Qualcomm Developer Project

Stable Diffusion on 8550DK

Project Submission

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| **Attribution:** | Tianye Fan | |
| **Email address** | <zhangzz6687@thundersoft.com>  [tianye.fan@thundersoft.com](mailto:tianye.fan@thundersoft.com) | |
| **Project Title**\* | Stable Diffusion on 8550DK | |
| **Images**  *Upload up to 5 images of your project*  *Please submit/send the original JPEG/PNG files for all images included in the document* | **C8550 DK**    [Alt tag: “Blurred Image Clearness Processing using the C6490P Develop Kit”]  **Type-c usb line**  **typc**  [Alt tag: “using the USB line to develop on C6490P Develop Kit” ]  **Charger**  charger  [Alt tag: “using round-hole charger to power C6490P Develop Kit”] | |
| **Description**\*  *High level description of the project* ***(75 words or less)*** | The project built a CLI application that runs the open-source model “Stable Diffusion (v1.5) “on the C8550DK platform, using DSP to perform inference based on prompt at a speed of 500ms/it. | |
| **Objective**   * *What inspired you to create this project?* * *What is your desired outcome?* | Stable Diffusion is a highly renowned text-to-image model (and also a relatively accessible generative AI model). Its deployment on mobile devices holds significant practical significance and profound historical impact, serving as a crucial lever and focal point for the popularization of generative AI, also made a invaluable contributions to the advancement of generative AI development. | |
| **Materials Required / Parts List / Tools** | Part Name | Link to purchase |
| C8550 DK | https://www.thundercomm.com/product/c8550-development-kit/ |
| USB Line | https://item.jd.com/40759941966.html |
| Charger | https://www.thundercomm.com/product/c8550-development-kit/ |
| **Source Code / Source Examples / Application Executable**  *Link to open source / shareable code repository* | Description | Link |
| Source Code | https://github.com/ThunderSoft-XA/C8550-Stable-Diffusion-on-8550DK |
| **Additional Resources**  *List related links or resources such as websites, videos, presentations, or other materials* | Resource Title | Link or File Name (and provide file) |
| Video | https://github.com/ThunderSoft-XA/ C8550-Stable-Diffusion-on-8550DK/doc/usage.mp4 |
| **Build / Assembly Instructions** | # when C8550 SDK is activated  bash build.sh | |
| **Usage Instructions** | Due to copyright requirements, the QNN SDK and model files are not directly available. Download the QNN SDK from <https://www.qualcomm.com/developer/software/qualcomm-ai-engine-direct-sdk> , select 2.14.0.230828 as the version, download and put it in the StableDiffusion-cpp/3rd/qnn/2.14.0.230828 directory. The model is hosted on huggingface <https://huggingface.co/billlight/XiaoMiStableDiffusionV1.0> , you can download it and placed in the StableDiffusion-cpp/models/ directory. Compilation needs to be done in the x86 cross-compilation environment (C8550 SDK). After the compilation script is executed, StableDiffusion\_C8550\_qnn-2.14.tar.gz will be generated in the root directory. Pass this tar package to the C8550 DK, decompress it, add the release/libs directory to the LD\_LIBRARY\_PATH, and then run ./stablediffusion. | |
| **Contributor(s) Info**  *Feel free to include headshots!* | Name | Title  Company |
| <zhangzz6687@thundersoft.com> | Thundersoft |
| [tianye.fan@thundersoft.com](mailto:tianye.fan@thundersoft.com) | Thundersoft |

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Filters and Tags for QDN projects page

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| **Platform/Hardware** | CSR 101x/102x Bluetooth  DragonBoard 410c  mangOH Red/Yellow  Qualcomm C6490P | MDM920x LTE for IoT  QCA-402x WiFi/BLE/Zigbee  Qualcomm Robotics RBx Dev Kit  √ Qualcomm C8550 DK |
| **Software Tools** | 3D Audio Plugin for Unity  Adreno GPU SDK  Hexagon DSP SDK | Neural Processing SDK for AI  √ 　Qualcomm AI Engine Direct  　Snapdragon Profiler |
| **Operating System** | Android  √ Linux  ThreadX RTOS | Ubuntu Core  Windows 10 IoT Core |
| **Cloud Services/Platform** | Sierra Wireless AirVantage  Gizwits Cloud Platform  AT&T M2X  IBM Bluemix | IBM Watson IoT  Microsoft Azure IoT  Amazon AWS IoT |
| **Skill Level Required** | Advanced  Beginner  √ Intermediate |  |
| **Areas of Focus** | 3D Printing & Modeling  Alexa Voice Service  √ Artificial Intelligence  Bluetooth  √ Computer Vision  Digital Signage  Education  √ Embedded  Gaming | Healthcare  IoT  Robotics  Security  Sensors  Smart Cities  Smart Home  Toys |

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