ParAd Installation Guide

<https://github.com/dazeorgacm/ParAd>

Tested April 12, 2019 on Ubuntu 18.04.1 LTS, x86-64 (Dell Inspiron 15, 5000 series).
Most of prerequisite software is installed from source code.

1. Download recent version of ParAd (source code) from <https://github.com/dazeorgacm/ParAd>

For instance: ParAd-1.2.3.tar.gz

2. Extract the archive (to you home directory)

`>tar -zxvf ParAd-1.2.3.tar.gz`

3. Enter ParAd directory and read README.md file

`>cd ParAd-1.2.3`
`>cat  README.md | more`

4. Install prerequisite software from the specified locations

Return to you home directory

`>cd $HOME`

4.1. Install compilers etc

`>sudo apt install gcc`

`>sudo apt install gfortran`

`>sudo apt install g++`

`>sudo apt install make`

`>sudo apt install cmake`

`>sudo apt install m4`

4.2. MPICH

4.2.1. Download MPICH source code from <u>www.mpich.org</u>

For instance: mpich-3.3.tar.gz

4.2.2. Extract the archive (to you home directory)

`>tar -zxvf mpich-3.3.tar.gz`

4.2.3. Enter MPICH directory

`>cd mpich-3.3`

4.2.4. Configure MPICH

`>./configure`

4.2.5. Build MPICH

`>make`

4.2.6. Install MPICH

`>sudo make install`

Installed by default to /usr/local

4.2.7. Return to your home directory

`>cd $HOME`

4.3. GraphBLAS – for sparse integer matrix multiplication

4.3.1. Download SuiteSparse from <u>http://faculty.cse.tamu.edu/davis/suitesparse.html</u>

For instance: SuiteSparse-5.4.0.tar.gz

4.3.2. Extract the archive (to you home directory)

`>tar -zxvf SuiteSparse-5.4.0.tar.gz`

4.3.3. Enter GraphBLAS directory

`>cd SuiteSparse`
`>cd GraphBLAS/build`

4.3.4. Configure GraphBLAS

`> cmake ..`

4.3.5. Build GraphBLAS

`>make`

4.3.6. Install GraphBLAS

`>sudo make install`

Installed by default to /usr/local

4.3.7. Return to your home directory

`>cd $HOME`

4.4. 4ti2 – for solving linear Diophantine system

4.4.1. Download 4ti2 from www.4ti2.de and https://4ti2.github.io/

For instance: 4ti2-1.6.9.tar.gz

4.4.2. Extract the archive (to you home directory)

>tar -zxvf 4ti2-1.6.9.tar.gz

4.4.3. Enter 4ti2 directory

`>cd 4ti2-1.6.9`

4.4.4. Configure 4ti2

`>./configure`

4.4.5. Build 4ti2

`>make`
`>make check`

4.4.6. Install 4ti2

`>sudo make install-exec`

Installed by default to /usr/local

4.4.7. Return to your home directory

`>cd $HOME`

4.5. METIS – for graph partitioning

4.5.1. Download METIS from http://glaros.dtc.umn.edu/gkhome/metis/metis/download

For instance: metis-5.1.0.tar.gz

4.5.2. Extract the archive (to you home directory)

>tar -zxvf metis-5.1.0.tar.gz

4.5.3. Enter METIS directory

`>cd metis-5.1.0`

4.5.4. Configure METIS

`>make config`

4.5.5. Build METIS

`>make`

4.5.6. Install METIS

`>sudo make install`

Installed by default to /usr/local

4.5.7. Return to your home directory

`>cd $HOME`

5. Buld ParAd

5.1. Enter ParAd directory

`>cd ParAd-1.2.3`

5.2. Build ParAd

`>make`

6. Test ParAd

6.1. Enter test directory

`>cd test`

6.2. Run test

`>mkdir output`

`>./test_mpi`

In case of success you will finally get

`All the tests completed successfully!`

Note: copy ParAd to /usr/local/bin to install it for all users
    `>sudo cp ParAd /usr/local/bin`

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