

How to Build and Use Unigen

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About Unigen

Unigen is a uniform solution sampler for CNF. Its homepage is <https://github.com/meelgroup/unigen>.

Unigen Usage

Unigen takes a .cnf file in the DIMACS format as an input.

A special comment line, e.g., `c ind 3 4 7 8 10 11 14 17 18 26 30 35 36 39 42 47 60 62 67 0`, can be prepended to the input file to denote which SAT variables must be sampled (if not all of them are needed).

Invocation example:

```
1 | unigen --samples 10 myfile1.cnf >out1.cnf
```

The number of samples n by default is 500; in our example we chose 10.

Unigen outputs a lot of comment lines (starting with `c`), the line containing sampled variables (`vp 10 8 7 6 4 3 1 0`), and $\geq n$ samples. Thus, we need to take the last n non-comment lines. Each such line contains one sample: a list of positive and negative integers ending with 0. Positive and negative integers correspond to `true` and `false` values of the corresponding CNF variables.

Building Unigen Static Binary

The following commands need to be executed in order to build and install the static binary of Unigen on Ubuntu (tested on Ubuntu 22.04 LTS).

The static binary (independent on other libs) can be then taken from `/usr/local/bin/unigen` (31 MiB).

```
1 | sudo apt-get install build-essential cmake
2 | sudo apt-get install zlib1g-dev libboost-program-options-dev libm4ri-dev
3 | sudo apt install libgmp-dev
4 |
5 | mkdir -p ~/unigen.gits
6 | cd ~/unigen.gits
7 |
8 | git clone https://github.com/msoos/cryptominisat
9 | cd cryptominisat
10 | mkdir build && cd build
11 | cmake -DSTATICCOMPILE=ON -DUSE_GAUSS=ON ..
12 | make
13 | sudo make install
14 |
```

```
15 echo # arjun needed for approxmc
16 cd ../../
17 git clone https://github.com/meelgroup/arjun
18 cd arjun
19 mkdir build && cd build
20 cmake -DSTATICCOMPILE=ON ..
21 make
22 sudo make install
23
24 cd ../../
25 git clone https://github.com/meelgroup/approxmc/
26 cd approxmc
27 mkdir build && cd build
28 cmake -DSTATICCOMPILE=ON ..
29 make
30 sudo make install
31
32 cd ../../
33 git clone https://github.com/meelgroup/unigen/
34 cd unigen
35 mkdir build && cd build
36 cmake -DSTATICCOMPILE=ON ..
37 make
38 sudo make install
```