EIQTRN

eIQ Toolkit Release Notes

Rev.1.8 — July 10, 2023 Release notes

Document information

Information	Content
Keywords	Machine Learning, AI, TensorFlow, Neural Networks, eIQ, Computer Vision
Abstract	This document contains information about the content, new features, and limitations of the eIQ Toolkit package. eIQ Toolkit is a machine learning environment which enables its users to train and run machine learning models as efficiently as possible on NXP hardware.

Contents:

1 Overview

This document contains information about the content, new features, and limitations of the eIQ Toolkit package. eIQ Toolkit is a machine learning environment which enables its users to train and run machine learning models as efficiently as possible on NXP hardware.

Table 1.1: Component overview

Component	Version
eIQ Portal	2.9.4
Model Tool	2.9.2
DeepViewRT/ModelRunner	2.4.46
DeepView Converter	2.7.0
DeepView Converter (ONNX plug-in)	2.7.1
DeepView Converter (RTM plug-in)	2.7.1
DeepView Converter (TF Lite plug-in)	2.7.1
DeepView Converter (Arm Vela plug-in)	1.1.0
DeepView Datastore	2.3.0
DeepView Importer	2.3.2
DeepViewRT	2.4.46
Modelrunner	2.3.0
Modelrunner Client	0.1.1
DeepView Trainer	2.7.4
DeepView Validator	2.7.3
DeepView Python	2.6.3
Python	3.8.10
Python – Tensorflow	2.10.1
Python – ONNX	1.12.0
Python – ONNX Runtime	1.13.1

Table 1.2: Third-party optional dependencies

Component	Version
CUDA	11.2 or 11.4
cuDNN	8.1.0 for CUDA 11.2 or 8.2.4 for 11.4

2 References

This release includes the following references and additional information:

- *eIQ Toolkit User's Guide* (document EIQTUG) - provides the information about the eIQToolkit.
- *eIQ Toolkit Release Notes* (document EIQTRN) - provides the release information.
- *DeepViewRT User's Manual* - provides the information about DeepViewRT inference engine.
- *Datastore User's Manual* - provides the information about Datastore API for dataset management.

3 1.8 Features and fixes

- Custom model templates:
  - Added templates for image classification, object detection, image segmentation models, and for a custom loss function.
- User settings:
  - Added a modal window for user settings (Settings window).
  - Added the user plugins folder setting to the Settings window.
- Image segmentation is supported *(preview)*.
  - Support only for training and defining your own custom model, UNET and FPN. Dataset curation and Model Wizard will support this feature in future versions.
- Custom Model templates are provided in *workspace\templates* for classification, object detection, segmentation, and a custom loss function.
- Neutron converter added to support eIQ Neutron Neural Processing Unit.
  - Currently only as command-line tool. Further integration will be included in future versions.
- Version updates:
  - TensorFlow updated from 2.8.0 to 2.10.1.
  - ONNX updated from 1.11.0 to 1.12.0.
  - ONNX Runtime updated from 1.10.0 to 1.13.1.
  - Related dependencies were updated as well. Pip-tools package was introduced for requirements management.
- Model Tool merged with netron 6.7.5.
- Extensions
  - Updated Explainability Extension with Deep k-Nearest Neighbor.
- Extension Framework
  - Added image pagination.
  - A few minor bugfixes and tweaks.

4 Known issues and workarounds

The following list specifies the current known issues (which may impact the user experience) and workarounds:

- Do not use Batch Sizes of less than 4 in eIQ Portal.
- Validation may not work when Proxy Settings are enabled.
- Issues observed for ONNX to TFLite conversions due to differences between the 2 formats and third-party library usage, but since the last version they were significantly improved. Specifically this applies to models originating from PyTorch.
- Issues observed for H5/TF Lite to ONNX conversions due to differences between the 2 formats and third-party library usage.
- Issues observed in quantized conversions from the TF SavedModel format.
- Unable to quantize LSTM layer in TF Lite.
- Missing icon for Model Tool on Linux.
- Conversion from ONNX to TF Lite has performance issues due NHWC/NCHW layout change and addition of Transpose layers

5 Revision history

Table 5.1: Revision history

Revision number	Date	Substantive changes
0	15 June 2021	Initial release of eIQ Toolkit 1.0.3
1	24 June 202	Updated release of eIQ Toolkit 1.0.5
2	19 October 2021	Updated release of eIQ Toolkit 1.1.8
3	18 January 2022	Updated release of eIQ Toolkit 1.2.5
4	31 March 2022	Updated release of eIQ Toolkit 1.3.4
5	8 July 2022	Updated release of eIQ Toolkit 1.4.5
6	3 October 2022	Updated release of eIQ Toolkit 1.5.2
7	1 February 2023	Updated release of eIQ Toolkit 1.6
8	11 April 2023	Updated release of eIQ Toolkit 1.7
9	10 July 2023	Updated release of eIQ Toolkit 1.8

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