Qualcomm Developer Project CM2290 Hand Gesture Kit

Project Submission

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| **Project Title**\* | **CM2290 Pose Estimation** | |
| **Images**  *Upload up to 5 images of your project*  *Please submit/send the original JPEG/PNG files for all images included in the document* | CM2290.png  CM2290 [alt tag: “CM2290 Pose Estimation using the CM2290 which is designed based on the Qualcomm QCM2290/QCS2290 platform.”] **Type-C.png**   |  | | --- | | **typc** |   [alt tag: “**using the type-c line to develop on C865DK 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)*** | Use the CM2290 to Use tflite model to identify especial things in Image.  In most cases, those objects should be less than three. | |
| **Objective**   * *What inspired you to create this project?* * *What is your desired outcome?* | 1. Recognize normal things such as keyboard and mouse. 2. For future Image analysis data statisticsd | |
| **Materials Required / Parts List / Tools** | Part Name | Link to purchase |
| CM2290 | https://www.thundercomm.com/zh/product/cm2290-c2290-som/ |
| 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/ |
| Models | MediaPipe Hands |
|  |  |
| Description | Link |
| [Source Code](https://github.com/canyudeguang/Home_Automation) | <https://github.com/ThunderSoft-XA/CM2290-Hand-Gesture-Kit> |
| **Source Code / Source Examples / Application Executable**  *Link to open source / shareable code repository* |  |  |
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| Resource Title | Link or File Name (and provide file) |
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| **Additional Resources**  *List related links or resources such as websites, videos, presentations, or other materials* |  |  |
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| **Build / Assembly Instructions** | Sample outline:   1. Overall design framework and Test environment construction method.     pose     1. Software Build Instructions   Prepare a PC (Ubuntu 16.04/ window10/ MAC);   1. Install app to CM2290 device   adb device; adb install CM2290 Hand Gesture Kit.apk | |
|  | Sample outline:   1. How does it work?   The ability to perceive the shape and motion of hands can be a vital component in improving the user experience across a variety of technological domains and platforms. For example, it can form the basis for sign language understanding and hand gesture control, and can also enable the overlay of digital content and information on top of the physical world in augmented reality. While coming naturally to people, robust real-time hand perception is a decidedly challenging computer vision task, as hands often occlude themselves or each other (e.g. finger/palm occlusions and hand shakes) and lack high contrast patterns.  MediaPipe Hands is a high-fidelity hand and finger tracking solution. It employs machine learning (ML) to infer 21 3D landmarks of a hand from just a single frame. Whereas current state-of-the-art approaches rely primarily on powerful desktop environments for inference, our method achieves real-time performance on a mobile phone, and even scales to multiple hands. We hope that providing this hand perception functionality to the wider research and development community will result in an emergence of creative use cases, stimulating new applications and new research avenues.  Main structure of java： ├── eBox //Main function directory│   ├── Activity //group-box control│   ├── Adapter│   ├── AI // AI task to do picture text recognition│   ├── Config //Configuration module│   ├── Constants│   ├── Data //some AI data structure│   ├── Database//Database processing│   ├── Gl //display module│   ├── Log│   ├── Model│   ├── Utils //some common functions│   └── VIew //display interface├── gateway //some info structure│   ├── 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 CM 2290 device   adb install CM2290 Hand Gesture Kit.apk   1. Start app.   1)connect wifi/wired network, start “Hand Gesture Kit” app  ic_launcher.png  2)use the camera on CM 2290 to get Image or Video   * App can display key parts of the human body | |
| **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 CM 2290 Som |
| **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  √ Smart Retail |

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