Qualcomm Developer Project MultiDecoderApp 2.0

Project Submission

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| **Project Title**\* | **MultiDecoderApp 2.0** | |
| **Images**  *Upload up to 5 images of your project*  *Please submit/send the original JPEG/PNG files for all images included in the document* | AIKIT.png  http://5b0988e595225.cdn.sohucs.com/images/20181025/2af6252750954a21bf3721ce1338c3f0.png [alt tag: “MultiDecoder 2.0 using the Thundercomm AI Kit which is designed with Qualcomm® SDA845 as development board.”] **Type-C.png**   |  | | --- | | **typc** |   [alt tag: “**using the type-c line to develop on Thundercomm AI Kit development board.** ”]  [alt tag: “use mini-hdmi line to connect display **.**”]  IP-Camera.png  ip-camera | |
| **Description**\*  *High level description of the project* ***(75 words or less)*** | Using **Thundercomm AI Kit**, the data of 1080 cameras are collected by RTSP, decoded and use AI algorithm to do object detection, then the rectangular frame of object is drawn and output to HDMI display. | |
| **Objective**   * *What inspired you to create this project?* * *What is your desired outcome?* | 1.Show the powerful decoding power of 865HDK-c865 through 4 decoding videos 2.Include the full use of snpe SDK , help developers load models into the GPU/DSP/CPU of Qualcomm chips through SNPE SDK. | |
| **Materials Required / Parts List / Tools** | Part Name | Link to purchase |
| TurboX™ AI KIT | https://www.thundercomm.com/app\_en/product/1536844968290219 |
| Type-c line | https://detail.tmall.com/item.htm?id=44425281296&ali\_refid=a3\_430582\_1006:1103572855:N:8BFxSxK119dzkfQCc2yGI2us815vvcUHETWnj5g1swo=:6399b40850a40201c56536531a885bcf&ali\_trackid=1\_6399b40850a40201c56536531a885bcf&spm=a230r.1.14.11 |
| IP Camera | https://item.jd.com/ |
| Neural Processing SDK for AI | https://developer.qualcomm.com/software/qualcomm-neural-processing-sdk |
| Models | https://github.com/ThunderSoft-XA/Object-Detection-Sample-of-SNPE/tree/master/ObjectDetectionSample/models/ inception\_v3.dlc |
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| **Source Code / Source Examples / Application Executable**  *Link to open source / shareable code repository* | Description | Link |
| [Source Code](https://github.com/canyudeguang/Home_Automation) | [https://github.com/ThunderSoft-XA](https://github.com/ThunderSoft-XA/demo-Smart-Motion-detector)/TurboX-MultiDecoder2.0 |
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| **Additional Resources**  *List related links or resources such as websites, videos, presentations, or other materials* | Resource Title | Link or File Name (and provide file) |
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| **Build / Assembly Instructions** | Sample outline:   1. Overall design framework and Test environment construction method.   result.png   1. Software Build Instructions   Prepare a PC (Ubuntu 16.04/ window10/ MAC);   1. Install app to Turbox AiKit device   Adb device; adb install MultiDecoderApp2.0.apk | |
|  | Sample outline:   1. How does it work?   Below are some usage instructions to test the project. Now let's introduce the MultiDecoderApp 2.0’s workflow .  MultiDecoderApp 2.0 application realizes the concurrent 4 video and display that come from IP cameras decoding and use AI algorithm to do object detection(by using the open source Inception\_v3 network , the project can detect 1001 kinds of items), then the rectangular frame of object is drawn and output to HDMI display.  Items:  cauliflower  zucchini  spaghetti squash  acorn squash  butternut squash  cucumber  artichoke  bell pepper  cardoon  mu**s**hroom  Granny Smith  strawberry  orange  lemon  fig  pineapple  banana  jackfruit  custard apple  pomegranate  hay  carbonara  chocolate sauce  dough  meat loaf  And so on....  [Directory](C:/Users/user/AppData/Local/youdao/dict/Application/8.9.5.0/resultui/html/index.html#/javascript:;) [structure](C:/Users/user/AppData/Local/youdao/dict/Application/8.9.5.0/resultui/html/index.html#/javascript:;) of project:  Main structure of jave： ├── eBox //Main function directory│   ├── Activity //group-box control│   ├── Adapter│   ├── AI // AI task to do object detection│   ├── Config //Configuration module│   ├── Constants│   ├── Data //some AI data struct│   ├── Gl //display module│   ├── Log│   ├── Model│   ├── Utils //some common functions│   └── VIew //display interface├── gateway //some info struct│   ├── data│   └── utils├── libyuv //the color conversion├── rtsp //rtsp client module└── util //common functions Function support by cpp：  ├── Affinity //CPU binding functions  ├── BasicUsageEnvironment  │   └── include  ├── groupsock //live555 feature  │   └── include  ├── libbitmap //same bitmap functions  ├── libyuv //mage color space conversion  │   └── libyuv  │   ├── build\_overrides  │   ├── docs  │   ├── include  │   │   └── libyuv  │   ├── infra  │   │   └── config  │   ├── source  │   ├── tools\_libyuv  │   │   ├── autoroller  │   │   │   └── unittests  │   │   │   └── testdata  │   │   ├── msan  │   │   ├── ubsan  │   │   └── valgrind  │   │   └── memcheck  │   ├── unit\_test  │   │   └── testdata  │   └── util  ├── liveMedia //live555 feature  │   └── include  ├── RtspClient //live555 feature  │   └── include  └── UsageEnvironment //live555 feature  └── include | |
| **Usage Instructions** | Sample outline:   1. Install app to Tubox AiKit device   adb install MultiDecoderApp2.0.apk   1. Start app. 2. connect wifi/wired network, start “edgebox client” app   ic_launcher.png   1. Click “+” to add RTSP URL(support up to 4 channels)   Screenshot_20201224-202227.png  c . Back to start playing and do object detection  result.png | |
| **Contributor(s) Info**  *Feel free to include headshots!* | Name | Title  Company |
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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 | ☐ MDM920x LTE for IoT  ☐ QCA-402x WiFi/BLE/Zigbee  √     Qualcomm Robotics RBx Dev Kit |
| **Software Tools** | ☐ 3D Audio Plugin for Unity  ☐ Adreno GPU SDK  ☐ Hexagon DSP SDK | √ Neural Processing SDK for AI  ☐ 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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