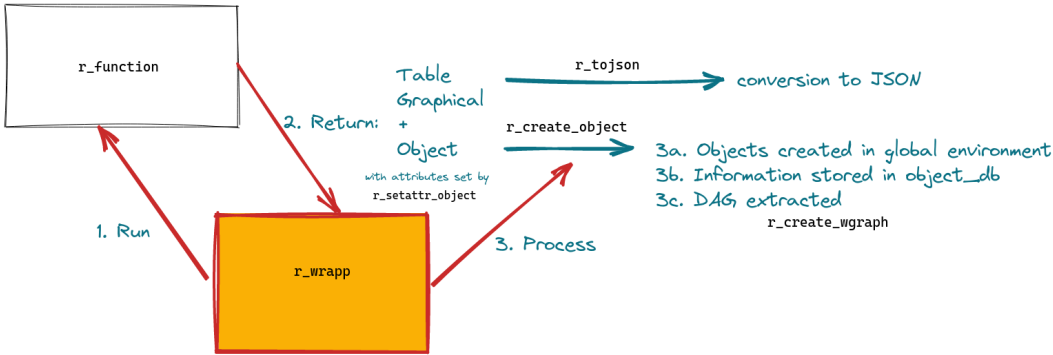
Data communications between Rserve and PyRserve is restricted to characters, numbers and vectors including these elements...!

Input arguments: dataset names (and not the actual object!) $\Rightarrow$ need for an object database + use of `get` and `assign`.

Main technical bottleneck from the R side

Data communications between Rserve and PyRserve is restricted to characters, numbers and vectors including these elements...!

Input arguments: dataset names (and not the actual object!) $\Rightarrow$ need for an object database + use of `get` and `assign`.



Deployment

First experience (for me) with 

Deployment

First experience (for me) with docker

Deployment

First experience (for me) with 

How does it work?

- three containers:  (stabilized with **renv**), Python, and nginx
- docker-compose used to combine them

From a user point of view:

- Just pull the images from our registry
- ... and use our docker-compose file (just one command line)!

Next steps

- a few bugs to fix
- a few other features to implement (metagenomics analyses are among them)
- test the deployment on other servers (with docker)
- upgrade  , packages, python modules, ... 

Online application: https://asterics.miat.inrae.fr

User documentation:
https://asterics.pages.mia.inra.fr/user_documentation/
Code repository (with installation instructions):
https://forgemia.inra.fr/asterics/asterics
Suggest an issue:
https://forgemia.inra.fr/asterics/asterics-issues/-/issues or
asterics-tlse@inrae.fr
Want to contribute? Technical documentation:
https://asterics.pages.mia.inra.fr/doc_asterics/