

SIEMENS EDA

# AC Machine Learning **Release Notes**

Software Version v1.5  
October 2021

Copyright 2021 Siemens

Licensed under the Apache License, Version 2.0 (the "License");  
you may not use this file except in compliance with the License.

You may obtain a copy of the License at

<http://www.apache.org/licenses/LICENSE-2.0>

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

Table of Contents

**Release 1.5..... 1**  
    *Enhancements.....1*  
    *Corrected Issues.....1*

**Release 1.4..... 2**  
    *Enhancements.....2*  
    *Corrected Issues.....2*

**Release 1.0.3..... 3**  
    *Enhancements.....3*  
    *Corrected Issues.....3*

**Release 1.0.2..... 4**  
    *Enhancements.....4*  
    *Corrected Issues.....4*

**Release 1.0.1..... 5**  
    *Enhancements.....5*  
    *Corrected Issues.....5*

**Release 1.0.0..... 6**  
    *Enhancements.....6*  
    *Corrected Issues.....6*

**Supported Compilers..... 7**

# Release 1.5

---

The following topics describes the changes that were made to the *Algorithmic C Machine Learning (AC ML)* library since the last release.

## Enhancements

### System Level Design

Added two examples that demonstrate bringing the accelerator into a system level design.

In "host\_code\_design" the stimulus comes from a program running in the SystemC testbench, which drives register operations to the slave side of the accelerator and accesses the shared memory.

In "processor\_design", the same stimulus program is run on an embedded processor. Since the design have much hardware in common, the hardware source directory, hardware\_sources, is here and is shared by the processor\_design and host\_code\_design.

In order to run these examples you will need to source the script "set\_rocket\_vars" in addition to the "set\_vars" script documented in the HLS\_SEMINAR\_2021/README.txt. Move up to the directory containing HLS\_SEMINAR\_2021 and do the following:

Example for C-Shell users:

```
source ../set_vars.csh
source ../set_rocket_vars.csh
```

Example for Bourne Shell users:

```
. ../set_vars.sh
. ../set_rocket_vars.sh
```

### Support for Bourne Shell

Added Bourne-shell variations of the "set\_vars" scripts. To download the third-party software required to run the examples in HLS\_SEMINAR\_2021, you need to move to the directory containing HLS\_SEMINAR\_2021 and do the following:

Example for C-Shell users:

```
source ../set_vars.csh
```

Example for Bourne Shell users:

```
. ../set_vars.sh
```

## Corrected Issues

Add switch to usage of "wget" in the "set\_vars" scripts to avoid certificate issues with the Accellera SystemC download.

## Release 1.4

---

The following topics describes the changes that were made to the *Algorithmic C Machine Learning (AC ML)* library since the last release.

### Enhancements

Added the presentation material from the HLS Seminar 2021 as  
Early\_Design\_and\_Validation\_of\_an\_AI\_Accelerator.pdf

### Corrected Issues

N/A

## Release 1.0.3

---

The following topics describes the changes that were made to the *Algorithmic C Machine Learning (AC ML)* library since the last release.

### Enhancements

N/A

### Corrected Issues

Added DPRAM.h memory model.

## Release 1.0.2

---

The following topics describes the changes that were made to the *Algorithmic C Machine Learning (AC ML)* library since the last release.

### Enhancements

N/A

### Corrected Issues

Added in several files that were missing from the distribution.

Note that the data file holding the kernel weights is a gzip-compressed file to work with github. The Makefiles will copy all data files to the current directory (and unzip) before running.

# Release 1.0.1

---

The following topics describes the changes that were made to the *Algorithmic C Machine Learning (AC ML)* library since the last release.

## Enhancements

A C-Shell script 'set\_vars.csh' has been added. Sourcing this script in your shell will download/build all of the open-source projects required to compile and simulate the DVCON\_2021 reference design example.

## Corrected Issues

The following bugs were fixed:

- N/A



# Release 1.0.0

---

The following topics describes the changes that were made to the *Algorithmic C Machine Learning (AC ML)* library since the last release. This release is the first release of this library and contains a reference design showing ML implemented in C++ with SystemC MatchLib interfaces.

## Enhancements

N/A

## Corrected Issues

N/A

## Supported Compilers

---

The AC Machine Learning package requires a C++ compiler that supports the C++11 or newer language standard.