

Funk Browser

status

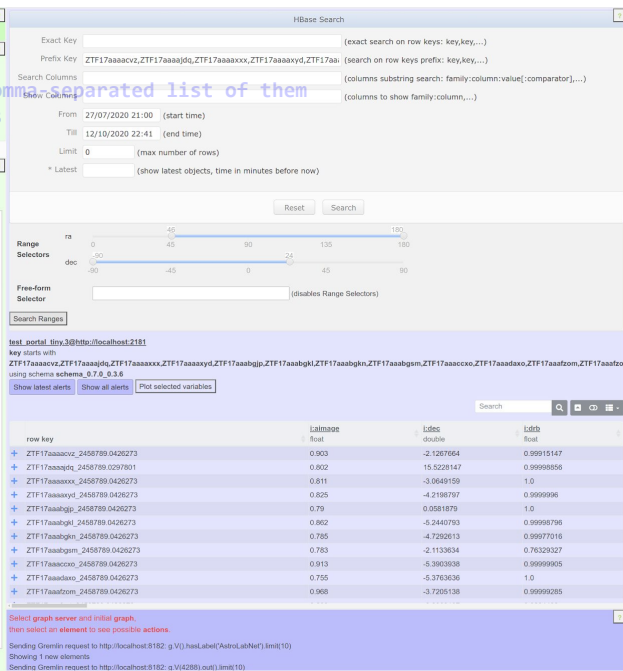
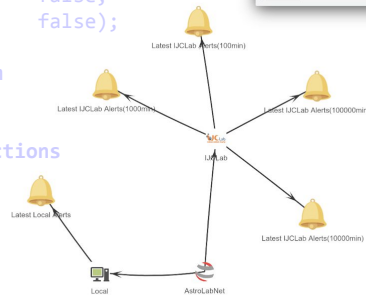
```
// Connect to JanusGraph
GremlinClient gc = new GremlinClient("134.158.74.85", 24444);
g = gc.g();
```

```
// Connect to HBase
HBaseClient hc = new HBaseClient("134.158.74.54", 2181);
hc.connect("test_portal_tiny.3", "schema_0.7.0_0.3.6");
```

```
// Get new interesting alerts from JanusGraph
// 1) get AlertCollection with name = NewInterestingAlerts
// 2) navigate all outgoing edges to get all alerts in this collection
// 3) convert their rowkeys into a List
rowkeys = g.V().has("AlertCollection", "name",
"NewInterestingAlerts").out().values("rowkey").toList();
```

```
// 1) ask HBase for those alerts from HBase
// 2) convert the List of rowkeys into a String with a comma separated list of them
// 3) ask HBase for dec and ra properties of those alerts
String rowkeysStr = String.join(",", rowkeys);
res = hc.execute("select * from test_portal_tiny.3 where rowkey in (" + rowkeysStr + ")");
```

```
// Analyse them
// ...
// Close connections
gc.close();
hc.close();
```



- Mission
- Architecture
- Design
- Implementation
- Command Line / API
- Web Service
- Status

Mission

- To give
 - Transparent and
 - interactive access
- To all Fink
 - Data (stored in HBase and JanusGraph databases) and
 - Processing
- In a distributed environment
- From the
 - Web Service
 - Command Line
- Integratable into other frameworks
- Extendable with existing (third party) tools
- Using standard technologies

Architecture - 1



row key	i:aimage float	i:bimage float	i:dec double	i:ra double	i:seeratio float
+ ZTF17aaaacvz_2458789.0426273	0.903	0.718	-2.1267664	83.2148851	2.0
+ ZTF17aaaajdq_2458789.0297801	0.802	0.704	15.5228147	149.1123409	0.55874145
+ ZTF17aaaaxxx_2458789.0426273	0.811	0.768	-3.0649159	84.5695002	0.98741776
+ ZTF17aaaaxyd_2458789.0426273	0.825	0.763	-4.2198797	83.9509267	1.0054516
+ ZTF17aaabgjp_2458789.0426273	0.79	0.778	0.0581879	86.5794079	1.2489125
+ ZTF17aaabgkl_2458789.0426273	0.862	0.822	-5.2440793	84.0823252	1.0638597
+ ZTF17aaabgkn_2458789.0426273	0.785	0.737	-4.7292613	83.3925766	0.9791926
+ ZTF17aaabgsm_2458789.0426273	0.783	0.684	-2.1133634	84.0362482	2.0
+ ZTF17aaaccxo_2458789.0426273	0.913	0.881	-5.3903938	83.4445077	1.0598751
+ ZTF17aaadaxo_2458789.0426273	0.755	0.727	-5.3763636	84.9028841	1.2408653

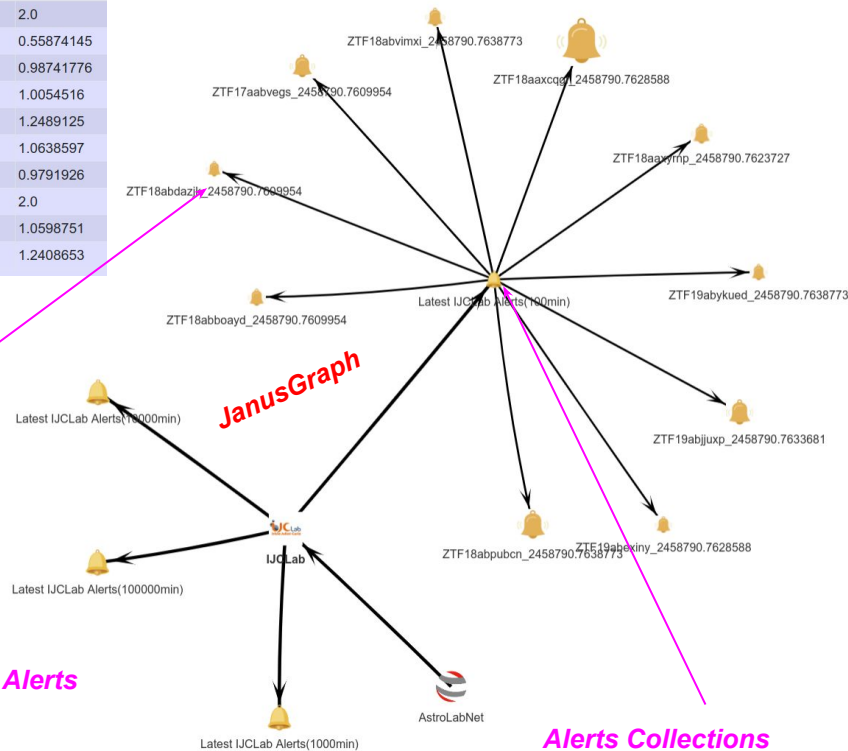
HBase

Alerts
(all alerts are both in
Graph and in HBase table)

Relations between Alerts

Data are available simultaneously in the

- **HBase table** - more details
- **JanusGraph graph** - to express their structure and relations



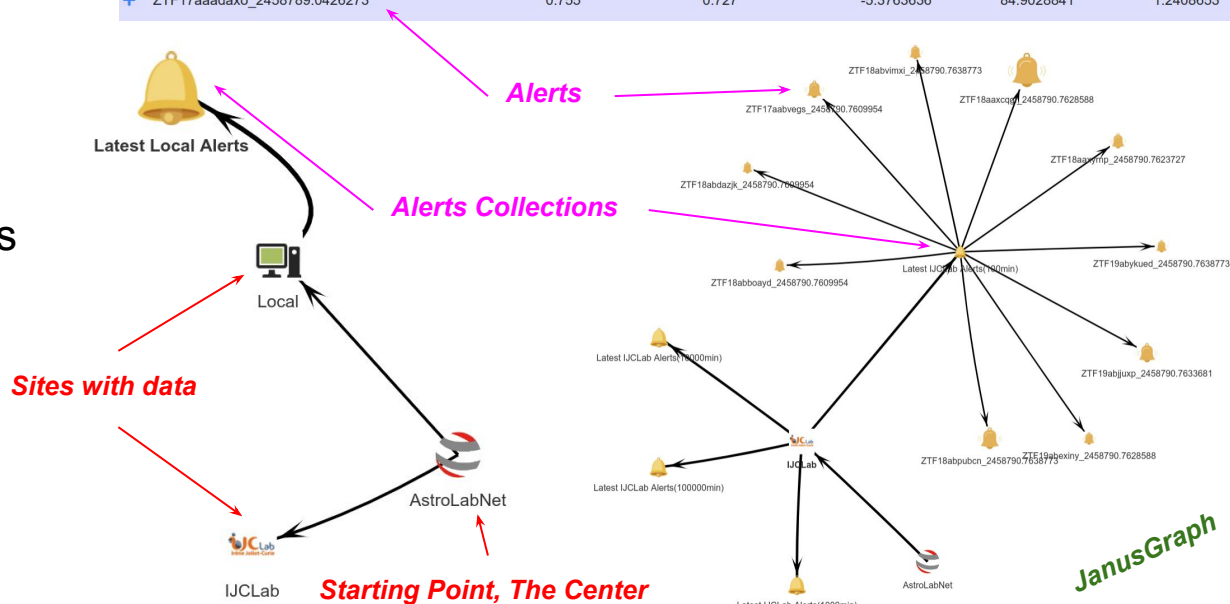
JanusGraph

Alerts Collections

- Latest alerts
- Alerts with some properties
- ...

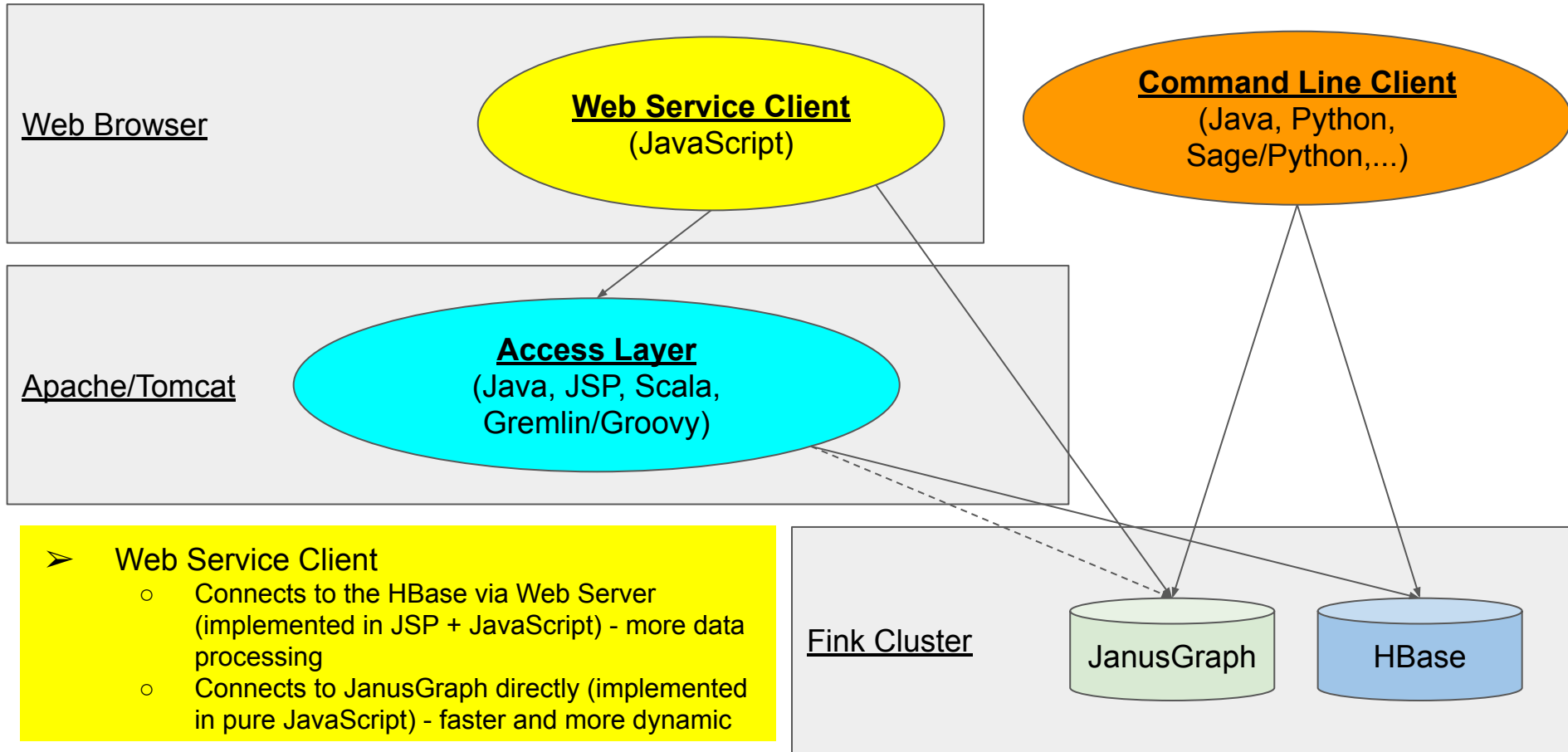
Architecture - 2

row key	i:aimage float	i:bimage float	i:dec double	i:ra double	i:seeratio float
+ ZTF17aaaacvz_2458789.0426273	0.903	0.718	-2.1267664	83.2148851	2.0
+ ZTF17aaaajdq_2458789.0297801	0.802	0.704	15.5228147	149.1123409	0.55874145
+ ZTF17aaaaxxx_2458789.0426273	0.811	0.768	-3.0649159	84.5695002	0.98741776
+ ZTF17aaaaxyd_2458789.0426273	0.825	0.763	-4.2198797	83.9509267	1.0054516
+ ZTF17aaabgjp_2458789.0426273	0.79	0.778	0.0581879	86.5794079	1.2489125
+ ZTF17aaabgkl_2458789.0426273	0.862	0.822	-5.2440793	84.0823252	1.0638597
+ ZTF17aaabgkn_2458789.0426273	0.785	0.737	-4.7292613	83.3925766	0.9791926
+ ZTF17aaabgsm_2458789.0426273	0.783	0.684	-2.1133634	84.0362482	2.0
+ ZTF17aaaccxo_2458789.0426273	0.913	0.881	-5.3903938	83.4445077	1.0598751
+ ZTF17aaadaxo_2458789.0426273	0.755	0.727	-5.3763636	84.9028841	1.2408653



- All functionality is available on the Graph of elements
 - Sites
 - Data (alerts)
 - Data Collections
- Each element shows:
 - Its properties (incl. graphics)
 - Relations to other elements
 - Available Actions/Operations (local or external)
- Other elements and relations can be created
 - And analysed
 - Even by end users
- Full data are available from the HBase table
 - Interlinked with Graph elements

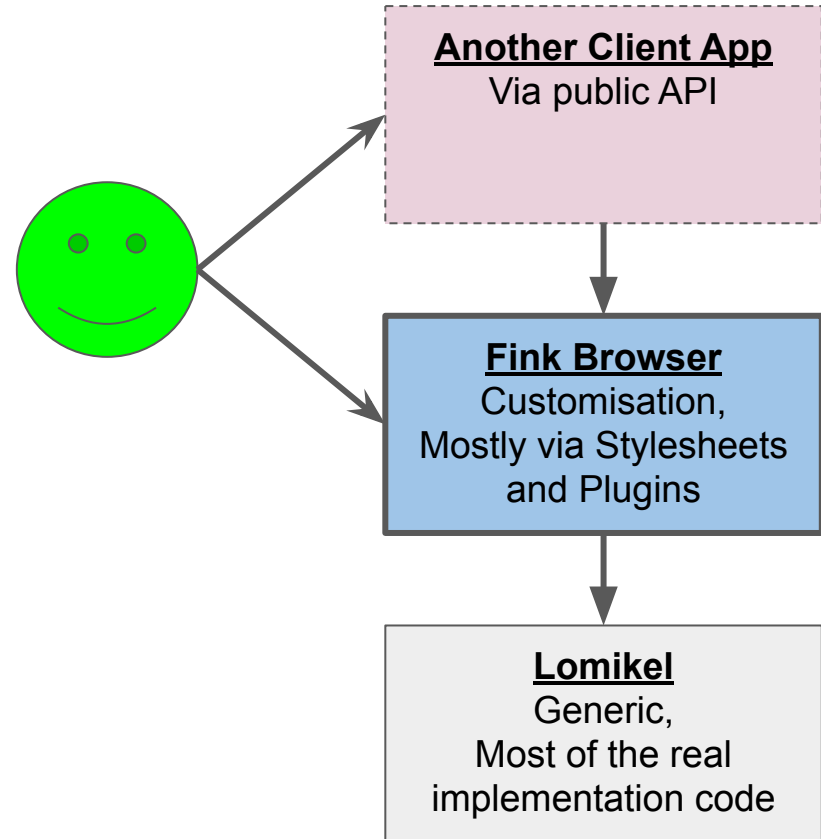
Design



Implementation



- Written in
 - [Java](#), [JavaScript](#), [JSP](#), [Python](#), [Groovy](#)
- Based on
 - [JavaFX](#), [HBase](#), [JanusGraph](#), [TinkerPop](#), [HttpClient](#), [JS9](#), [vis.js](#), [jQuery](#), [jQuery UI](#), [w2ui](#), [Popper](#), [Font Awesome](#), [BootStrap](#), [BootStrap Table](#), [Moment.js](#), [Knockout.js](#), [jRange.js](#), [BeanShell](#), [CLI Parser](#), [org.json](#), [Jython](#), [JPyype](#), [Sage](#), [MatPlotLib](#)
- Build with the help of
 - [Ant](#), [J2H](#), [Vizant](#), [UmlGraph](#), [FindBugs](#), [ApiViz](#), [JDepend](#)
- **Distributed as a single (static) file, containing all dependencies**
 - **FinkBrowser.exe.jar** serves all command line applications (Java, Python,...)
 - **FinkBrowser.war** can be deployed in any Apache/Tomcat server container



Command Line - Java



```
Welcome to Fink Browser CLI 00.07.02+ [05/Oct/2020 at 10:59:21 CEST by hrivnac for Local]
https://astrolabsoftware.github.io

BeanShell 3.0.0-SNAPSHOT.B41
bsh % HBaseClient client = new HBaseClient("localhost", 2181);

HBaseClient: Opening localhost on port 2181
-> $0 = com.Lomikel.HBaser.HBaseClient@4dbaa135 : com.Lomikel.HBaser.HBaseClient
bsh % client.connect("test_portal_tiny.3", "schema_0.7.0_0.3.6");

HBaseClient: Connecting to test_portal_tiny.3
HBaseClient: Searching for schema schema_0.7.0_0.3.6
HBaseClient: Searching for key: schema_0.7.0_0.3.6, search: null, filter: null, interval: 0 ms - 1601908207034
ms. id/time: false/false
HBaseClient: 119 entries found
HBaseClient: 1 results found in 359ms
-> $1 = test_portal_tiny.3;hconnection-0x2009b2ba : org.apache.hadoop.hbase.client.HBaseClient
bsh % results = client.scan("ZTF17aaaaxyd_2458789.0426273,ZTF17aaaajdq_2458789.0297801",
null,
"i:candid",
null));

HBaseClient: Searching for key: ZTF17aaaaxyd_2458789.0426273,ZTF17aaaajdq_2458789.0297801, search:
null, filter: i:candid,b:cutoutScience_stampData, interval: 0 ms - 1601908220225 ms, id/time: false/false
HBaseClient: 2 entries found
HBaseClient: 2 entries found
HBaseClient: 2 results found in 13ms
-> $2 =
{"ZTF17aaaajdq_2458789.0297801"= {"b:cutoutScience_stampData"= "binary:ZTF17aaaajdq_2458789.0297801:cutoutScience_stampData",
"i:candid"= "1034529781415015018"},
"ZTF17aaaaxyd_2458789.0426273"= {"b:cutoutScience_stampData"= "binary:ZTF17aaaaxyd_2458789.0426273:cutoutScience_stampData",
"i:candid"= "1034542623115010020"}} : Map
bsh % print(client.results2String(results));

ZTF17aaaajdq_2458789.0297801 = (b:cutoutScience_stampData=binary:ZTF17aaaajdq_2458789.0297801:cutoutScience_stampData,
i:candid=1034529781415015018)
ZTF17aaaaxyd_2458789.0426273 = (b:cutoutScience_stampData=binary:ZTF17aaaaxyd_2458789.0426273:cutoutScience_stampData,
i:candid=1034542623115010020)
-> void
bsh %
```

**Graphical Window
(all Java platforms)**

```
// Connect to HBase table
```

```
HBaseClient client = new HBaseClient("134.158.74.54", 2181);
client.connect("test_portal_tiny.3", "schema_0.7.0_0.3.6");
```

```
// Get two known alerts (just one column)
```

```
print(client.scan("ZTF17aaaaxyd_2458789.0426273,ZTF17aaaajdq_2458789.0297801",
null,
"i:candid",
null));
```

```
// Get all alerts with row starting with 'ZTF19'
```

```
print(client.scan(null,
"key:key:ZTF19",
"i:candid",
"10000"));
```

```
// Get timeline dependece of i:candid
```

```
print(client.timeline("i:candid"));
```

```
// Get all recent (last 100000 minutes) objectIds
```

```
print(client.latests("i:objectId",
null,
100000,
true));
```

```
// Apply formula to filter results
```

```
client.setEvaluation("isWithinGeoLimits(80, 85, -4.0, 0.0)", "ra,dec");
print(client.scan(null,
null,
null,
null));
```

```
client.close();
```

```
[localhost] ~/work/LSST/FinkBrowser/ant $ java -jar ../lib/FinkBrowser.exe.jar
Welcome to Fink Browser CLI 00.07.02+ [05/Oct/2020 at 10:59:21 CEST by hrivnac for Local]
https://astrolabsoftware.github.io
BeanShell 3.0.0-SNAPSHOT.B41
```

```
bsh % HBaseClient client = new HBaseClient("localhost", 2181);
0 INFO (HBaser.HBaseClient : 82) : Opening localhost on port 2181
-> $0 = com.Lomikel.HBaser.HBaseClient@34dbfff2 : com.Lomikel.HBaser.HBaseClient
bsh % client.connect("test_portal_tiny.3", "schema_0.7.0_0.3.6");
6601 INFO (HBaser.HBaseClient : 143) : Connecting to test_portal_tiny.3
6610 INFO (HBaser.HBaseClient : 157) : Searching for schema schema_0.7.0_0.3.6
6610 INFO (HBaser.HBaseClient : 400) : Searching for key: schema_0.7.0_0.3.6, search: null,
6977 INFO (HBaser.HBaseClient : 448) : 119 entries found
6980 INFO (HBaser.HBaseClient : 560) : 1 results found in 370ms
-> $1 = test_portal_tiny.3;hconnection-0x56cbe1e : org.apache.hadoop.hbase.client.HTable
bsh %
```

Linux Command Line

Command Line - Python



```
import sys

import jpyype
import jpyype.imports
from jpyype import JImplements, JOVERRIDE, JImplementationFor

# ../dist/FinkBrowser.exe.jar
jpyype.startJVM(jpyype.getDefaultJVMPath(), "-ea", "-Djava.class.path=" + sys.argv[1], convertStrings=False)

from com.Lomikel.HBaser import HBaseClient

true  = jpyype.java.lang.Boolean(True)
false = jpyype.java.lang.Boolean(False)

client = HBaseClient("localhost", 2181)
client.connect("test_portal_tiny.3", "schema_0.7.0_0.3.6")
client.setLimit(10)

print(client.scan(None, "key:key:ZTF17", None, 100000, true, true))

client.close()

jpyype.shutdownJVM()
```

*CPython wrapper
over Java client*

```
import sys

# ../dist/FinkBrowser.exe.jar
sys.path.append(sys.argv[1])

from com.Lomikel.HBaser import HBaseClient

client = HBaseClient("localhost", 2181)
client.connect("test_portal_tiny.3", "schema_0.7.0_0.3.6")
client.setLimit(10)

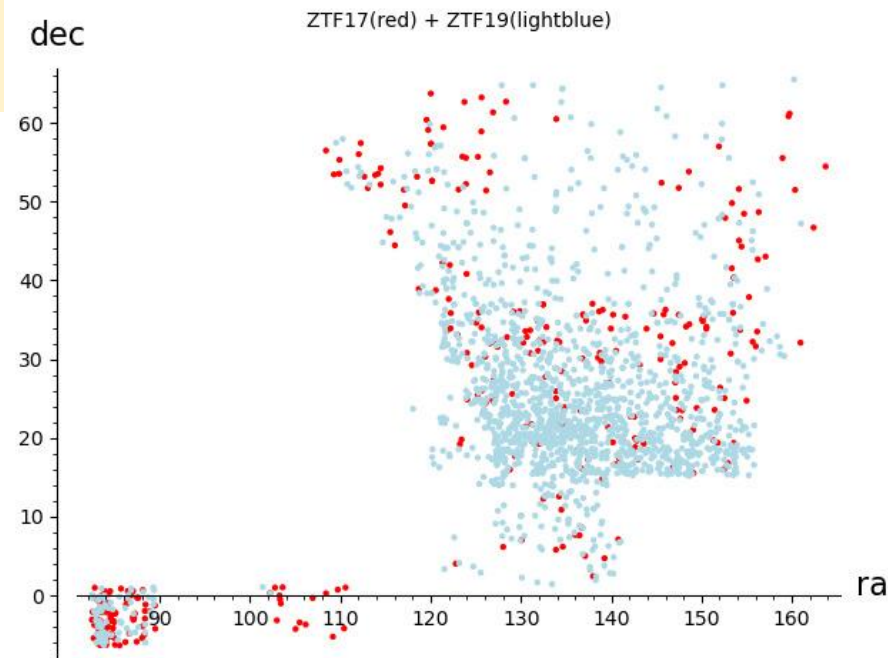
print(client.scan(None, "key:key:ZTF17", None, 100000, True, True))

client.close()
```

*Jython wrapper
over Java client*

Command Line - Sage

```
# like Python
a17 = [];
a19 = [];
for r in client.scan("", "key:key:ZTF17", "i:ra,i:dec", 100000, false, false).values():
    a17 += [(float(r['i:ra']), float(r['i:dec']))];
for r in client.scan("", "key:key:ZTF19", "i:ra,i:dec", 100000, false, false).values():
    a19 += [(float(r['i:ra']), float(r['i:dec']))];
p = list_plot(a17, color='red') + list_plot(a19, color='blue');
show(p, axes_labels = ('ra', 'dec'), title='ZTF17(red) + ZTF19(blue)');
```



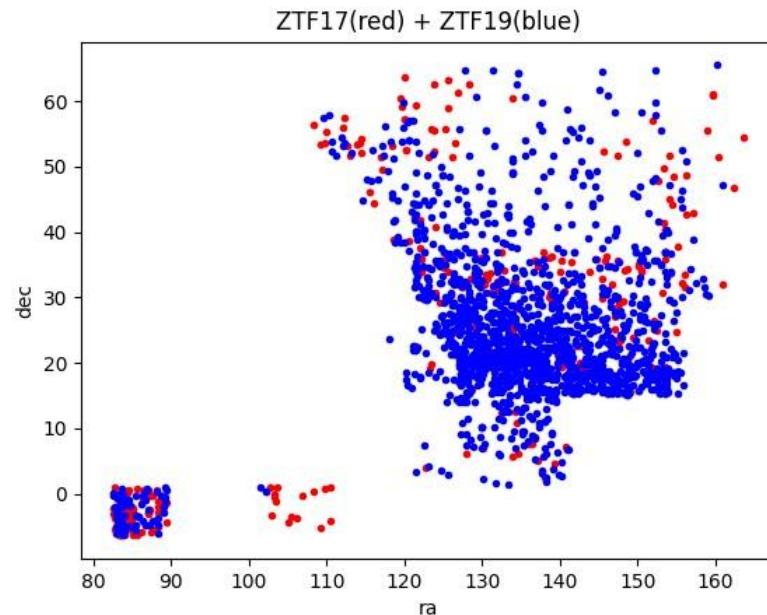
Advanced Math & Graphics
(interface to other Python frameworks can be easily added)
? Graph Math ?

Command Line - Matplotlib

```
# like Python
import matplotlib.pyplot as plt
a17_x = [];
a17_y = [];
a19_x = [];
a19_y = [];
for r in client.scan("", "key:key:ZTF17", "i:ra,i:dec", 0, false, false).values():
    a17_x += [float(r['i:ra'])]
    a17_y += [float(r['i:dec'])]
for r in client.scan("", "key:key:ZTF19", "i:ra,i:dec", 0, false, false).values():
    a19_x += [float(r['i:ra'])]
    a19_y += [float(r['i:dec'])]

plt.plot(a17_x, a17_y, 'r.')
plt.plot(a19_x, a19_y, 'b.')
plt.title('ZTF17(red) + ZTF19(blue)')
plt.xlabel('ra')
plt.ylabel('dec')
plt.show()
```

*Advanced Graphics
(interface to other Python frameworks can be easily added)*



Connecting to both databases

row key	l1image float	l1image float	l2dc float	l2a double	l2eratio float
+ ZTF17aacvcc, 2458788 0426273	0.903	0.718	1.2287664	3.3148851	0.55074
+ ZTF17aacvcc, 2458788 0291701	0.860	0.704	15.5228417	149.112349	0.55074
+ ZTF17aacvcc, 2454788 0426273	0.911	0.766	2.5791198	84.5550523	0.55074
+ ZTF17aacvcc, 2458788 0426273	0.825	0.728	1.2181977	33.9506207	1.005451
+ ZTF17adggp, 2458788 0426273	0.739	0.778	0.0581879	86.5794079	1.248912
+ ZTF17aafgg, 2458788 0426273	0.682	0.822	-5.440793	84.022352	0.163659
+ ZTF17aaglnh, 2458788 0426273	0.765	0.737	-4.729083	3.305766	0.973192
+ ZTF17aagatg, 2458788 0426273	0.763	0.684	-3.758243	84.0304445	2.0
+ ZTF17aacvcc, 2458788 0426273	0.713	0.881	1.3603308	83.445077	1.598875
+ ZTF17aacvcc, 2458788 0426273	0.755	0.727	1.3763036	83.000841	1.240865

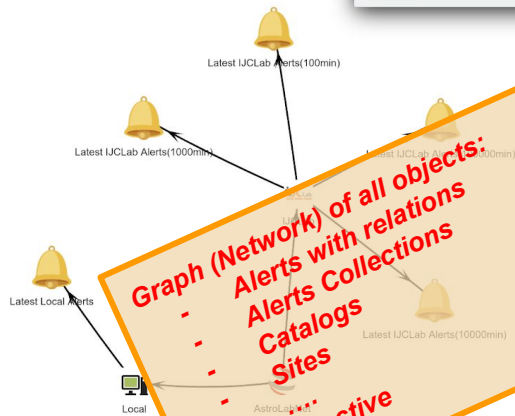
[illegible]

Web Service - Description



Initialisation / where to start
- Server to connect to
- Bootstrap element

Introspection of
objects in Graph



Database of all data
With many ways of
searching and exploration

Operation feedback

HBase Search

Exact Key: (exact search on row keys: key, key,...)
Prefix Key: ZTF17aaaacvz,ZTF17aaaajdq,ZTF17aaaaxxx,ZTF17aaaaxyd,ZTF17aa (search on row keys prefix: key, key,...)
Search Columns: (columns substring search: family:column:value[:comparator],...)
Show Columns: (columns to show family:column,...)

From: 27/07/2020 21:00 (start time)
Till: 12/10/2020 22:41 (end time)
Limit: 0 (max number of rows)
* Latest: (show latest objects, time in minutes before now)

Range Selectors: ra (0 to 180), dec (-90 to 45)
Free-form Selector: (disables Range Selectors)
Search Ranges: [button]

test_portal_tiny.3@http://localhost:2181
key starts with
ZTF17aaaacvz,ZTF17aaaajdq,ZTF17aaaaxxx,ZTF17aaaaxyd,ZTF17aaabgjp,ZTF17aaabgkl,ZTF17aaabgkn,ZTF17aaabgsm,ZTF17aaaccco,ZTF17aaadaxo,ZTF17aaafzom,ZTF17aaafzot
using schema schema_0.7.0_0.3.6
[Show latest alerts] [Show all alerts] [Plot selected variables]

row key	l:aimage float	l:dec double	l:drb float
+ ZTF17aaaacvz_2458789.0426273	0.903	-2.1267664	0.99915147
+ ZTF17aaaajdq_2458789.0297801	0.802	15.5228147	0.99998856
+ ZTF17aaaaxxx_2458789.0426273	0.811	-3.0649159	1.0
+ ZTF17aaaaxyd_2458789.0426273	0.825	-4.2198797	0.9999996
+ ZTF17aaabgjp_2458789.0426273	0.79	0.0581879	1.0
+ ZTF17aaabgkl_2458789.0426273	0.862	-5.2440793	0.99998796
+ ZTF17aaabgkn_2458789.0426273	0.785	-4.7292613	0.99977016
+ ZTF17aaabgsm_2458789.0426273	0.783	-2.113634	0.76329327
+ ZTF17aaaccco_2458789.0426273	0.913	-5.3903938	0.99999905
+ ZTF17aaadaxo_2458789.0426273	0.755	-5.3763617	1.0
+ ZTF17aaafzom_2458789.0426273	0.968	0.245138	0.99999285

Select graph server and initial graph,
then select an element to see possible actions.
Sending Gremlin request to http://localhost:8182: g V().hasLabel('AstroLabNet').limit(10)
Showing 1 new elements
Sending Gremlin request to http://localhost:8182: g V(4288).out().limit(10)

Web Service - Left (Green) Pane



00.05.02+ [07/Oct/2020 at 19:11:24 CEST by hrivnac for IJCLab] [Reset](#)

site: IJCLab

Actions: [Livy](#) - [Spark](#) - [Ganglia](#) - [Hadoop](#) - [Mesos](#) - [Prometheus](#) - [Grafana](#) - [Zeppelin](#) - [Tomcat](#) - [HBase test](#) - [HBase test tiny 1](#) - [HBase test tiny 2](#) - [HBase test tiny 3](#)

Graph Image Plot

Customize the interactions with the graph.

☒ Cluster by group type ☐ Cluster by group size ☐ Expand all clusters ☐ Show all edges ☐ Hierarchical (☐ up/☐ fr ☐ size/hierarchy) ☒ Live

☒ clusterize ☒ zoom cluster ☐ stabilize ☒ get children ☐ get parents ☐ remove old

filter: Apply select: limit(10)

Introspection

IJCLab AstroLabNet

➤ Stable element (never changes and allows total reset)

➤ Initial graph search

➤ Graph element introspection and context-specific actions

➤ Graph manipulation, options and filters

➤ Detailed page help

➤ Graph

site: IJCLab

Zeppelin: <https://wuip.lal.in2p3.fr:24443>
HBaseTestTiny3: <http://134.158.74.221:8080>
Tomcat: <http://134.158.74.221:8080>
Livy: <http://vm-75222.lal.in2p3.fr:21111>
Hadoop: <http://vm-74078.lal.in2p3.fr:8188/clu>
Prometheus: <http://134.158.75.113:24490/graph>
title: IJCLab
Grafana: <https://supervision.lal.in2p3.fr>
Ganglia: <http://vm-75222.lal.in2p3.fr/ganglia>
HBaseTestTiny1: <http://134.158.74.54:16010>
HBaseTestTiny2: <http://134.158.74.54:16010>
HBaseTestTiny3: <http://134.158.74.54:16010>
Mesos: <https://wuip.lal.in2p3.fr:20505>
HBaseTest: <http://134.158.74.54:16010>
Spark: <https://wuip.lal.in2p3.fr:8444>
SparkHistory: <https://wuip.lal.in2p3.fr:8443>

- Collection of alerts
- Detailed HBase search
- Range search
- Several possible views of the found table results
- Operation feedback with info about equivalent command line operations

HBase Search

Exact Key (exact search on row keys: key,key,...)

Prefix Key ZTF17aaacvz,ZTF17aaaajdq,ZTF17aaaaxxx,ZTF17aaaaxyd,ZTF17aa (search on row keys prefix: key,key,...)

Search Columns (columns substring search: family:column:value[:comparator],...)

Show Columns (columns to show family:column,...)

From 27/07/2020 21:00 (start time)

Till 12/10/2020 22:41 (end time)

Limit 0 (max number of rows)

* Latest (show latest objects, time in minutes before now)

Range Selectors

Free-form Selector (disables Range Selectors)

test_portal_tiny3@http://localhost:2181

key starts with
ZTF17aaacvz,ZTF17aaaajdq,ZTF17aaaaxxx,ZTF17aaaaxyd,ZTF17aaabgkj,ZTF17aaabgkl,ZTF17aaabgkn,ZTF17aaabgsn,ZTF17aaacxco,ZTF17aadaxo,ZTF17aaafzom,ZTF17aaafzo

using schema schema_0.7_0_0.3.6

	i:almage float	i:dec double	i:drb float
+ ZTF17aaacvz_2458789.0426273	0.903	-2.1267664	0.99915147
+ ZTF17aaaajdq_2458789.0297801	0.802	15.5228147	0.99998856
+ ZTF17aaaaxxx_2458789.0426273	0.811	-3.0649159	1.0
+ ZTF17aaaaxyd_2458789.0426273	0.825	-4.2196797	0.99999996
+ ZTF17aaabgjp_2458789.0426273	0.79	0.0581879	1.0
+ ZTF17aaabgk_2458789.0426273	0.862	-5.2440793	0.99998796
+ ZTF17aaabgkn_2458789.0426273	0.785	-4.7292613	0.99977016
+ ZTF17aaabgsn_2458789.0426273	0.783	-2.1133634	0.76329327
+ ZTF17aaacxco_2458789.0426273	0.913	-5.3903938	0.99999905
+ ZTF17aadaxo_2458789.0426273	0.755	-5.3763636	1.0
+ ZTF17aaafzom_2458789.0426273	0.968	-3.7205138	0.99999285

Select graph server and initial graph,
then select an element to see possible actions.

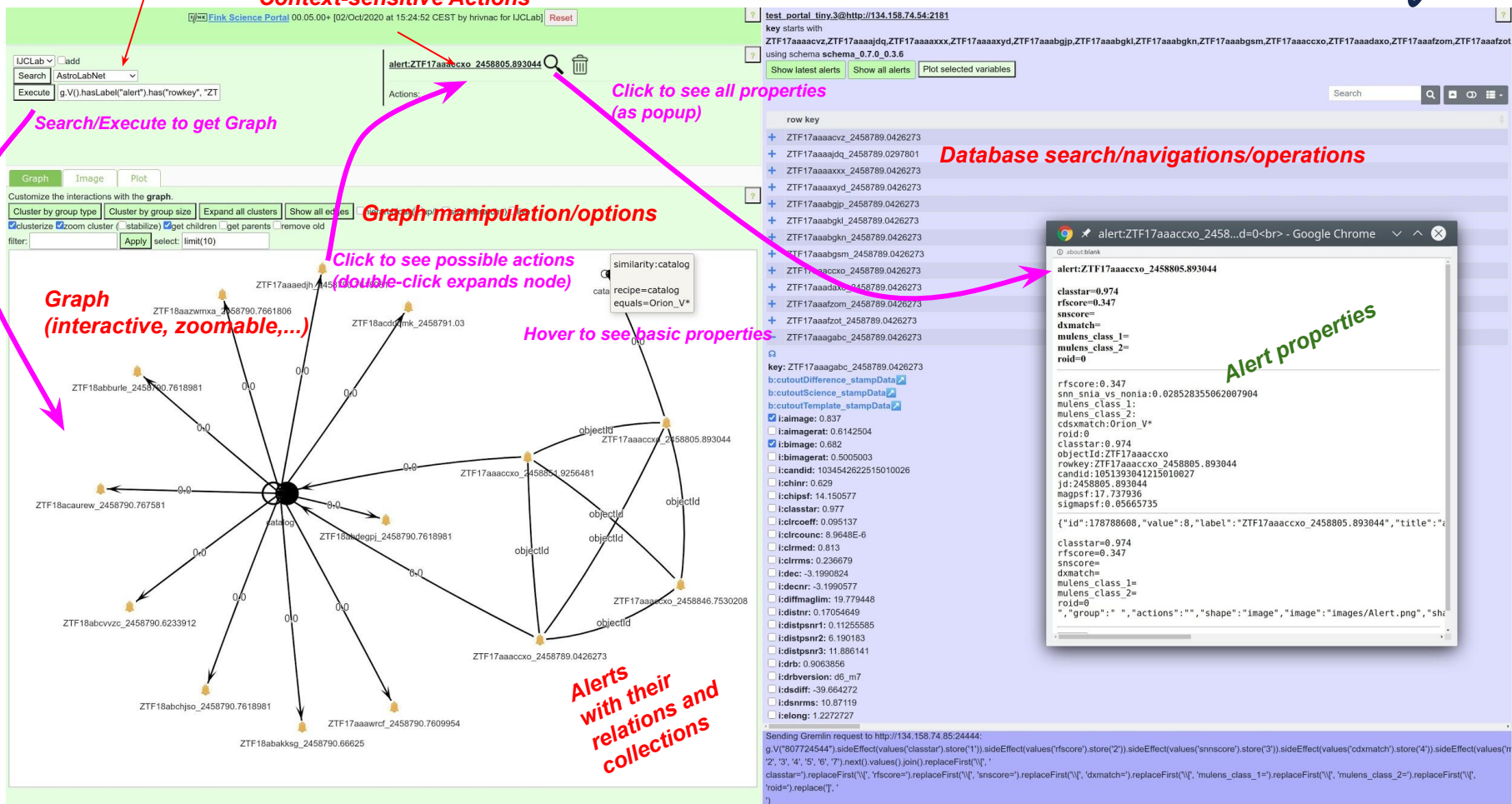
Sending Gremlin request to http://localhost:8182: g.V().hasLabel('AstroLabNet').limit(10)

Showing 1 new elements

Sending Gremlin request to http://localhost:8182: g.V((4288).out()).limit(10)

Web Service - Flow

Context-sensitive Actions



Web Service - Images



UCLab ☐ add

Search

Actions:

Graph Image Plot

3dPlot (JS9)

Encircled Energy (JS9)

File Edit View Zoom Scale Color Regions WCS Analysis Help

185.0911 1.625 25.375 (physical)

Show and analyse

Region Stats (JS9)

position x	y
31.38	31.38
box width	60.00 height 60.00
min	154.73 max 490.19
totcounts	621198.91
bscounts	13376.19
bkgd	178.56 noise 7.62
centroid x	30.58 y 30.76
FWHM	38.56

Histogram (JS9)

row key ZTF17aaafgy_2458789.034838_154.7131397_48.4648188

Select picture (*binary*)

row key	value
b:cutoutDifference	"binary"
binary	"binary"
b:cutoutScience	"binary"
binary	"binary"
b:cutoutTemplate	"binary"
binary	"binary"
i:aimage	0.928
i:aimagerat	0.15755518
i:aimage	0.812
i:aimagerat	0.13786077
i:andid	103453483421501000
i:chidr	0.422
i:chipsf	135.11581
i:classtar	1.0
i:clrccoeff	0.122813
i:clrcount	2.36399995
i:clrmad	0.615
i:clrrms	0.324699
i:dec	48.4648188
i:decnr	48.4648958
i:diffmaglim	20.309875
i:distnr	0.28727442

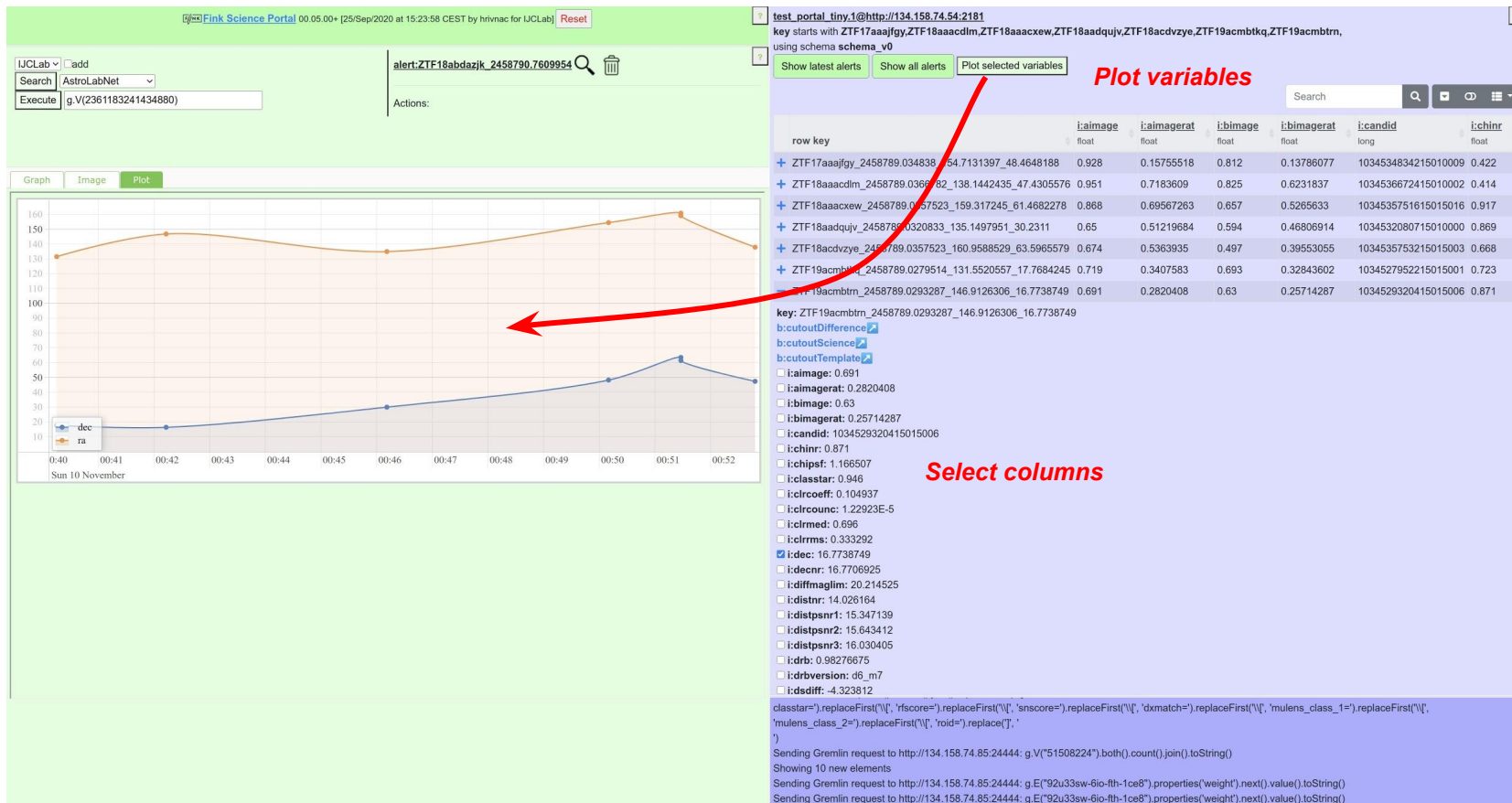
classstar=.replaceFirst("\\.",'rfscore=').replaceFirst("\\.",'snscore=').replaceFirst("\\.",'dxmatch=').replaceFirst("\\.",'mulens_class_1=').replaceFirst("\\.",'mulens_class_2=').replaceFirst("\\.",'roid=').replace('T,')

Sending Gremlin request to http://134.158.74.85:24444: g.V("51508224").both().count().join().toString()

Showing 10 new elements

Sending Gremlin request to http://134.158.74.85:24444: g.E("92u33sw-6io-fth-1ce8").properties('weight').next().value().toString()

Sending Gremlin request to http://134.158.74.85:24444: g.E("92u33sw-6io-fth-1ce8").properties('weight').next().value().toString()



Status

- Framework with all connections in place, running
 - Client code available to download
- Functional user interface with some functionality and limited user-friendliness
 - Very simplified style to be implemented
- Raw data in place and accessible
 - Limited structure in data (AlertCollections to be defined/implemented/filled)
- Basic documentation in place
- Basic help in place
 - To be extended
- Authentication/authorisation not yet included
- Under Active development

Home Page: <https://cern.ch/hrivnac/Activities/Packages/FinkBrowser>

Prototype Client: <http://cern.ch/hrivnac/Activities/Packages/FinkBrowser.exe.jar>

Prototype/Demo Web Service: <http://134.158.74.221:8080/FinkBrowser/?profile=ijclab&style=simple>

default data loaded at start

simplified interface