

# Fibo Al Stack 模型转化指南

-----Docker Desktop 环境操作

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#### 适用型号

序列	文档版本	更新说明
1	V1.0	NA



### 目录

1	引言	1
2	所需理	不境使用1
	2.1	安装 Docker Desktop1
	2.2	下载 Fibo Al Stack 文件3
3	详细封	步骤
	3.1	方法一: Docker file3
	3.2	方法二: Docker image6
	3.3	模型转化6
		3.3.1 模型导入7
		3.3.2 模型导出7
		3.3.3 ONNX 模型转化
		3.3.4 TFLite 模型转化 9
		3.3.5 TensorFlow 模型转化10

## 1 引言

Fibo AI Stack 旨在帮助用户在 SC171 开发套件 V3 上将人工智能相关的应 用进行端侧化的部署。端侧部署的流程分为:数据预处理、模型训练、模型转化、 模型端侧推理、数据后处理。

本文主要介绍如何使用 Fibo AI Stack 进行模型转化的工作。

## 2 所需环境使用

### 2.1 安装 Docker Desktop

电脑提前安装 Docker Desktop, 官网链接: <u>Windows</u> | <u>Docker Docs</u>

如果用户使用的是 Win11 家庭版, 需要自行搜索安装与开启 hyper-v 的相关方法。

Docker 默认会将镜像、容器、卷等数据存储在 C 盘上。随着使用时间的增加,这些数据可能会占用大量空间(尤其是镜像和容器日志),所以推荐将 Docker 与镜像文件安装到 C 盘以外的路径,请参考以下修改方法:

将官网下载好的 Docker Desktop Installer.exe 文件放到 d 盘或者其他的 盘。注意: Docker 安装文件不要放 Docker 的安装路径下



在安装程序所在的文件夹上方输入 cmd 回车



在打开的 cmd 命令行窗口中输入以下代码, 红色字体变为自己的电脑路径: "D:\Tools\Docker\Docker Desktop Installer.exe" install --accept-license --installationdir="D:\Tools\Docker\DockerImage"

注意: Docker 依赖的一些服务(如 ws1 和 Hyper-V)仍然会安装在 C 盘



如图所示, 安装成功

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在桌面生成的 Docker 右键以管理员身份打开,选择设置中的 Resources,选择 Browse,选择你想要放置镜像的地址,最后选择 Apply & retart。

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Fanlan maine 11 - D		Cancel Apply & restart

此时 Docker 会弹出异常错误提示,**不用理会**。此时在选择的路径下会出现 新文件夹 DockerDesktopWSL,进入路径\DockerDesktopWSL\disk\,点击 docker\_data.vhdx,选择属性->安全->编辑,点击Users,选择完全控制,点击 确定即可。最后重启 Docker,即设置成功。

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## Fibccom

## 2.2 下载 Fibo AI Stack 文件

下载Fibo AI Stack 文件, 链接:

https://pan.baidu.com/s/1y6k28b\_5POMkJj65jydjLQ?pwd=i3js

说明: Dockerfile 与 Docker image 是两种生成 docker 镜像的方式,任选一种方式操作即可,对于 docker 网络环境较差的场景建议使用 docker image 的方式,在使用前需要确保本地 docker 环境正常

## 3 详细步骤

## 3.1 方法一: Docker file

打开软件 Docker Desktop, 打开设置, 选择 Docker Engine 修改内容为: "builder": { "gc": { "defaultKeepStorage": "20GB", "enabled": true } }, "experimental": false, "registry-mirrors": [ "https://docker.m.daocloud.io", "https://docker.imgdb.de", "https://docker-0.unsee.tech", "https://docker.hlmirror.com", "https://docker.1ms.run", "https://func.ink", "https://lispy.org", "https://docker.xiaogenban1993.com"

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选择 Apply & retart

## Fibocon

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	env.Dockerme.			
Windows PowerShell X				
Windows PowerShell 版权所有(C) Microsoft Co	orporation。保留所有权利。			
安装最新的 PowerShell, 了角	解新功能和改进! https://ak	a.ms/PSWindows		
PS D:\docker> docker build	d -t fiboai_qcom_tools_env	:v1.0 -f fiboai	acom_tools_env.	Dockerfile .

构建完成后会在 docker 生成 fiboai\_qcom\_tools\_env:v1.0 镜像,预计时间一个小时左右,构建耗时主要取决于网速状态。镜像下载断开后,可以根据之前进度继续下载。



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		[ 6/11] RUN /bin/bash		cd /tmp && wget https://mirrors.tuna.tsinghua.edu.cn/anaconda/minicond	a/Mi	81.6	s
1 :		[ 7/11] RUN /bin/bash		/opt/conda/bin/pip config set global.trusted-host mirrors.aliyun.com &&	/op	0.6	
		[ 8/11] COPY 2.26.0.24	0828	.tar.gz /opt/		1.7	
		[ 9/11] RUN /bin/bash		cd /opt && tar -xzf 2.26.0.240828.tar.gz && rm 2.26.0.240828.tar.g		19.1	
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#### 输入以下命令来创建 docker 容器:

docker run -dit --name fiboai\_qcom\_226\_env fiboai\_qcom\_tools\_env:v1.0 查看当前正在运行的 docker 容器: docker ps

PS dd4 PS COI dd4 PS	D:\docker> docker 167dad7735c45ebb123 D:\docker> docker ITAINER ID IMAGE 167dad7735 fiboai D:\docker> 如图所示,	run -ditname fiboa: 5465bfdf3ee24a67c3fe8d os _qcom_tools_env:v1.0 创建成功	i_qcom_226_env fce49d8d739ad4 COMMAND "/bin/bash"	fiboai_qcom_tool 085bef9 CREATED 3 minutes ago	s_env:v1.0 STATUS Up 3 minutes	PORTS	NAMES fiboai_qcom_226_env
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### 3.2 方法二: Docker image

在文件存放路径下打开终端,使用下面的命令导入镜像,构建完成后会生成 fiboai\_qcom\_tools\_env:v1.0 镜像: docker load -i fiboai\_qcom\_tools\_env.tar

D:\docker-Fibo_AI_Stack 270a1170e7e3: Loading ] 762249f7b41c: Loading ] 0bdef5192c24: Loading ] 848094ccf5a9: Loading ] 4704830fc62f: Loading ] 14dae5b7c196: Loading ] 17fc630fa9b2: Loading ] b200f1594c8f: Loading ] 8b03f33a94ac: Loading ] 28f74afdac73: Loading ] Loaded image: fiboai_q0	Odocker load -i fiboai_qcom_tools         ayer [	_env. tar	80. 41MB/80. 41MB 3. 072kB/3. 072kB 46. 86MB/46. 86MB 277. 4MB/277. 4MB 2. 191GB/2. 191GB 1. 042CB/1. 042CB 3. 584kB/3. 584kB 903. 2MB/903. 2MB 2. 28GB/2. 28GB 2. 841GB/2. 841GB 11. 35GB/11. 35GB
D:\docker-Fibo_AI_Stack	$\diamond$		
输入以下命令	来创建 docker 容器:		
docker run -dit	name fiboai_qcom_2	26_env fiboai_qc	com_tools_env:v1.0
D:\docker-Fibo_AI_St 929824461aa590934235	ack>docker run -ditname fi b75874d718c424bd10decd43c190q	boai_qcom_226_env fiboa 8586ec5a7a552d7	ai_qcom_tools_env:v1.0
D:\docker-Fibo_AI_St	ack>		
查看当前正在	运行的 docker 容器:	docker ps	
D:\docker-Fibo_AI_Stack> CONTAINER ID IMAGE 929824461aa5 fiboai_qc 226 env	docker ps COMMAND CR om_tools_env:v1.0 "/bin/bash" Ab	EATED STATUS out a minute ago Up About	PORTS NAMES a minute fiboai_qcom
D:\docker-Fibo_AI_Stack>			虚拟机名称
如图所示,创	建成功		
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### 3.3 模型转化

在 SC171 开发套件上进行端侧部署时,模型需要全部转化为特定的.DLC 格式,才可以使用 Fibo AI Stack 的工具进行后续的推理工作。本小节将会为大家介绍 3 种类型的模型转化,分别是:ONNX 模型转化、TFLite 模型转化、Tensorflow 模型转化。

除了上述 3 中类型的格式模型外,其他模型建议先自行转化为 ONNX 格式,再使用 Fibo AI Stack 的工具转化为 DLC 格式。



### 3.3.1 模型导入

打开 Docker Desktop,点击运行虚拟机并打开终端。

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### 3.3.2 模型导出

输入命令退出虚拟机终端: exit 输入命令将文件导出虚拟机:



docker cp <虚拟机名称>:<虚拟机中的模型路径> <电脑中的模型文件路径> 如:

#### docker cp fiboai\_qcom\_226\_env:/home/project/MyModel.dlc D:\Project\MyModel.dlc

PS C:\Users\FIBOCOM><mark>docker</mark> cp\_fiboai\_gcom\_226\_env:/home/project/MyModel.dlc\_D:\Project\MyModel.dlc Successfully copied 457kB to D:\Project\MyModel.dlc PS C:\Users\FIBOCOM>

如图所示, 文件导出成功

亨 查看

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Þ	^	名称 ^	修改日期	类型	大小
Þ		📒 deeplabv3_resnet50-snapdragon_8_elite.dlc	2025/3/25 16:35	文件夹	
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σ		MyModel.dlc	2025/4/7 16:16	DLC 文件	445 KB
		· · · · · · · · ·		\	

### 3.3.3 ONNX 模型转化

将模型导入虚拟机后,输入命令,进入虚拟机终端中: docker exec -it <虚拟机名称> bash 如: docker exec -it fiboai\_qcom\_226\_env bash PS C:\Users\FIBOCOM> docker exec -it fiboai\_qcom\_226\_env bash

```
/opt/2.26.0.240828
[INFO] AISW SDK environment set
[INFO] QNN_SDK_ROOT: /opt/2.26.0.240828
[INFO] SNPE_ROOT: /opt/2.26.0.240828
(snpe_env) root@64d0060ee0cd:/#
```

使用 Fibo AI Stack 中的 "snpe-onnx-to-dlc"工具,将 ONNX 格式模型转 化为 DLC 格式模型,直接调使用 "snpe-onnx-to-dlc"工具:

snpe-onnx-to-dlc --input\_network / 路 径 /model.onnx --output\_path / 路 径 /model.dlc

如:

snpe-onnx-to-dlc --input\_network /home/project/real\_esrgan\_x4plus.onnx -output path /home/project/real\_esrgan\_x4plus.dlc

注释:

---input\_network 参数表示: 需要转换的模型框架路径

--output\_path 参数表示:转换模型文件输出路径

红色字体部分需自行填入

如图所示,转化成功

2025-04-07	08:16:46,513 - 235 -	INFO - INFO_INITIALIZATION_SUCCESS:
2025-04-07	08:16:46,518 - 235 -	INFO - INFO_CONVERSION_SUCCESS: Conversion completed successfully
2025-04-07	08:16:46,526 - 235 -	INFO - INFO_WRITE_SUCCESS:
(snpe_env)	root@64d0060ee0cd:/h	ome/project#

8

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### 3.3.4 TFLite 模型转化

将模型导入虚拟机后,输入命令,进入虚拟机终端中: docker exec -it <虚拟机名称> bash

如:

docker exec -it fiboai\_qcom\_226\_env bash

```
PS C:\Users\FIBOCOM> docker exec -it fiboai_qcom_226_env bash
/opt/2.26.0.240828
[INFO] AISW SDK environment set
[INFO] QNN_SDK_ROOT: /opt/2.26.0.240828
[INFO] SNPE_ROOT: /opt/2.26.0.240828
(snpe_env) root@64d0060eeecd:/#
```

使用 Fibo AI Stack 中的 "snpe-tflite-to-dlc"工具,将 tflite 格式模型转化为 DLC 格式模型,直接调使用 "snpe-tflite-to-dlc"工具

snpe-tflite-to-dlc --input\_network /路径/model.tflite --input\_dim input\_name "1,28,28,1" --output path /路径/model.dlc

如:

snpe-tflite-to-dlc --input\_network /home/project/MyModel.tflite --input\_dim
"serving\_default\_conv2d\_input:0" "1,28,28,1" --output\_path

/home/project/MyModel.dlc

注释:

---input\_network 参数表示: 需要转换的模型框架路径

--output\_path 参数表示:转换模型文件输出路径

--input\_dim 参数表示:需转化模型的输入名称和输入数据格式,对于输入 名称和输入数据格式不清楚的用户,可以在<u>https://netron.app/</u>中导入自己的 模型,即可查看到输入名称和输入数据格式

红色字体部分需自行填入



e --input\_dim "serving\_default\_conv2d\_input:0" "1,28,28,1" --output\_path /home/project/MyModel.dl 2025-04-07 08:16:46,513 - 235 - INFO - INFO\_INITIALIZATION\_SUCCESS: 2025-04-07 08:16:46,518 - 235 - INFO - INFO\_CONVERSION\_SUCCESS: Conversion completed successfully 2025-04-07 08:16:46,526 - 235 - INFO - INFO\_WRITE\_SUCCESS: (snpe\_env) root@64d0060ee@cd:/home/project#

9

深圳市广和通无线股份有限公司

### 3.3.5 TensorFlow 模型转化

将模型导入虚拟机后,输入命令,进入虚拟机终端中: docker exec -it <虚拟机名称> bash 如:

docker exec -it fiboai\_qcom\_226\_env bash

PS C:\Users\FIBOCOM> docker exec -it fiboai\_qcom\_226\_env bash
/opt/2.26.0.240828
[INFO] AISW SDK environment set
[INFO] QNN\_SDK\_ROOT: /opt/2.26.0.240828
[INFO] SNPE\_ROOT: /opt/2.26.0.240828
(snpe env) root@64d0060ee0cd:/#

使用 Fibo AI Stack 中的"snpe-tensorflow-to-dlc"工具,将 pb 格式模型转化为 DLC 格式模型,具体方法:

在 Fibo AI Stack 路径下,直接调使用 "snpe-tensorflow-to-dlc"工具

snpe-tensorflow-to-dlc --input\_network /路径/model.pb --input\_dim input\_name "1,299,299,3" --out\_node "output\_name"--output\_path /路径/model.dlc

如:

snpe-tensorflow-to-dlc --input\_network /home/project/inception\_v3.pb -input\_dim input "1,299,299,3" --out\_node "InceptionV3/Predictions/Reshape\_1" -output\_path /home/project/inception\_v3.dlc

注释:

---input\_network 参数表示: 需要转换的模型框架路径

--output path 参数表示:转换模型文件输出路径

--input\_dim 参数表示: 需转化模型的输入名称和输入数据格式

--output\_node 参数表示: 需转化模型的输出名称

对于输入名称、输入数据格式和输出名称不清楚的用户,可以在 https://netron.app/</u>中导入自己的模型,即可查看到输入名称、输入数据格式 和输出名称

红色字体部分需自行填入





	NODE PROPERTIES			S			
BiasAdd bias (1001)	输出名称为: InceptionV3/Predictions/Resl	hape_1	type name	Reshape InceptionV3/Predictions/Reshape_1			
Squeeze	1	ATTRIBUTE	s				
Reshape			T Tshape	float32 int32			
shape (2)		INPUTS					
Softmax			shape	name: InceptionV3/Predictions/Softmax			
Reshape shape <2>	/	OUTPUTS	output				
如图所示,转化成功							
2025-04-07 08:16:46,513 - 235 - INFO - INFO_I 2025-04-07 08:16:46,518 - 235 - INFO - INFO_C 2025-04-07 08:16:46,526 - 235 - INFO - INFO_W	NITIALIZATION_SUCCESS ONVERSION_SUCCESS: Con RITE_SUCCESS:	: nversio	on co	mpleted successfully			

(snpe\_env) root@64d0060ee0cd:/home/project#

