

# Scalability-First Pointer Analysis with Self-Tuning Context-Sensitivity (Artifact Installation Instructions)

## 1 Basic Requirements

To use this artifact, you need to have:

- A 64-bit Ubuntu system (version 14.04 – 16.10).
- A Python interpreter (version 2.7 – 3.0).
- A Java 1.8 distribution.

## 2 Installing the PA-Datalog Engine

To run DOOP framework, you need to install a PA-Datalog engine for interpreting the Datalog rules used in DOOP. Since we cannot re-distribute our copy of this engine to others due to the licensing issue, you need to install the engine by yourself. Below we introduce how to install and setup the engine.

**Installation** Firstly, please download the engine from this page:

<http://snf-705535.vm.oceanos.grnet.gr/agreement.html>

Note that to download the engine, you must accept the academic license (which will automatically pop up after you click the “Download” and “Proceed” buttons).

For each Ubuntu system, there are two files, i.e., a `.tar.gz` file and a `.deb` file, corresponding to two installation approaches. For convenience, we recommend `.deb` package installation. For example, if you use Ubuntu 16.04, then just select “Ubuntu 16.04 LTS (.deb)” and proceed.

To install the `.deb` (e.g., `pa-datalog_0.5-1xenial.deb` for Ubuntu 16.04), just run the following two commands (The first may report some missing packages as shown in Figure 1. This is expected, and these packages will be automatically installed by the second command as shown in Figure 2):

```
$ sudo dpkg -i pa-datalog_0.5-1xenial.deb
$ sudo apt-get install -f
```

Now PA-Datalog engine should be in directory `/opt/lb/pa-datalog`.

**Setup** To make the binaries of PA-datalog available for use in the shell, you need to:

1. Set `JAVA_HOME` to an appropriate location for Java:

```
$ export JAVA_HOME=/path/to/java-8
```

2. Source the `lb-env-bin.sh` script in your shell to set required paths:

```
$ source /opt/lb/pa-datalog/lb-env-bin.sh
```

Then the PA-Datalog engine is ready to use. You may include the above commands in your startup script such as `.bashrc`, so that you don’t need to setup the engine again when you open a new shell.

Now you can start evaluating our artifact.

```

fse81@artifact:~$ sudo dpkg -i pa-datalog_0.5-1xenial.deb
[sudo] password for fse81:
Selecting previously unselected package pa-datalog.
(Reading database ... 172258 files and directories currently installed.)
Preparing to unpack pa-datalog_0.5-1xenial.deb ...
Unpacking pa-datalog (0.5-1) ...
dpkg: dependency problems prevent configuration of pa-datalog:
 pa-datalog depends on realpath; however:
   Package realpath is not installed.
 pa-datalog depends on libtcmalloc-minimal4; however:
   Package libtcmalloc-minimal4 is not installed.
 pa-datalog depends on libgoogle-perftools4; however:
   Package libgoogle-perftools4 is not installed.
 pa-datalog depends on protobuf-compiler; however:
   Package protobuf-compiler is not installed.
 pa-datalog depends on libprotobuf-dev; however:
   Package libprotobuf-dev is not installed.
 pa-datalog depends on libprotobuf-java; however:
   Package libprotobuf-java is not installed.
 pa-datalog depends on libboost-program-options1.58.0; however:
   Package libboost-program-options1.58.0 is not installed.
 pa-datalog depends on libboost-regex1.58.0; however:
   Package libboost-regex1.58.0 is not installed.
 pa-datalog depends on libboost-thread1.58.0; however:
   Package libboost-thread1.58.0 is not installed.
 pa-datalog depends on libcxxpunit-1.13-0v5; however:
   Package libcxxpunit-1.13-0v5 is not installed.
dpkg: error processing package pa-datalog (--install):
 dependency problems - leaving unconfigured
Errors were encountered while processing:
 pa-datalog

```

Figure 1: Missing packages

```

fse81@artifact:~$ sudo apt-get install -f
Reading package lists... Done
Building dependency tree
Reading state information... Done
Correcting dependencies... Done
The following additional packages will be installed:
 libboost-program-options1.58.0 libboost-regex1.58.0 libboost-thread1.58.0 libcxxpunit-1.13-0v5
 libgoogle-perftools4 libprotobuf-dev libprotobuf-java libprotoc9v5 libtcmalloc-minimal4
 protobuf-compiler realpath zlib1g zlib1g-dev
The following NEW packages will be installed:
 libboost-program-options1.58.0 libboost-regex1.58.0 libboost-thread1.58.0 libcxxpunit-1.13-0v5
 libgoogle-perftools4 libprotobuf-dev libprotobuf-java libprotoc9v5 libtcmalloc-minimal4
 protobuf-compiler realpath zlib1g-dev

```

Figure 2: The missing packages will be automatically installed.