# GPNTRN

## GoPoint for i.MX Applications Processors Release Notes

**Rev. 4 — 2 April 2024**

**Document information**

| Information | Content |
|---|---|
| Keywords | GPNTRN, GoPoint, i.MX, demos, MPU, machine learning, GoPoint for i.MX Applications Processors |
| Abstract | This document contains information about the content, new features, and limitations of the GoPoint for i.MX Applications Processors interface. |

# 1   Introduction

This document contains information about the content, new features, and limitations of the GoPoint for i.MX Applications Processors interface. The interface is user-friendly and allows the user to launch preselected demonstrations. These demonstrations are included in the NXP provided version 6.6.3_1.0.0 Linux board support package (BSP). For more information, refer to *Embedded Linux for i.MX Applications Processors* (document IMXLINUX). The GoPoint for i.MX Applications Processors and its demos are classified as *demo quality* software and must be used with caution.

# 2   Supported i.MX reference boards

This release supports the following i.MX reference boards:

- i.MX 9 Series
  - i.MX 93 EVK Board (93)
  - i.MX 95 EVK Board (95)
- i.MX 8 Series
  - i.MX 8ULP EVK Board (8ULP)
  - i.MX 8M Plus EVK Board (8MP)
  - i.MX 8QuadXPlus MEK Board (8QXP)
  - i.MX 8QuadMax MEK Board (8QM)
  - i.MX 8M Quad EVK Board (8MQ)
  - i.MX 8M Mini EVK Board (8MM)
  - i.MX 8M Nano EVK Board (8MN)
- i.MX 7 Series
  - i.MX 7ULP EVKB Board (7ULP)

# 3   References

This release includes the following reference and additional information:

- *GoPoint for i.MX Applications Processors User Guide* (document GPNTUG) – provides the information about the GoPoint for i.MX Applications Processors

# 4   Supported demos

Table 1, Table 2, Table 3, and Table 4 list the supported demos in this release.

**Table 1.  Machine learning demos**

| Demo name | Supported boards |
| --- | --- |
| Object classification (NNStreamer) | 8MP, 8MM, 8QM, 93 |
| Object detection (NNStreamer) | 8MP, 8MM, 8QM, 93 |
| Face recognition | 8MP |
| Pose detection (NNStreamer) | 8MP, 8QM |
| ML benchmark demo | 8MP, 93 |
| ML Gateway | 8MP, 8MM, 93 |
| Selfie Segmenter | 8MP, 93 |

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**Table 1. Machine learning demos**...*continued*

| Demo name | Supported boards |
|---|---|
| Driver Monitoring System (DMS) | 8MP, 93 |
| i.MX Smart Fitness | 8MP, 93 |
| LP baby cry detection | 93 |
| LP KWS detection | 93 |

**Table 2. Multimedia demos**

| Demo name | Supported boards |
|---|---|
| Video test demo | 7ULP, 8MN, 8MM, 8MQ, 8QM, 8QXP, 8MP, 8ULP, 93 |
| Camera using the Video Processing Unit (VPU) | 8MP |
| Multi-camera preview | 8MP |
| Image Sensor Processor (ISP) control demo | 8MP |
| Video dump demo | 8MP |
| Audio record | 7ULP |
| Audio play | 7ULP |
| i.MX voice control | 8MP, 8MM |
| i.MX Multimedia Player | 8MM, 8MP, 93 |
| i.MX Smart Kitchen | 8MM, 8MP, 93 |
| 2Way video streaming | 8MP, 8MN, 8MM |

**Table 3. TSN demos**

| Demo name | Supported boards |
|---|---|
| TSN 802.1Qbv | 8MM, 8MP |

**Table 4. GPU demos**

| Demo name | Supported boards |
|---|---|
| Tiger G2D | 7ULP, 8MM, 8QM, 8QXP, 8MP, 8ULP, 8MQ, 8MN |
| Vivante launcher | 7ULP, 8QM, 8QXP, 8MP, 8ULP |
| Cover flow | 7ULP, 8ULP |
| Vivante tutorial | 7ULP, 8ULP |
| Bloom | 7ULP, 8MN, 8MM, 8MQ, 8QM, 8QXP, 8MP |
| Blur | 7ULP, 8MN, 8MM, 8MQ, 8QM, 8QXP, 8MP, 8ULP |
| Eight layer blend | 7ULP, 8MN, 8MM, 8MQ, 8QM, 8QXP, 8MP, 8ULP |
| Fractal shader | 7ULP, 8MN, 8MM, 8MQ, 8QM, 8QXP, 8MP, 8ULP |
| Line builder 101 | 7ULP, 8MN, 8MM, 8MQ, 8QM, 8QXP, 8MP, 8ULP |
| Model loader | 7ULP, 8MN, 8MM, 8MQ, 8QM, 8QXP, 8MP, 8ULP |

**Table 4. GPU demos**...*continued*

| Demo name | Supported boards |
|---|---|
| S03 transform | 7ULP, 8MN, 8MM, 8MQ, 8QM, 8QXP, 8MP, 8ULP |
| S04 projection | 7ULP, 8MN, 8MM, 8MQ, 8QM, 8QXP, 8MP, 8ULP |
| S06 texturing | 7ULP, 8MN, 8MM, 8MQ, 8QM, 8QXP, 8MP, 8ULP |
| Mapping | 7ULP, 8MN, 8MM, 8MQ, 8QM, 8QXP, 8MP, 8ULP |
| Mapping refraction | 7ULP, 8MN, 8MM, 8MQ, 8QM, 8QXP, 8MP, 8ULP |

## 5 New features

This release includes the following new features:

- Main repository changes:
  - Improved `README.md` for the main page, showing a list of applications included in the release and the supported i.MX boards.
  - The download file is now a JSON file to improve the download process of assets and its readability. The previous download file has been a raw TXT file, less robust, and maintainable.
  - All files contain their sha1sum hash to confirm correct downloads.
  - Refactored the `Utils` script to support the JSON `downloads.json` file.
  - Improved the launcher thumbnail images and removed the old ones from the repository.
  - Reviewed the Python scripts with static analyzer tool *Pylint* and improved the overall score for the scripts. The scripts are now better quality in terms of source code implementation and safety.
  - Separated the machine learning examples in independent folders containing the source code and information on how to run them. Their license file is also included in each folder. It is going to be applied for other example applications in the future releases.
  - The README files with detailed information are included for the following examples:
    - ML Gateway
    - Selfie Segmenter
    - i.MX Smart Fitness
    - DMS
- NNSTREAMER example applications:
  - Removed and replaced the NNStreamer examples with the newly developed examples of NXP available at: nxp-nnstreamer-examples. NNStreamer examples are licensed under the BSD-3-Clause license. Pose estimation example has better performance than the previous example.
  - Some features available in the past releases are not supported in this first version of the NNStreamer examples. Future improvements are going to be added, such as FPS and IPS information.
  - Removed the LGPL-2.1-only source code from the release.
- ML benchmark:
  - The i.MX 8M Plus now supports this tool.
  - Refactored and improved the tool, allowing the user to change the model to be evaluated and compared between NPU and CPU.
  - The tool now selects the number of threads to use on a Cortex-A CPU for inference.
- ML Gateway:
  - Refactored and improved the ML Gateway. The user experience running this example has been simplified.
  - The GUI now provides more information to the user regarding errors during testing, such as the unsupported camera device.
- Selfie Segmenter:
  - Refactored and improved the Selfie Segmenter.

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- – i.MX 93 now supports the general version of the model (better accuracy) due to improved performance on the Vela compiled model.
- – The i.MX 8M Plus now supports the landscape version of the model.
- – The user can now change the background image for background substitution and choose their own background.
- – The GUI now provides more information logs to the users.
- i.MX Smart Fitness:
  - – A new example application integrated to GoPoint: i.MX Smart Fitness.
  - – i.MX Smart Fitness is supported on both i.MX 8M Plus and i.MX 93.
- DMS:
  - – Released new version of DMS.
  - – The i.MX 8M Plus now supports the DMS.
  - – DMS now detects smoking and calling detection.
- Low-power baby cry detection:
  - – Low-power baby cry detection integrated for i.MX93.
  - – Low-power ML example that shows how to implement baby cry detection running on the Cortex-M33 core, with Linux in Suspend mode.
- Low-power KWS detection:
  - – Integrated the low-power KWS detection for i.MX 93.
  - – Low-power ML example that shows how to implement keyword detection running on the Cortex-M33 core with Linux in Suspend mode.
- TSN:
  - – Improved the TSN example application and fixed several bugs.
  - – Added IP address dialog for i.MX 8M Plus.
  - – Added ssh conditional to avoid failure of application.
  - – Fixed camera client while loop break condition.

# 6   Known issues and workarounds

This release includes the following known issues and workarounds:

- i.MX Multimedia Player is not functional in this release, due to the deprecation of Pulse Audio and the migration of the stack to PipeWire.
- NNStreamer demos can appear on the i.MX 95 image, but are not functional.

# 7   Revision history

Table 5 summarizes the revisions to this document.

**Table 5. Revision history**

| Document ID | Release date | Description |
|---|---|---|
| GPNTRN v.4.0 | 2 April 2024 | • Updated for the 6.6.3_1.0.0 release<br>• Added i.MX 95 EVK Board to Supported i.MX reference boards<br>• Updated Table 2 in Supported demos<br>• Updated New features<br>• Updated Known issues and workarounds |
| GPNTRN v.3.0 | 15 December 2023 | • Updated for the 6.1.55_2.2.0 release |

**Table 5. Revision history**...*continued*

| Document ID | Release date | Description |
|---|---|---|
| | | • Rename from NXP Demo Experience to GoPoint for i.MX Applications Processors |
| GPNTRN v.2.0 | 30 October 2023 | Updated for 6.1.36_2.1.0 release |
| GPNTRN v.1.0 | 30 August 2023 | Updated for 6.1.22 release. Initial external release. |

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