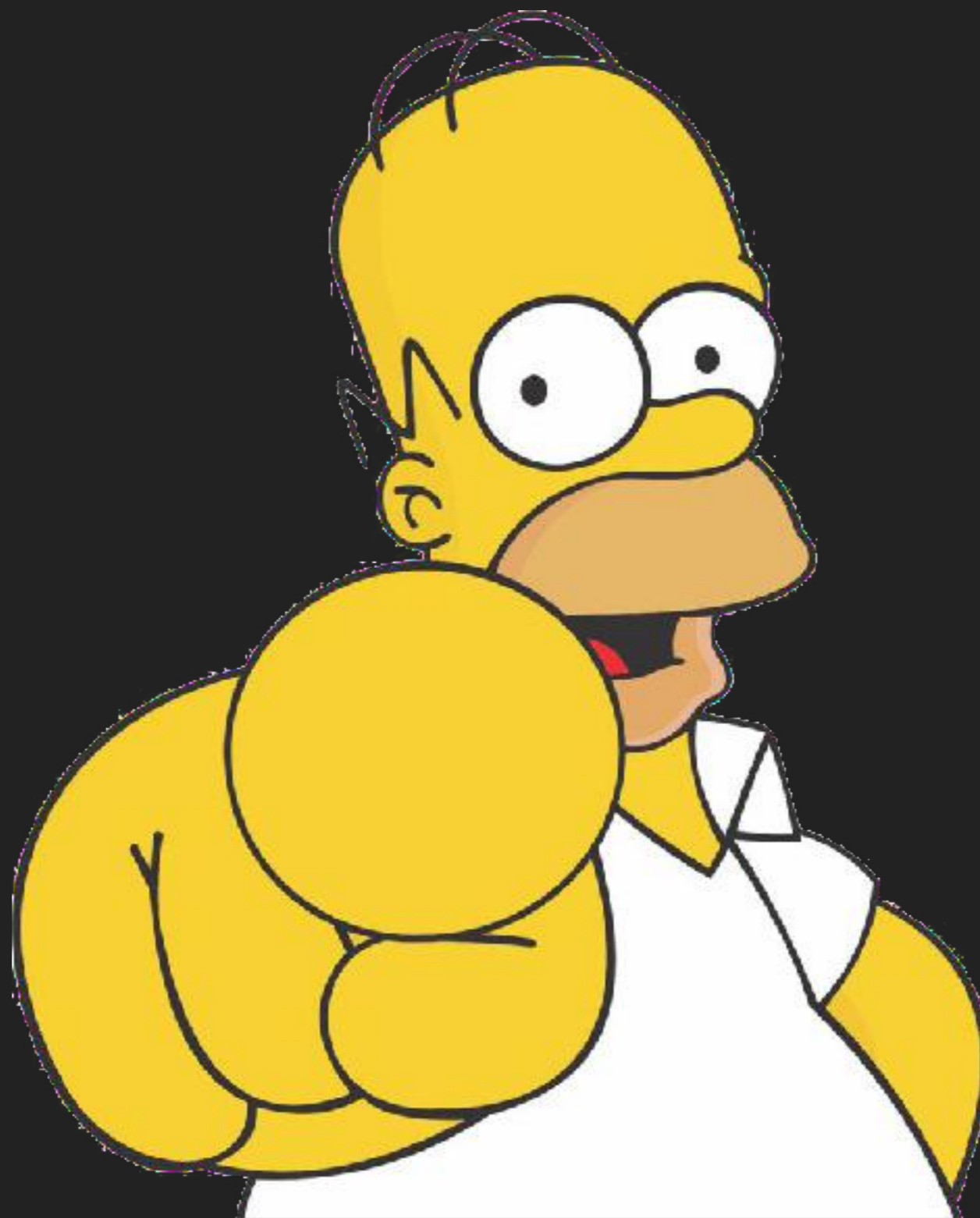


PGConf.Brasil 2018

AGRADECIMENTO



AGRADECIMENTO





Gustavo Boniziol Sperandio

Endereço para acessar este CV: <http://lattes.cnpq.br/3601443060054028>

Última atualização do currículo em 27/11/2016

Possui graduação em Sistema de Informação pelo Fundação de Assistência e Educação(2015). Tem experiência na área de Ciência da Computação, com ênfase em Sistemas de Computação. (Texto gerado automaticamente pela aplicação CVLattes)

Identificação

Nome Gustavo Boniziol Sperandio

Nome em citações bibliográficas SPERANDIO, G. B.

Endereço

Formação acadêmica/titulação

2011 - 2015 Graduação em Sistema de Informação.
Fundação de Assistência e Educação, FAESA, Brasil.
Título: UTILIZAÇÃO DE UMA REDE NEURAL ARTIFICIAL PARA INFERIR A PROBABILIDADE DE INFECÇÃO CIRÚRGICA POR STAPHYLOCOCCUS AUREUS EM PARTOS CESÁREOS.
Orientador: Cinthia Calari.

Formação Complementar

2014 - 2014 Desenvolvimento móvel com iOS. (Carga horária: 40h).
Caelum, CAELUM, Brasil.

2012 - 2012 Desenvolvimento móvel com Google Android. (Carga horária: 40h)
Caelum, CAELUM, Brasil.

O GRUPO





AGENDA



▶ Hardware



▶ Sistema operacional



▶ Instalação



▶ Desempenho



▶ IoT



▶ Micro DataCenter



HARDWARE (VERSÃO MAIS ATUAL 3 B+)

Bluetooth 4.2

Wireless 2.4GHz e 5GHz IEEE 802.11

b/g/n/ac

40-pin GPIO

Power-over-Ethernet (PoE)



Fonte: https://pt.wikipedia.org/wiki/Raspberry_Pi

Broadcom BCM2837B0, Cortex-A53 (**ARMv8**) 64-bit @ 1.4GHz

1GB LPDDR2 SDRAM

Gigabit Ethernet



HARDWARE (PONTOS RELEVANTES)

Educação

O projeto foi criado na Inglaterra para ensinar crianças a programarem

Processador ARM

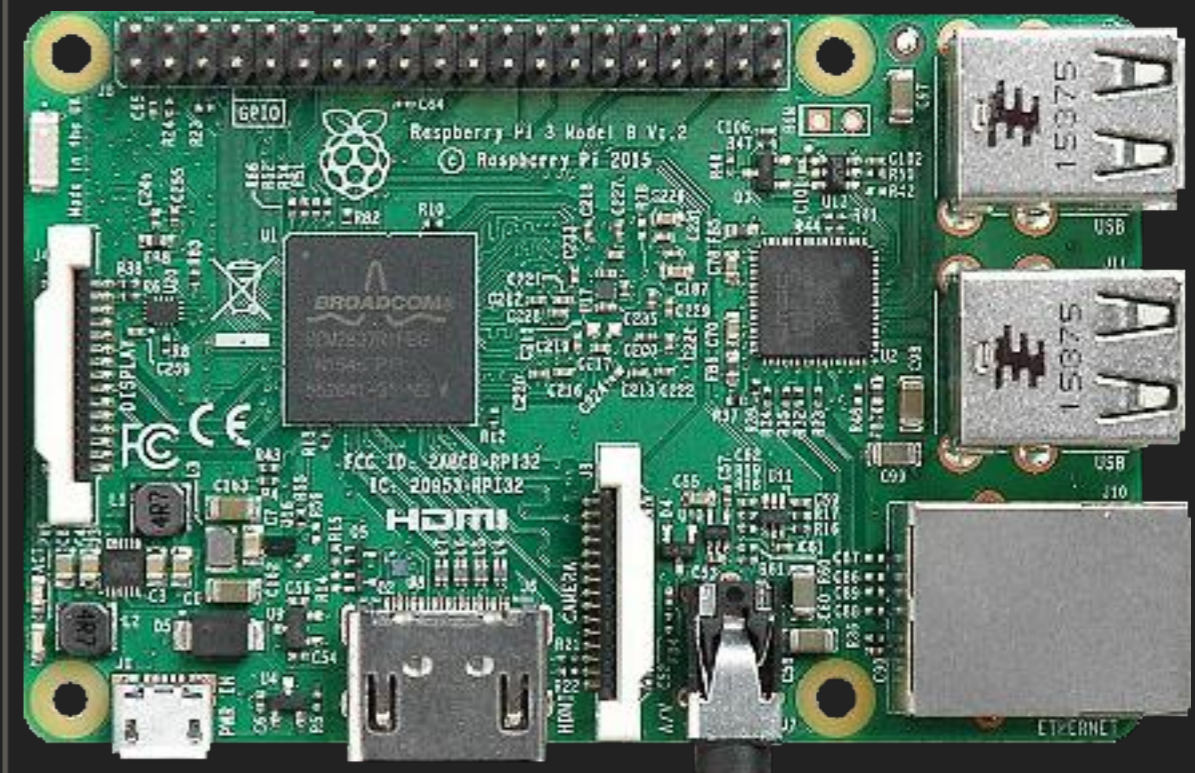
Arquitetura baseado na arquitetura RISC, permite um menor consumo de energia, com versões que suportam 64 bits como o V8, surgiram nos anos 80

GPIO

Permite conectar diversos tipos de sensores e através de protocolos como o I2C e outros, utiliza-los nas aplicações.

Open Source

O projeto nasce como aberto e permite que outros similares sejam criados, como o Banana-pi, Rock64, LattePanda, etc...



Fonte: https://pt.wikipedia.org/wiki/Raspberry_Pi

SISTEMA OPERACIONAL

Debian

Sistema operacional igual ao x86 porém compilado para ARM

Repositórios próprios

Alguns códigos fontes são similares, ou seja, quando compilados se ajustam a arquitetura

Aplicativos pré-instalados

Objetivo de iniciar as pessoas interessadas em aprender a programar (Python 2 e 3 IDE, Mathematica, Wolfram, Minecraft, etc..)

Outras opções

Sistemas como NOOBIS, Ubuntu mate, Snappy Ubuntu Core, Windows 10 IoT Core e Windows 10, OSMC, etc...



Fonte: <https://commons.wikimedia.org/wiki/>



INSTALAÇÃO

```
root@raspberrypi:/home/pi# apt-cache search postgresql-9.6
postgresql-9.6 - object-relational SQL database, version 9.6 server
postgresql-9.6-asnoid - ASN.1 OID data type for PostgreSQL
postgresql-9.6-citus - sharding and distributed joins for PostgreSQL
postgresql-9.6-dbg - debug symbols for postgresql-9.6
postgresql-9.6-debversion - Debian version number type for PostgreSQL
postgresql-9.6-ip4r - IPv4 and IPv6 types for PostgreSQL 9.6
postgresql-9.6-mimeo - specialized, per-table replication between PostgreSQL instances
postgresql-9.6-mysql-fdw - Postgres 9.6 Foreign Data Wrapper for MySQL
postgresql-9.6-orafce - Oracle support functions for PostgreSQL 9.6
postgresql-9.6-partman - PostgreSQL Partition Manager
postgresql-9.6-pgextwlist - PostgreSQL Extension Whitelisting
postgresql-9.6-pgfincore - set of PostgreSQL functions to manage blocks in memory
postgresql-9.6-pgmemcache - PostgreSQL interface to memcached
postgresql-9.6-pgmp - arbitrary precision integers and rationals for PostgreSQL 9.6
postgresql-9.6-pgpool2 - connection pool server and replication proxy for PostgreSQL - modules
postgresql-9.6-pgq3 - Skype tools for PostgreSQL replication, londiste and PGQ
postgresql-9.6-pgrouting - Routing functionality support for PostgreSQL/PostGIS
postgresql-9.6-pgrouting-doc - Routing functionality support for PostgreSQL/PostGIS (Documentation)
postgresql-9.6-pgrouting-scripts - Routing functionality support for PostgreSQL/PostGIS - scripts
postgresql-9.6-pgtap - Unit testing framework extension for PostgreSQL 9.6
postgresql-9.6-pllua - Lua procedural language for PostgreSQL 9.6
postgresql-9.6-plproxy - database partitioning system for PostgreSQL 9.6
postgresql-9.6-plr - Procedural language interface between PostgreSQL and R
postgresql-9.6-plsh - PL/sh procedural language for PostgreSQL 9.6
postgresql-9.6-plv8 - Procedural language interface between PostgreSQL and JavaScript
postgresql-9.6-postgis-2.3 - Geographic objects support for PostgreSQL 9.6
postgresql-9.6-postgis-2.3-scripts - Geographic objects support for PostgreSQL 9.6 -- scripts
postgresql-9.6-postgis-scripts - transitional dummy package
postgresql-9.6-powa - PostgreSQL Workload Analyzer -- PostgreSQL 9.6 extension
postgresql-9.6-prefix - Prefix Range module for PostgreSQL
postgresql-9.6-preprepare - pre prepare your PostgreSQL statements server side
postgresql-9.6-prioritize - Get and set the nice priorities of PostgreSQL backends
postgresql-9.6-python-multicorn - multicorn extension for Postgres 9.6 to write FDWs with python2
postgresql-9.6-python3-multicorn - multicorn extension for Postgres 9.6 to write FDWs with python3
postgresql-9.6-repack - reorganize tables in PostgreSQL databases with minimal locks
postgresql-9.6-repmgr - replication manager for PostgreSQL 9.6
postgresql-9.6-repmgr-dbg - debug symbols for repmgr for PostgreSQL 9.6
postgresql-9.6-slony1-2 - replication system for PostgreSQL: PostgreSQL 9.6 server plug-in
postgresql-9.6-unit - SI Units for PostgreSQL
postgresql-client-9.6 - front-end programs for PostgreSQL 9.6
postgresql-contrib-9.6 - additional facilities for PostgreSQL
root@raspberrypi:/home/pi#
```



INSTALAÇÃO

```
root@raspberrypi:/home/pi# apt install postgresql-9.6 postgresql-9.6-postgis-2.3
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
ghostscript gsfonts libaec0 libarmadillo7 libarpack2 libavdevice57 libboost-atomic1.61.0 libboost-chrono1.61.0 libboost-program-options1.61.0 libboos
libboost-test1.61.0 libboost-thread1.61.0 libboost-timer1.61.0 libbcgal12 libcoin80v5 libdap23 libdapclient6v5 libdapserver7v5 libepsilon1 libfreexl1
libgeotiff2 libgraphicsmagick-q16-3 libhdf4-0-alt libhdf5-100 libiso9660-8 libjpeg8 libjson-c3 libkmlbase1 libkmlconvenience1 libkmlcore1 libkmlengine
liblwgeom-2.3-0 libmariadbclient18 libminizip1 libmng1 libnetcdf11 libodbc1 libogdi3.2 libopenscenegraph100v5 libopenthreads20 libpoppler-glib8 libpq
libqt4-opengl libqt4-xml libqtcore4 libqtdbus4 libqtgui4 libsdl2-2.0-0 libsfcgal1 libspatialite7 libsuperlu5 libsz2 liburiparser1 libvcinfo0 libwmf0
libxine2-bin libxine2-doc libxine2-ffmpeg libxine2-misc-plugins libxine2-plugins mysql-common odbcinst odbcinst1debian2 postgresql-9.6-postgis-2.3-sc
postgresql-client-common postgresql-common postgresql-contrib-9.6 proj-bin proj-data qdbus qt-at-spi qtchooser qtcore4-l10n ssl-cert sysstat
Suggested packages:
ghostscript-x libopenal0a libsimage-dev geotiff-bin gdal-bin libgeotiff-epsg graphicsmagick-dbg libhdf4-doc libhdf4-alt-dev hdf4-tools libmyodbc odbc
ogdi-bin qt4-qtconfig gxine xine-ui locales-all postgis postgresql-doc-9.6 libdbd-pg-perl openssl-blacklist isag
The following NEW packages will be installed:
ghostscript gsfonts libaec0 libarmadillo7 libarpack2 libavdevice57 libboost-atomic1.61.0 libboost-chrono1.61.0 libboost-program-options1.61.0 libboos
libboost-test1.61.0 libboost-thread1.61.0 libboost-timer1.61.0 libbcgal12 libcoin80v5 libdap23 libdapclient6v5 libdapserver7v5 libepsilon1 libfreexl1
libgeotiff2 libgraphicsmagick-q16-3 libhdf4-0-alt libhdf5-100 libiso9660-8 libjpeg8 libjson-c3 libkmlbase1 libkmlconvenience1 libkmlcore1 libkmlengine
liblwgeom-2.3-0 libmariadbclient18 libminizip1 libmng1 libnetcdf11 libodbc1 libogdi3.2 libopenscenegraph100v5 libopenthreads20 libpoppler-glib8 libpq
libqt4-opengl libqt4-xml libqtcore4 libqtdbus4 libqtgui4 libsdl2-2.0-0 libsfcgal1 libspatialite7 libsuperlu5 libsz2 liburiparser1 libvcinfo0 libwmf0
libxine2-bin libxine2-doc libxine2-ffmpeg libxine2-misc-plugins libxine2-plugins mysql-common odbcinst odbcinst1debian2 postgresql-9.6 postgresql-9.6
postgresql-9.6-postgis-2.3-scripts postgresql-client-9.6 postgresql-client-common postgresql-common postgresql-contrib-9.6 proj-bin proj-data qdbus q
ssl-cert sysstat
0 upgraded, 88 newly installed, 0 to remove and 0 not upgraded.
Need to get 47.9 MB of archives.
After this operation, 243 MB of additional disk space will be used.
Do you want to continue? [Y/n]
```

```
root@raspberrypi:/home/pi# ps -ax |grep postgres
9691 ?        S          0:00 /usr/lib/postgresql/9.6/bin/postgres -D /var/lib/postgresql/9.6/main -c config_file=/etc/postgresql/9
9693 ?        Ss         0:00 postgres: 9.6/main: checkpoint process
9694 ?        Ss         0:00 postgres: 9.6/main: writer process
9695 ?        Ss         0:00 postgres: 9.6/main: wal writer process
9696 ?        Ss         0:00 postgres: 9.6/main: autovacuum launcher process
9697 ?        Ss         0:00 postgres: 9.6/main: stats collector process
9877 pts/0    S+         0:00 grep postgres
root@raspberrypi:/home/pi#
```



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DESEMPENHO

Hardware utilizado: ▶ Fonte: 2A ▶ SD: XC I 64GB ▶ Raspberry Pi 3

Exemplos utilizado: ▶ Banco normalizado (106GB) ▶ Banco desnormalizado (13GB)
 ▶ 450 milhões registros ▶ 403,2 mil registros

Testes realizados: ▶ Restauração ▶ Select ▶ Insert

```
real    315m23.604s
user    3m28.316s
sys     1m20.544s
```

```
sperancio@npsd:~$ time psql -h ...
real    10m39.968s
user    4m29.030s
sys     9m22.288s
sperancio@npsd:~$ wc -l result.txt
53395 result.txt
sperancio@npsd:~$ time psql -h ...
real    9m2.963s
user    9m0.415s
sys     9m0.552s
sperancio@npsd:~$ wc -l result.txt
33 result.txt
sperancio@npsd:~$
```

```
INSERT 0 1
INSERT 0 1
real    0m26.195s
user    0m0.504s
sys     0m0.092s
```

1 Ano registros

```
INSERT 0 1
INSERT 0 1
real    1m2.574s
user    0m0.816s
sys     0m0.148s
```

2 Anos registros



MICRO DATA-CENTER



The RPiCluster

Josh Kiepert • 2,2 mi visualizações • 5 anos atrás

Documentation, Source code, and EagleCAD designs: <https://bitbucket.org/jkiepert/rpicluster>

Legendas

Fonte: www.youtube.com



Fonte: <https://www.raspberrypi.org>



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