

**AIXPRT**

# Installation Guide

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## Section 1 - Introduction

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Welcome to the AIXPRT Installation guide. AIXPRT is a user-friendly tool used to assess your system's capabilities when it comes to machine learning. With the help of Principled Technologies, a rich catalog of system results will be collected, and you will be able to become more informed about how Machine Learning ready you are.

This guide will take you through the steps you need to take in order to deploy AIXPRT and begin benchmarking machine learning models.

This manual will cover the following:

- How to install required software
- How to create an AIXPRT ready Python environment
- How to obtain the code necessary to run AIXPRT
- Uninstallation instructions

## Section 2 - System Requirements

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There are very few system requirements to run AIXPRT. In order to install the program and run it, you need the following:

- Ubuntu 16.04 or later
- An internet connection
- A minimum of 3GB of disc space to download and install

## Section 3 - Required Software

### Section 3.1 - Installing Anaconda

AIXPRT requires a lot of dependencies to work properly, but don't worry! Anaconda takes care of all the complexities for you. Official Anaconda installation instructions can be found [here](#), but we will give you a quick rundown below. The commands have been entered in text form so that you can simply copy and paste them into your terminal!

**Step 1:** Get the latest 64-bit Anaconda version from their website

```
wget https://repo.anaconda.com/archive/Anaconda3-5.3.1-Linux-x86_64.sh
```

```
alphe1@DESKTOP-06J19DC:~/testInstall$ wget https://repo.anaconda.com/archive/Anaconda3-5.3.1-Linux-x86_64.sh
--2018-12-09 23:53:39-- https://repo.anaconda.com/archive/Anaconda3-5.3.1-Linux-x86_64.sh
Resolving repo.anaconda.com (repo.anaconda.com)... 104.17.107.77, 104.17.109.77, 104.17.110.77, ...
Connecting to repo.anaconda.com (repo.anaconda.com)|104.17.107.77|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 667976437 (637M) [application/x-sh]
Saving to: 'Anaconda3-5.3.1-Linux-x86_64.sh'

Anaconda3-5.3.1-Linux-x86_64.sh          100%[=====] 637.03M  3.22MB/s   in 2m 31s
2018-12-09 23:56:09 (4.23 MB/s) - 'Anaconda3-5.3.1-Linux-x86_64.sh' saved [667976437/667976437]
```

**Step 2:** Run the installation file

```
bash Anaconda3-5.3.1-Linux-x86_64.sh
```

```
alphe1@DESKTOP-06J19DC:~/testInstall$ bash Anaconda3-5.3.1-Linux-x86_64.sh

Welcome to Anaconda3 5.3.1

In order to continue the installation process, please review the license
agreement.
Please, press ENTER to continue
>>>
=====
Anaconda End User License Agreement
=====

Copyright 2015, Anaconda, Inc.
```

**Step 3:** Follow the installation instructions. Read the terms of usage and then agree by typing “yes”.

```
Do you accept the license terms? [yes|no]
[no] >>> yes
```

Then you will need to choose a place to install Anaconda.

```
Anaconda3 will now be installed into this location:
/mnt/c/Unix/anaconda3

- Press ENTER to confirm the location
- Press CTRL-C to abort the installation
- Or specify a different location below

[/mnt/c/Unix/anaconda3] >>> /mnt/c/Unix/testInstall/anaconda3
```

Once the installation is finished, Anaconda will ask you if you want to add its location to your .bashrc file. Answer “yes” to this question, as it will allow you to activate Anaconda with ease in the future.

```
Do you wish the installer to initialize Anaconda3
in your /mnt/c/Unix/.bashrc ? [yes|no]
[no] >>> yes

You may wish to edit your /mnt/c/Unix/.bashrc to setup Anaconda3:

source /mnt/c/Unix/testInstall/anaconda3/etc/profile.d/conda.sh

Thank you for installing Anaconda3!
```

Anaconda will then ask if you would like to install Microsoft VSCode. This is unnecessary, so type no (unless you want this software).

```
Anaconda is partnered with Microsoft! Microsoft VSCode is a streamlined
code editor with support for development operations like debugging, task
running and version control.

To install Visual Studio Code, you will need:
- Administrator Privileges
- Internet connectivity

Visual Studio Code License: https://code.visualstudio.com/license

Do you wish to proceed with the installation of Microsoft VSCode? [yes|no]
>>> no
alphel@DESKTOP-06J19DC:~/testInstall$
```

Congratulations! Anaconda is installed and ready to be used!

## Section 3.2 - Creating an AIXPRT Environment

In order to create an AIXPRT environment, you need to create an anaconda environment. Before you can do this, you need to add Conda-Forge to the list of places Anaconda can look for packages. Execute the following command (in a bash shell) to do so:

```
conda config --add channels conda-forge
```

To do this, execute the following command. This command will create a Python 3.6 environment with all the required packages for AIXPRT!

```
conda create -n aixprt_python python=3.6 kivy psutil tensorflow tensorflow-hub
```

Anaconda will list a bunch of packages and ask if you wish to proceed, type “y” to continue.

```
xorg-libxau:      1.0.8-h470a237_6      conda-forge
xorg-libxdmcp:    1.1.2-h470a237_7      conda-forge
xz:               5.2.4-h470a237_1      conda-forge
zlib:            1.2.11-h470a237_3      conda-forge

Proceed ([y]/n)? y
```

Anaconda will then proceed to create your environment and then give you instructions on how to activate it.

```
Downloading and Extracting Packages
wheel-0.32.3      | 34 KB      | #####
libtiff-4.0.10    | 523 KB     | #####
glib-2.56.2      | 4.6 MB     | #####
sqlite-3.26.0    | 1.6 MB     | #####
python-3.6.7     | 20.5 MB    | #####
absl-py-0.6.1    | 151 KB     | #####
tensorflow-hub-0.2.0 | 48 KB     | #####
c-ares-1.15.0    | 91 KB      | #####
intel-openmp-2019.1 | 885 KB    | #####
tk-8.6.9         | 3.1 MB     | #####
libpng-1.6.36    | 276 KB     | #####
grpcio-1.16.0    | 4.9 MB     | #####
sdl2_image-2.0.4 | 118 KB     | #####
pygments-2.3.0   | 636 KB     | #####
setuptools-40.6.2 | 632 KB     | #####
Preparing transaction: done
Verifying transaction: done
Executing transaction: done
#
# To activate this environment, use:
# > source activate aixprt_python
#
# To deactivate an active environment, use:
# > source deactivate
#
```

At this point, your AIXPRT Python environment is setup! To activate this environment, enter a bash shell by typing “bash” and then activate the environment:

```
alphel@DESKTOP-06J19DC:~/testInstall$ bash
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

alphel@DESKTOP-06J19DC:~/testInstall$ source activate aixprt_python
(aixprt_python) alphel@DESKTOP-06J19DC:~/testInstall$
```



## Section 4 – Getting AIXPRT

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AIXPRT currently requires a certain directory setup in order to function properly (see the AIXPRT Developer's Guide for more details). In order to easily obtain this directory, download the .zip file from <insert\_PT\_zip\_location>. This can be done with the following:

**Step 1:** Navigate to where you want to create your AIXPRT folder directory

```
alphe1@DESKTOP-06J19DC:~$ cd testInstall
alphe1@DESKTOP-06J19DC:~/testInstall$
```

**Step 2:** Copy the .zip file into your directory.

```
wget <PT_website_link_to_.zip>
```

**Step 3:** Unzip the newly acquired file.

```
unzip aixprt.zip
```

**Step 4:** In order for the demo workloads to work properly, AIXPRT requires a certain set of images to be present in your install directory. These images can be obtained with the following commands:

```
curl -LO http://download.tensorflow.org/example_images/flower_photos.tgz
```

```
tar xzf flower_photos.tgz
```

```
alphe1@DESKTOP-06J19DC:~/testInstall$ curl -LO http://download.tensorflow.org/example_images/flower_photos.tgz
% Total    % Received % Xferd  Average Speed   Time    Time     Time  Current
           Dload  Upload   Total   Spent    Left   Speed
100 218M  100 218M    0     0 5354k      0  0:00:41  0:00:41 --:--:-- 5124k
alphe1@DESKTOP-06J19DC:~/testInstall$ tar xzf flower_photos.tgz
alphe1@DESKTOP-06J19DC:~/testInstall$
```

Now that you have AIXPRT and the necessary files to run the demo workloads, you are ready to run AIXPRT!

## Section 5 – Running AIXPRT

Detailed instructions on how to use AIXPRT can be found in the supplemental User Guide and Development Guide, but we will discuss how to start the program here. First, navigate to your AIXPRT installation folder.

```
alphel@DESKTOP-06J19DC:~$ cd ~/testInstall/AIXPRT
alphel@DESKTOP-06J19DC:~/testInstall/AIXPRT$
```

Then, enter a bash shell and activate your aixprt\_python environment:

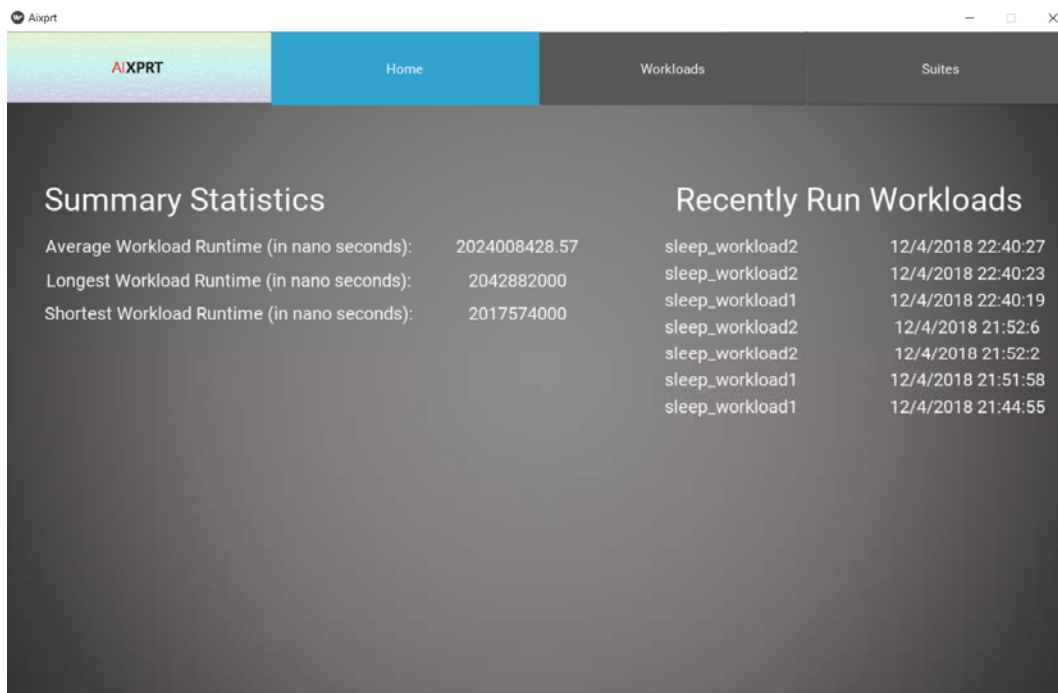
```
alphel@DESKTOP-06J19DC:~/testInstall/AIXPRT$ bash
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

alphel@DESKTOP-06J19DC:~/testInstall/AIXPRT$ source activate aixprt_python
(aixprt_python) alphel@DESKTOP-06J19DC:~/testInstall/AIXPRT$
```

Finally, navigate to the src/ folder of your installation, and then run the following command:

```
(aixprt_python) alphel@DESKTOP-06J19DC:~/testInstall/AIXPRT$ cd src
(aixprt_python) alphel@DESKTOP-06J19DC:~/testInstall/AIXPRT/src$ python3 AIXPRT_GUI.py
```

The AIXPRT GUI should open on your screen and you should see something like the following:



If you do NOT a screen such as the one above, please go to the Troubleshooting section of the installation guide.

## Section 6 – Uninstalling AIXPRT

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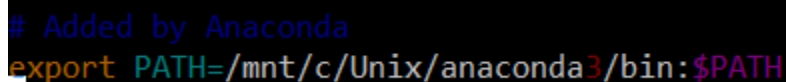
The easiest way to uninstall AIXPRT and all the required software is to simply remove your installation directory. Because we used Anaconda, this will remove your python environment and all the packages it used!

**BE WARNED:** Deleting the entire installation folder will ALSO delete your workloads and suites. If you wish to preserve these, copy the `workloads.json` and `suites.json` out of your `src/` folder. You can use these again in a future AIXPRT install!

After removing the installation folder, the only piece remaining is to remove the Anaconda path from your `.bashrc` file. Doing this is NOT required, but it is technically a remnant of the AIXPRT installation so we wanted to include it anyway. To do this, navigate to your home and edit the `.bashrc` file with `vi`.

```
vi .bashrc
```

Press “i” to enter insert mode and navigate to the line with the Anaconda export it will look something like this:



```
# Added by Anaconda
export PATH=/mnt/c/Unix/anaconda3/bin:$PATH
```

Press the delete key until the comment and the export line are erased. Then press the Escape key to exit Insert Mode. Finally, hold Shift and press the “z” key twice:

```
Shift + ZZ
```

This will save your changes. With that finished, there are NO traces of AIXPRT left on your machine!

## Section 7 – Troubleshooting

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This section will cover the solutions to some commonly hit issues when installing AIXPRT. If your issue is not found here, please reach out to PT on the BenchmarkXPRT community forum with a detailed description of your error, preferably with a screenshot.

**Problem:** My console says python3 is not found?

**Solution:** Make sure your aixprt\_python environment is activated correctly. If it is activated correctly, you will notice a (aixprt\_python) label on the left-hand side of your terminal.

BAD

```
alphel@DESKTOP-06J19DC:~/testInstall/AIXPRT/src$ python3 AIXPRT_GUI.py
-bash: python3: No such file or directory
```

GOOD

```
alphel@DESKTOP-06J19DC:~/testInstall/AIXPRT/src$ source activate aixprt_python
(aixprt_python) alphel@DESKTOP-06J19DC:~/testInstall/AIXPRT/src$ python3 AIXPRT_GUI.py
```

**Problem:** I can't activate my aixprt\_python environment! It says conda is not found?

**Solution:** If your terminal is saying that conda is not recognized as a command, that means the path to Anaconda is not in your system PATH. To remedy this you can export the PATH manually with something like the following:

```
export PATH=/mnt/c/Unix/anaconda3/bin:$PATH
```

or you can add the path to your .bashrc file so that it will be automatically appended to your system PATH every time you enter a bash shell. Follow the uninstallation steps to edit your .bashrc file but instead of DELETING the lines, add them!

**Problem:** Anaconda is not behaving correctly? Unexplainable errors are appearing.

**Solution:** There is a *slim* chance that Anaconda may not have installed correctly. Remove the anaconda folder and the installation script and re-follow the instructions for installation. If the problems persist, make sure the Anaconda location is in your PATH so that you may access it from anywhere.