

# NNStreamer build configurations

- Enable/Disable H/W & Neural Network Framework Adaptation (Tensor-Filter Subplugins)
  - option('enable-tensorflow-lite', type: 'boolean', value: false)
    - Build tensorflow-lite subplugin
    - Tensorflow-lite is required for build.
    - We supply "tensorflow-lite devel" packages along with headers and a proper pkgconfig file for Tizen, Ubuntu (PPA), Yocto /OpenEmbedded, and Android for Tensorflow 1.09, 1.13, 1.15.
  - option('enable-tensorflow', type: 'boolean', value: false)
    - Build tensorflow subplugin
    - Tensorflow is required for build
    - We supply "tensorflow devel" package along with headers and a proper pkgconfig file for Tizen and Ubuntu (PPA).
  - option('enable-caffe2', type: 'boolean', value: false)
    - Build caffe2 subplugin
    - Requires caffe2 (devel) and ptorobuf (devel)
    - We supply proper "caffe2 devel" package for Tizen and Ubuntu(PPA).
  - option('enable-pytorch', type: 'boolean', value: false)
    - Build pytorch subplugin
    - Requires pytorch (devel).
    - We supply proper "pytorch devel" package for Tizen and Ubuntu(PPA).
  - option('enable-movidius-ncsdk2', type: 'boolean', value: false)
    - Build mobidius (ncsdk2) subplugin
    - Requires mvnc library.
  - option('enable-python', type: 'boolean', value: false)
    - Build python-custom-filter support
    - This enables to insert a python object as a filter to GStreamer/NNStreamer pipelines.
  - option('enable-nnfw-runtime', type: 'boolean', value: false) # true to enable nnfw tensor filter element
    - Build nnfw-runtime (neurun) subplugin.
    - nnfw-runtime (neurun) is a neural network inference accelerator of Samsung (Apache2.0, opened via Tizen.org)
  - option('enable-cppfilter', type: 'boolean', value: true) # Allows C++ custom filters
    - Allows to insert C++ class as a filter in a GStreamer/NNStreamer pipeline.
  - option('enable-edgetpu', type: 'boolean', value: false)
    - Build EDGE-TPU support.
  - option('enable-armnn', type: 'boolean', value: false)
    - Build ARMNN support
  - option('enable-openvino', type: 'boolean', value: false)
    - Build OpenVINO support
- Change behaviors of H/W & Neural Network Framework Adaptation
  - option('enable-pytorch-use-gpu', type: 'boolean', value: false) # default value, can be specified at run time
    - Enable GPU usage for PyTorch in the .ini file.
  - option('enable-tflite-nnapi-delegation', type: 'boolean', value: false) # true to enable tensorflow-lite to delegate nnapi interpretation to nnfw backend in tizen
    - Enable NNAPI delegation for tflite by default.
    - This can be overridden by each instance of pipelines and their elements.
- Test & Examples
  - option('enable-test', type: 'boolean', value: true)
    - Build unit tests
  - option('install-test', type: 'boolean', value: false)
    - Install the unit test binaries to \${prefix}/\${libdir}/nnstreamer/unittest/ (default: /usr/lib/nnstreamer/unittest)
    - Install custom filters used for unit tests to \${prefix}/\${libdir}/nnstreamer/customfilters/ (default: /usr/lib/nnstreamer/customfilters)
  - option('install-example', type: 'boolean', value: false)
    - Install example custom filters after the build even if test is not enabled or installed.
- NNStreamer Core
  - option('enable-orc', type: 'boolean', value: true) # default true, use orc when found orc library
    - Use ORC for tensor-transform to apply SIMD.
  - option('disable-video-support', type: 'boolean', value: false)
    - Disable video support in tensor-converter
    - You may use this to remove the dependencies on GST-Video. (for video-only lightweight systems)
  - option('disable-audio-support', type: 'boolean', value: false)
    - Disable audio support in tensor-converter
    - You may use this to remove the dependencies on GST-Audio. (for audio-only lightweight systems)
  - option('enable-filter-cpp-class', type: 'boolean', value: false) # Allows to accept C++ classes as filter subplugin implementation.
    - Allow to implement tensor-filter subplugin (HW / NNFW adaptor) as a C++ class. (WIP: [#2194](#))
- Configure nnstreamer.ini
  - option('enable-env-var', type: 'boolean', value: true)
    - Set enable\_envvar=false in nnstreamer.ini
  - option('enable-symbolic-link', type: 'boolean', value: true)
    - Set enable\_symlink=false in nnstreamer.ini
- API Support
  - option('enable-capi', type: 'boolean', value: false)
    - Build NNStreamer's C API set.
    - This is Tizen Machine Learning C-API, but can be used for other OS as well (e.g., Ubuntu)
  - option('framework-priority-tflite', type: 'string', value: 'tensorflow-lite,nnfw,armnn,edgetpu', description: 'A comma separated prioritized list of neural network frameworks to open a .tflite file')
    - When a framework name is not specified for .tflite files via APIs, this option tells NNStreamer which frameworks to search.
    - There can be multiple candidates with higher priorities from the left.

- Access Control / OS Specifics
  - option('enable-tizen', type: 'boolean', value: false)
    - Build NNStreamer for Tizen devices
      - Be more strict on access control (C-API); i.e., apply Tizen Privilege Control APIs and restrict a few unwanted behaviors.
      - Search for available camera/mic node with Tizen Multimedia APIs automatically w/ C-API usages.
      - Use Tizen's "DLOG" for logging instead of GStreamer/GLib logging mechanism.
  - option('enable-tizen-sensor', type: 'boolean', value: false)
    - Add a NNStreamer plugin, "tensor-src-tizensensor".
    - This allows accepting Tizen Sensor Framework's output as inputs of GStreamer/NNStreamer pipeline with "tensor-src-tizensensor" elements.
  - option('enable-element-restriction', type: 'boolean', value: false) # true to restrict gst-elements in api
    - Provide a whitelist of GStreamer elements. Users won't be able to use other GStreamer elements with C-APIs
  - option('restricted-elements', type: 'string', value: "")
    - The whitelist. (Yes, the name is weird. We need to update it)

Related Code: /meson\_options.txt

Updated at 2020-04-07, based on commit [5ed942e6](#), (NNStreamer 1.5.1)