

Shiny Smart City:

A cidade inteligente em tempo real

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Orlando Celso Longo,
Luciane Ferreira Alcoforado,
Lincoln Sousa De Oliveira.

Seria possível criar um prédio inteligente com
Arduino, R e PostgreSQL?

*Sería posible crear un edificio inteligente con
Arduino, R y PostgreSQL*



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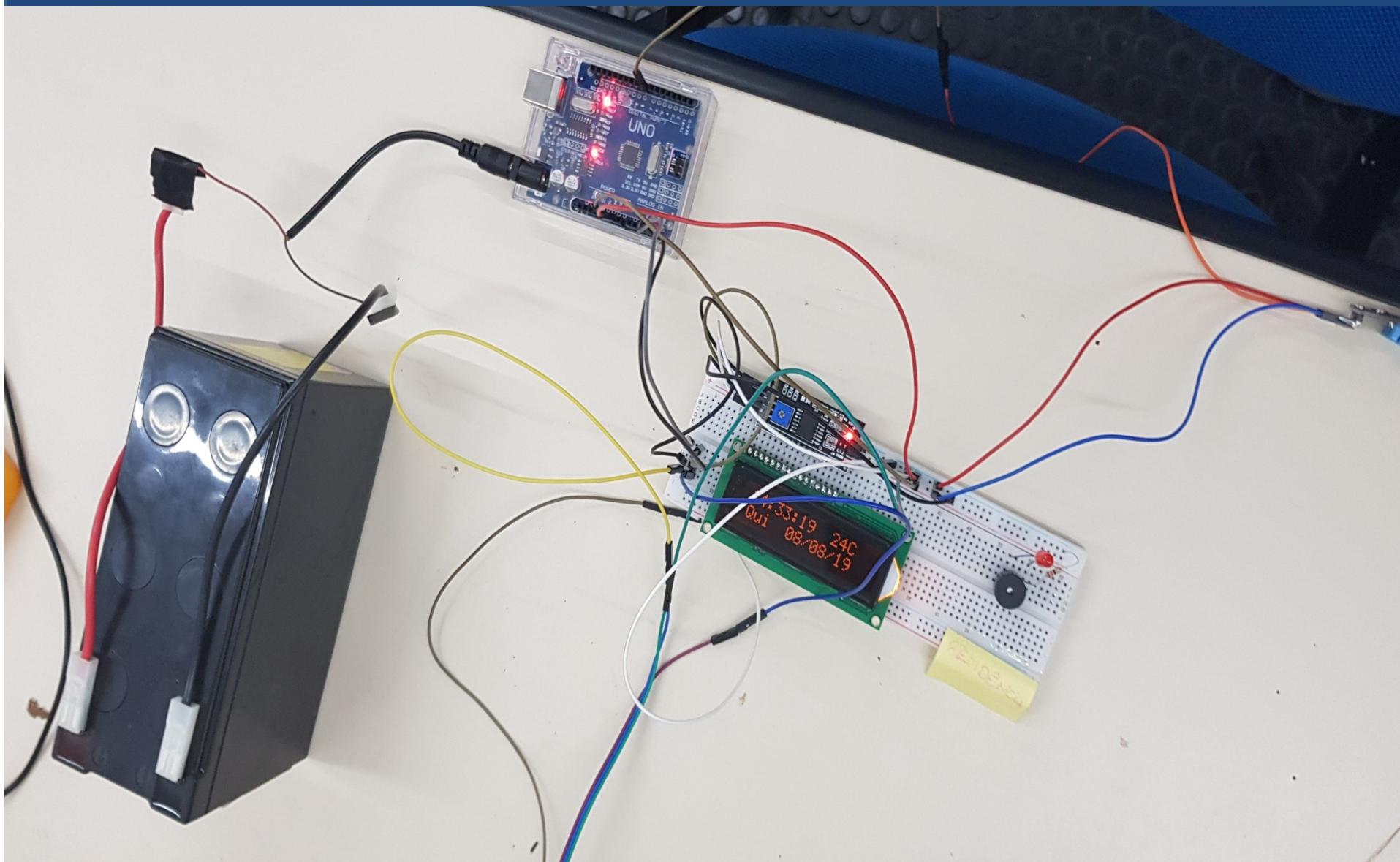
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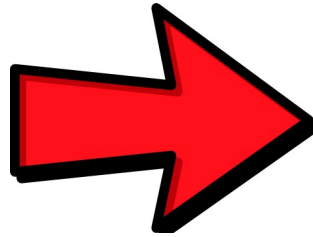
- Sensores

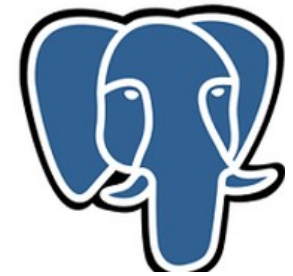
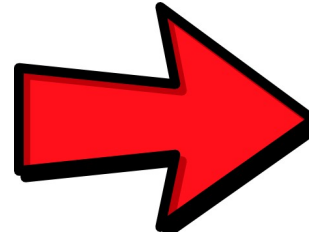
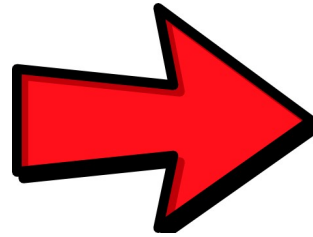
- Consumo de energia
- Detecção de fumaça (*Detección de humo*)
- Detecção de gás butano (*Detección de gas butano*)
- Temperatura

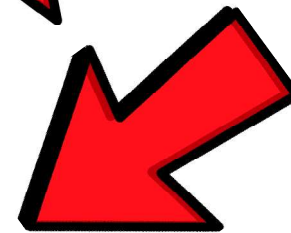
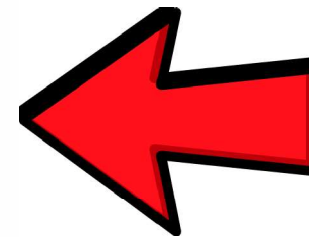
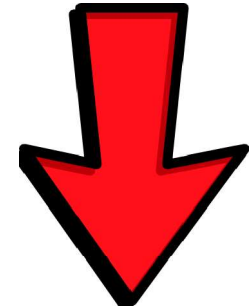
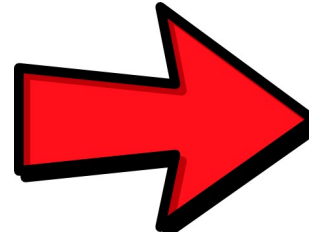
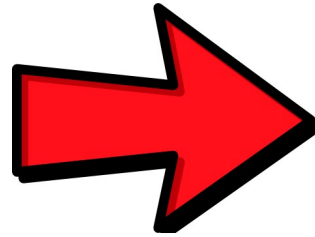


Método/Method
Shiny Smart City

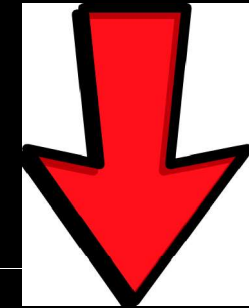
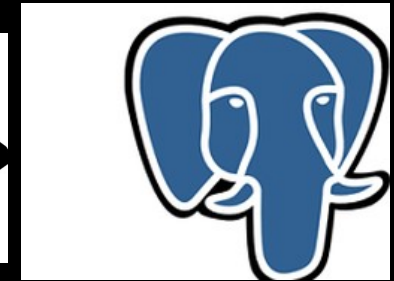
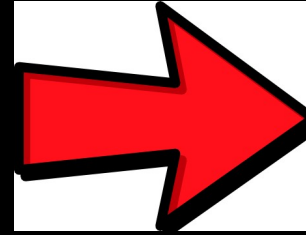
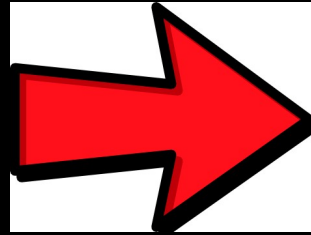




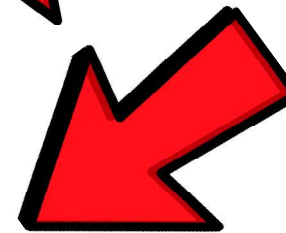
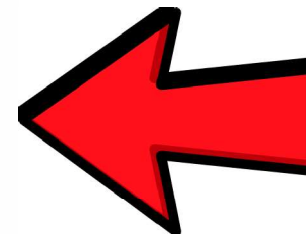




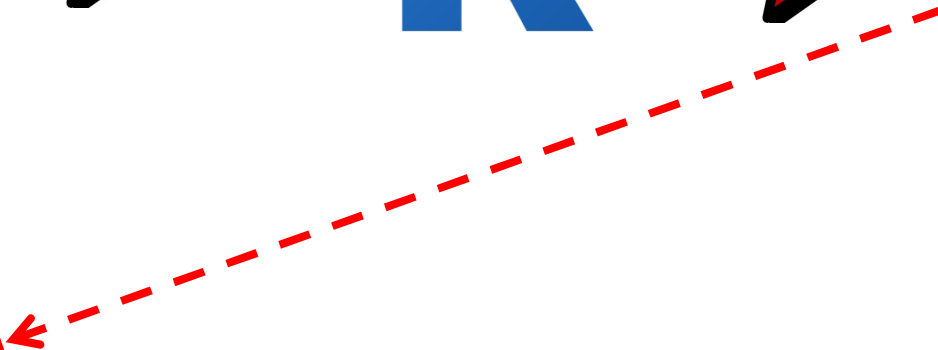
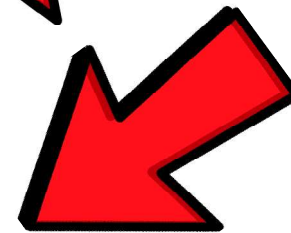
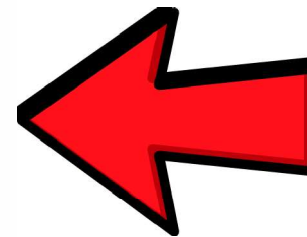
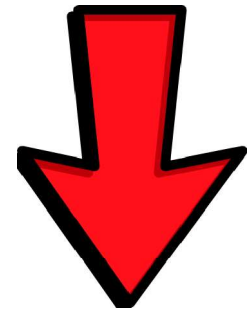
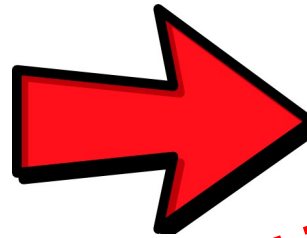
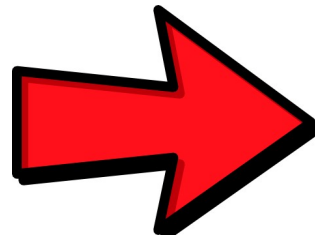
Parte 1. Leitura/Importação



Parte 2. Operação e Visualização

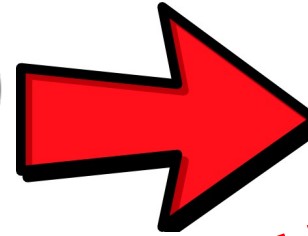
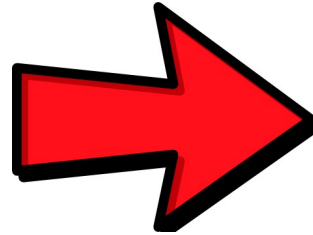


E-mail

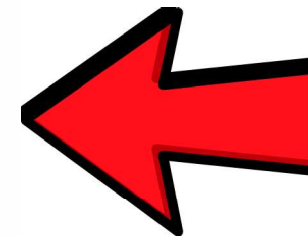
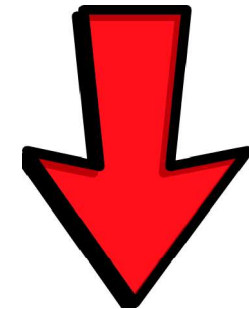




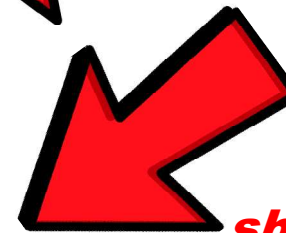
*Serial,
Rduino,
ArduinoR*



*RPostgreSQL,
Dplyr*



gmailr



*shiny, shinyjs,
ggplot2,
Highcharter*



CRA X Connec Reading arrow_c + - □

← → ↻ 🏠 ⓘ 🔒 https://cra 110% ⋮ 📄 ☆ ⬇️ ⏪

⚙️ Mais visitados 🌐 UCLA EDU Data Analy... 🌐 Show Me Shiny - Galle...

Rduino: A Microcontroller Interface

Functions for connecting to and interfacing with an 'Arduino' or similar device. Functionality includes uploading of sketches, setting and reading digital and analog pins, and rudimentary servo control. This project is not affiliated with the 'Arduino' company, <<https://www.arduino.cc/>>.

Version: 0.1
Depends: [serial](#)
Published: 2017-10-30
Author: Chris Suh, Peter Hoff
Maintainer: Peter Hoff <peter.hoff at duke.edu>
License: [GPL-3](#)
NeedsCompilation: no
CRAN checks: [Rduino results](#)

Downloads:

Reference manual: [Rduino.pdf](#)
Package source: [Rduino_0.1.tar.gz](#)
Windows binaries: r-devel: [Rduino_0.1.zip](#), r-release: [Rduino_0.1.zip](#),
r-oldrel: [Rduino_0.1.zip](#)
OS X binaries: r-release: [Rduino_0.1.tgz](#), r-oldrel: [Rduino_0.1.tgz](#)

CRA X Connec Reading arrow_c + - □

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⚙️ Mais visitados 🌐 UCLA EDU Data Analy... 🌐 Show Me Shiny - Galle...

serial: The Serial Interface Package

Enables reading and writing binary and ASCII data to RS232/RS422/RS485 or any other virtual serial interfaces of the computer.

Version: 2.1.4
Depends: R (≥ 2.15.0)
Published: 2019-06-04
Author: Martin Seilmayer
Maintainer: Martin Seilmayer <m.seilmayer at hzdr.de>
License: [GPL-2](#)
NeedsCompilation: no
CRAN checks: [serial results](#)

Downloads:

Reference manual: [serial.pdf](#)
Package source: [serial_2.1.4.tar.gz](#)
Windows binaries: r-devel: [serial_2.1.4.zip](#), r-release: [serial_2.1.4.zip](#),
r-oldrel: [serial_2.1.4.zip](#)
OS X binaries: r-release: [serial_2.1.4.tgz](#), r-oldrel: [serial_2.1.4.tgz](#)
Old sources: [serial archive](#)

Reactive polling

RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

+ R Folder Save Print Go to file/function Addins

Untitled3* x resumo de cada regressao.R x RVest_download_de_todos_as_bases_d...

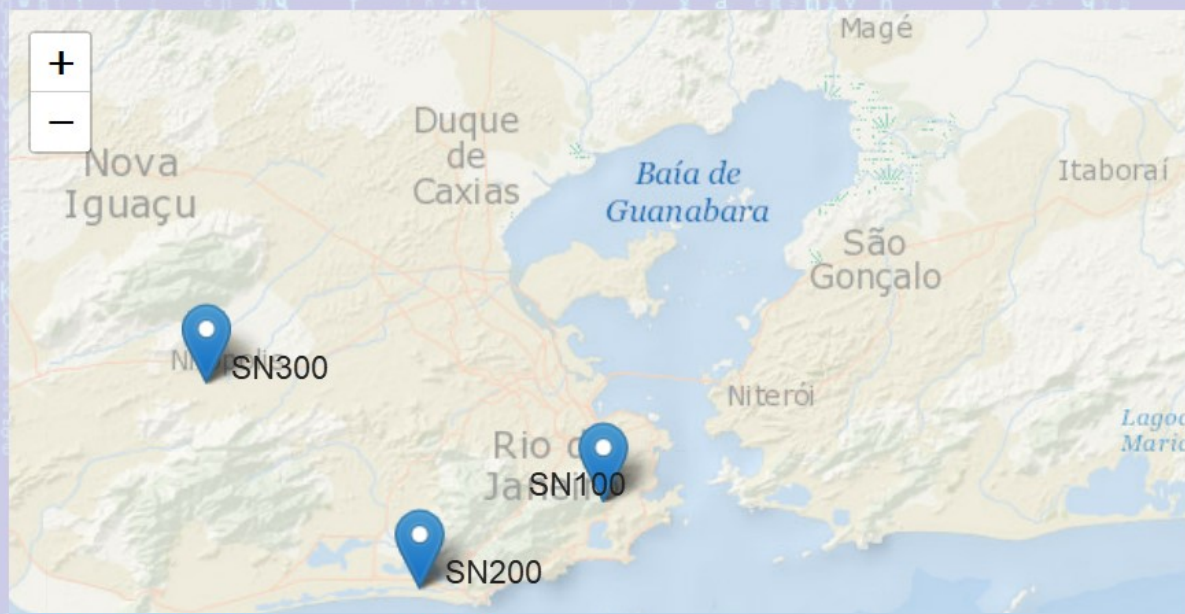
Navigation icons: back, forward, search, etc.

```
42
43
44 ReadAllData=function(){ # A function that calculates the
45   dados = tbl(localdb, "cidadesinteligentes")
46   dados =as.data.frame(dados)
47   dados$timestamp =as.POSIXct(as.numeric(as.character(da
48   dados
```

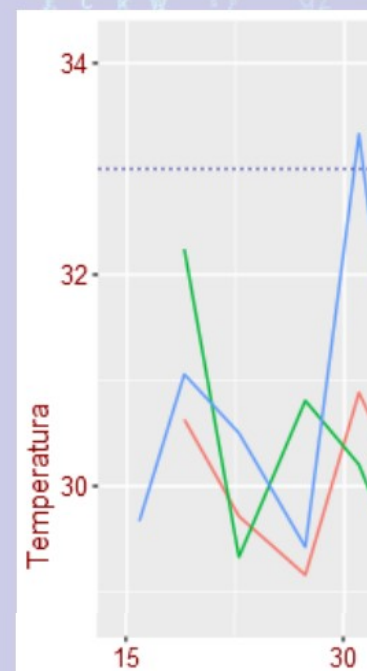
PROTÓTIPO



Resultado
Shiny Smart City



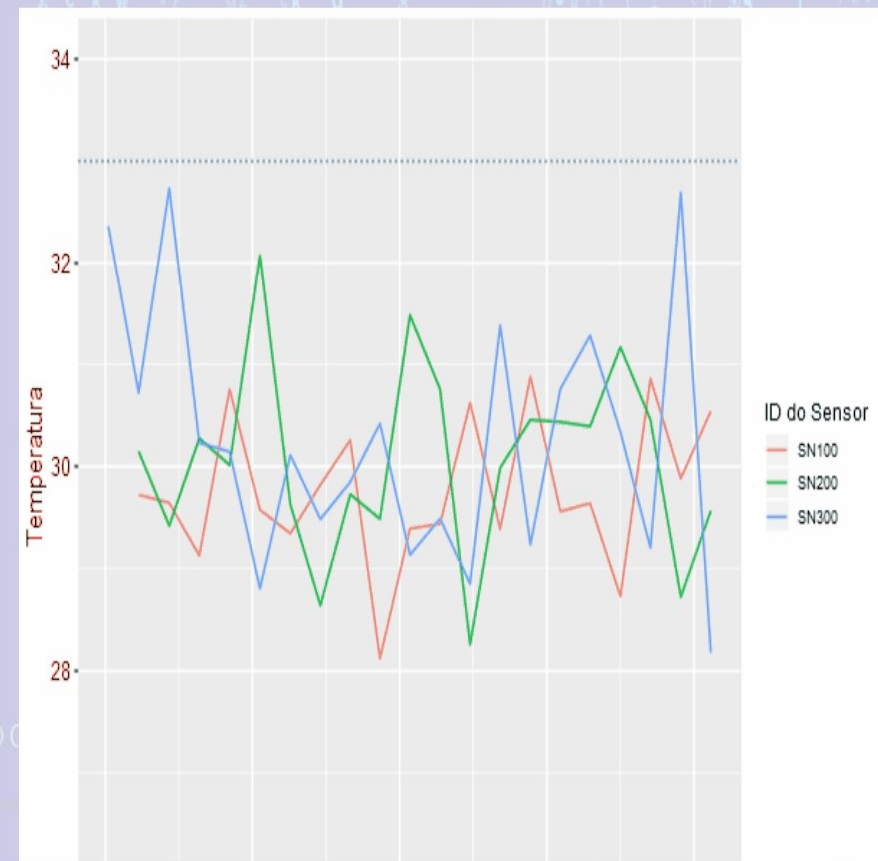
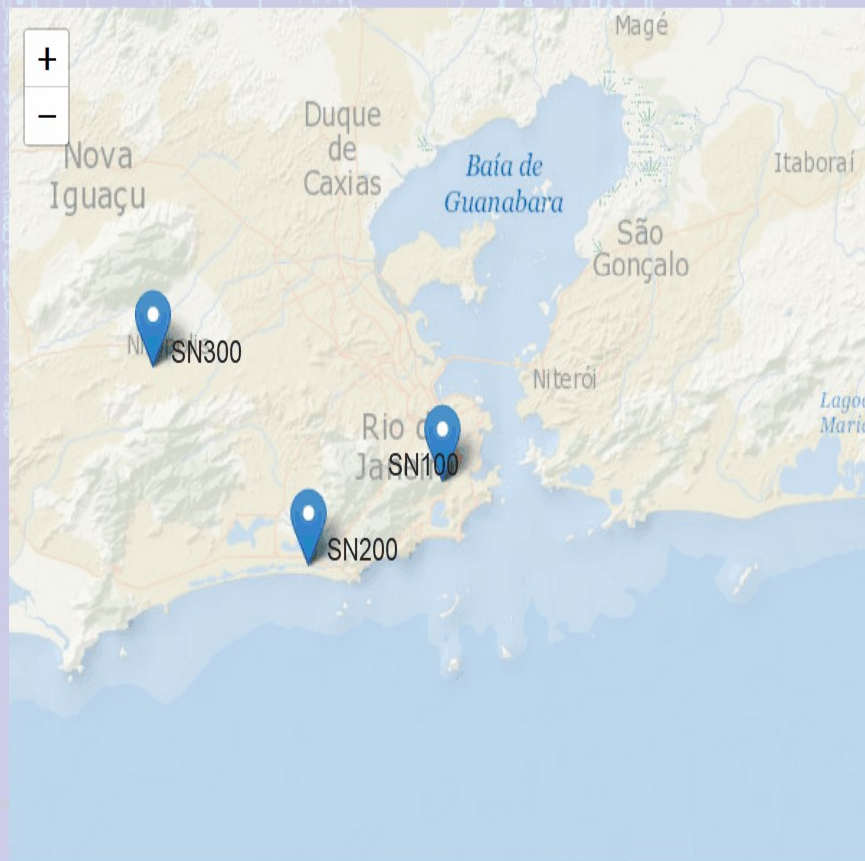
Leaflet | © OpenStreetMap contributors, CC-BY-SA, Tiles © Esri — Sources: GEBCO, NOAA, CHS, OSU, UNH, CSUMB, National Geographic, DeLorme, NAVTEQ, and Esri



Leitura do sensor a cada 10
segundos

*Lectura del sensor cada 10
segundos*

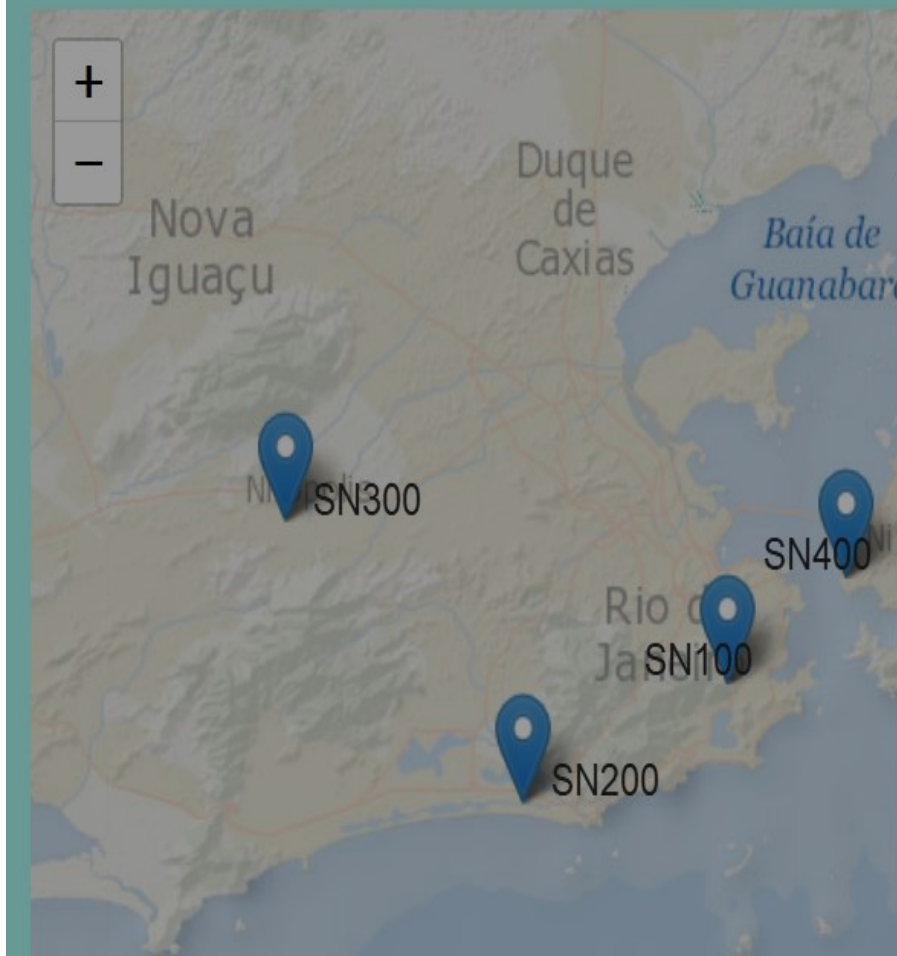
Projeto de sistema de segurança em edificações de cidades inteligentes



Notificação sonora e na tela caso o sensor deixe de funcionar ou se a leitura for fora do normal.

Notificación audible y en pantalla si el sensor no funciona o si la lectura es anormal.

Projeto de sistema de segurança em edificações



Falha de Sensor!

O Senso não funciona corretamente. ID do Sensor:

OK

Notificação por email

Notificación por correo electrónico



engenharia

 Compose

 Inbox

962

Starred

Snoozed

Important

Sent

Drafts

Categories

CSS JS HTML

Importante

Falha de Sensor! ➡ Inbox x

Smarteagle@gmail.com

to me ▾

11:39 AM (37 minutes ago)

Portuguese > English [Translate message](#)

Turn off for: Portuguese

Falha de Sensor! O Senso não funciona corretamente. Deverá ser substituído. ID do Sensor:

← Reply

➡ Forward




 Search mail

 Compose

 Inbox

 Starred

 Sent

Smarteagle@gmail.com



962

Alerta de Sensor: Leitura fora do normal  Inbox x



mestrado.engenharia.civil.uff@gmail.com

Smarteagle@gmail.com



Portuguese ▾ > English ▾ [Translate message](#)

63

Leitura fora do normal. A temperatura do Sensor está acima de 32 graus. ID do Sensor: SN300



Steven ▾

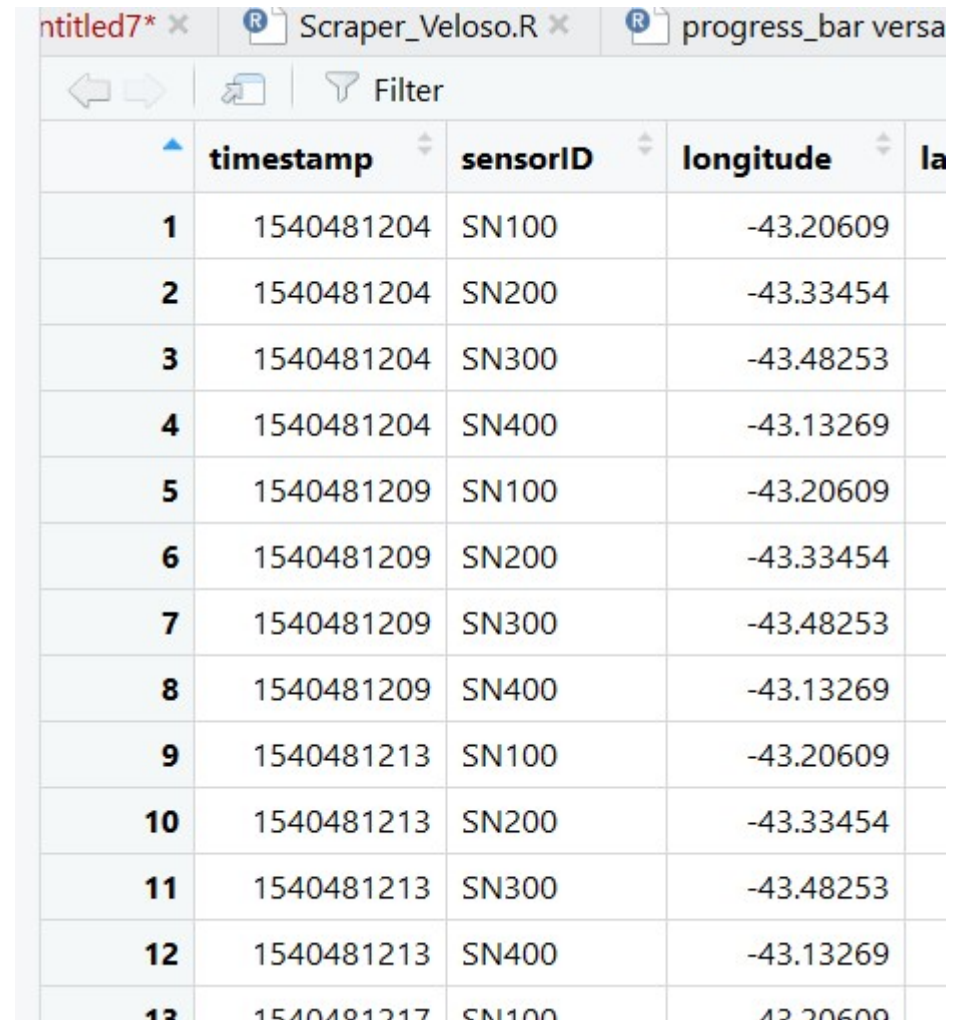


mestrado.engenharia.civil.uff@gmail.com

to me ▾

CÓPIA DE
SEGURANÇA
DE TODOS OS
DADOS

COPIA DE
SEGURIDAD
DE TODOS
LOS DATOS



ntitled7* x R Scraper_Veloso.R x R progress_bar versa

Filter

| | timestamp | sensorID | longitude | latitude |
|----|------------|----------|-----------|----------|
| 1 | 1540481204 | SN100 | -43.20609 | |
| 2 | 1540481204 | SN200 | -43.33454 | |
| 3 | 1540481204 | SN300 | -43.48253 | |
| 4 | 1540481204 | SN400 | -43.13269 | |
| 5 | 1540481209 | SN100 | -43.20609 | |
| 6 | 1540481209 | SN200 | -43.33454 | |
| 7 | 1540481209 | SN300 | -43.48253 | |
| 8 | 1540481209 | SN400 | -43.13269 | |
| 9 | 1540481213 | SN100 | -43.20609 | |
| 10 | 1540481213 | SN200 | -43.33454 | |
| 11 | 1540481213 | SN300 | -43.48253 | |
| 12 | 1540481213 | SN400 | -43.13269 | |
| 13 | 1540481217 | SN100 | -43.20609 | |

Dasafios

Desafíos

Biggest challenge: Streaming Data in Shiny



Desafios

- Sistema fica lento a partir de determinado momento (*El sistema se ralentiza de vez en cuando*)
- *Reiniciar o App Shiny as duas da manhã* (Reinicia la aplicación Shiny a las 2 a.m.)
- *Aumentar a eficiência (efficient R programming)*
- Sistema funcionou por 10 dias (*El sistema funcionó durante 10 días*).