# WitinProgramTool for WTM2101

# User Guide

1. Hardware Requirement:

* WTM2101 chip and demo board
* Jlink
* USB2SPI module

1. Software Requirement:

* WitinProgramTool.exe

or WitinProgramTool\_IEN.exe

or WitinProgramTool\_DEBUG.exe

* JLink\_x64.dll

1. Usage

WitinMem Program Tool for WTM2101 provides the following modes for WTM2101:

1. **"program" Mode: Program the network onto the chip.**
   1. File preparation

4 files are required during the program operation:

(1) network map (./map/xxx.csv)

(2) expected input for MAC operation of each weight matrix (./map/expected\_in.bin)

(3) expected output for MAC operation of each weight matrix (./map/expected\_out.bin)

(4) Map information for each weight matrix (./map/layers.txt).

NOTE: All (1)-(4) files need to be placed in the same directory (e.g. ./map/).

* 1. Run the tool with:

WitinProgramTool -m program -i ./map/xxx.csv -t tag\_you\_want

Then wait until the process finishes.

1. **"infer" Mode: Return the result of MAC operation of the specified weight matrix.**

**(WitinProgramTool\_DEBUG.exe or WitinProgramTool\_IEN.exe only)**

* 1. Write a file (e.g. layers\_infer.txt) to define the position of the weight matrix:

xs, xe, ys, ye, zs, ze, g

prepare your input file (space-separated!). One line for one frame.

* 1. Run the Tool with:

WitinProgramTool -m infer -i your\_input.txt -l layers\_infer.txt -r input\_frames

* 1. Find the result in ./infer\_output.txt

1. **"init" Mode: Initialize the chip.**

Since program mode will run the initialization automatically when the chip is programmed for the first time, the "init" mode is not necessary unless you want to do the initialization manually.

Run “init” mode with:

WitinProgramTool -m init

1. **"read\_tag" Mode: Read the tag saved on the chip.**

WitinProgramTool -m read\_tag

1. **"ota" Mode: Generate data file for OTA program.**

WitinProgramTool -m ota -i map.csv

Other Options：

**--boot <bootloader.txt>:** specify the bootloader to be saved with the chip. The current bootloader on the chip will be kept if --boot not given.

**--repeat (-k) <repeat\_num>:** specify the upper limit of repeat for refining, default is 1.

**--dframe <frame\_num>:** frame number to be used for OTA data generation, calibration and accuracy evaluation.

**--spi <spi\_id>:** ID of USB2SPI module, mandatory if more than 1 device connected.

**--jlink <jlink\_id>:** ID of Jlink module, mandatory if more than 1 device connected.

**--help (-h):** help information on commands and options.

**--version (-v):** version info.