Merit LILIN Ent. Co., Ltd.

HTTP AiEngine SDK

Table of Contents

Chapter 1. INTRODUCTION

Chapter 1-1. Overview

This document, HTTPAPI, specifies the HTTP-based application-programming interface (API) for AI/Deep Learning of Merit LILIN AIEngine. Application developers can use this document to develop applications for IVS.

Chapter 1.1. Software versions

The support for this HTTPAPI document is highly dependent on the product release. Please make sure that the functions, you want, are provided by the release of your product.

Chapter 1.2. Product-specific functionality

Some of the functions described in this specification may not be implemented in every IP-based product, and the set of the Common Gateway Interface (CGI) parameters and actual parameter values may differ among different products. At the end of each API function has product information for developers.

Chapter 2. HOW TO USE THIS MANUAL

This section contains information about general usages of this document.

Chapter 2.1. General notations

Chapter 2.1.1. General abbreviations

CGI : Common Gateway Interface – a standardized way to communicate between a client (e.g., a web browser) and a server (e.g., a web server).

N/A : Not applicable – a feature/parameter/value is not used in a specific task.

Chapter 2.2. Convention of this document

In URL syntax and in descriptions of CGI parameters, text in italic within angle brackets denotes that is to be replaced with either a value or a string. When replacing the text string, the angle brackets shall also be replaced.

Chapter 2.3 HTTP status returned codes

The built-in Web server uses the standard HTTP status codes. The syntax of returned HTTP status is as following format:

```
HTTP/1.0 <HTTP code> <HTTP text> \r\n
```

HTTP code and text meanings are described as the followings:

HTTP Code	HTTP Text	Description
200	OK	The request has succeeded.
204	No Content	Server has received the request but there is no information returned, and the client should stay in the same document

		view. This is mainly to allow inputting scripts without changing the document at the same time.
400	Bad Request	The request had bad syntax or was inherently impossible to be satisfied.
401	Unauthorized	The parameter to this message gives a specification of authorization schemes that are acceptable. The client should retry the request with a suitable Authorization header.
403	Forbidden	The request is for an action that is forbidden.
404	Not Found	The server has not found anything matching the given URL.

Chapter 2.4 Default Port Number

The default tcp port number is at 8591. Default http port number is at 8592.

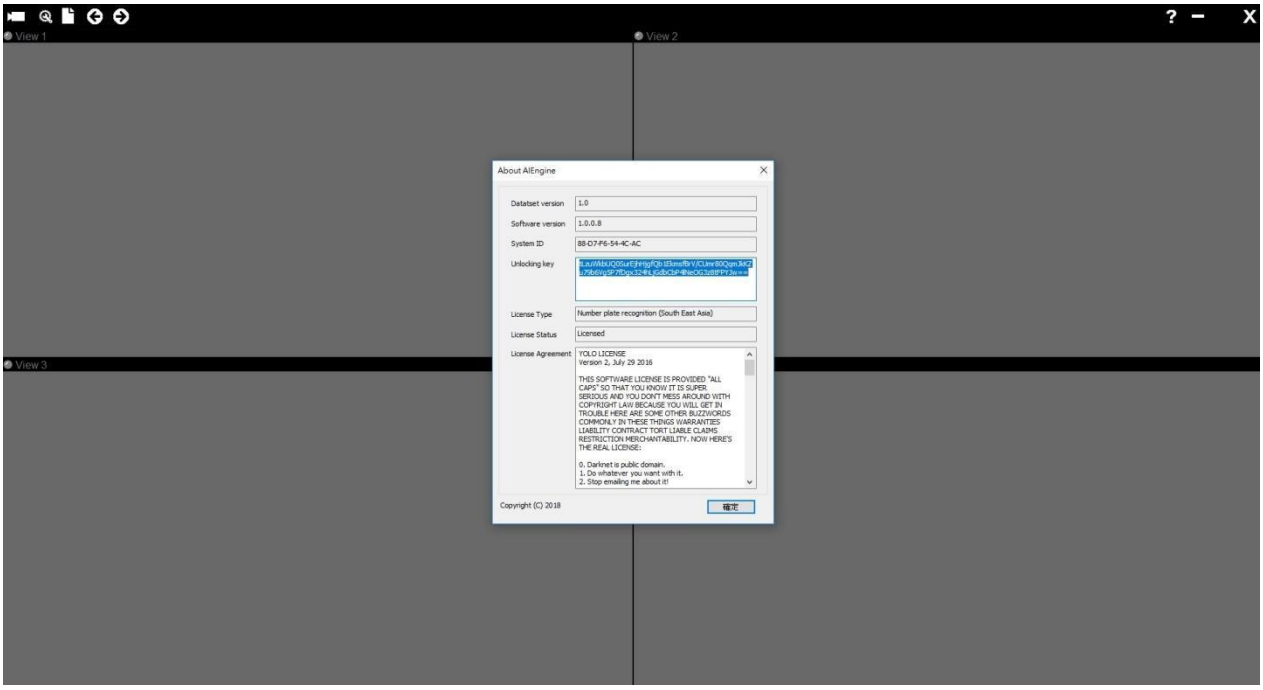
Chapter 3. HTTP API

Chapter 3.1. Image and video request URLs

There are two different ways to request images from Merit LILIN's IP Fast Dome, LAN camera, and video server—snapshot (JPEG) and server-push (MJPEG).

License Key:

Please purchase LILIN AIEngine. After purchasing, send us System ID. We will issue the unlocking key back.



Launch GYNet

gynet server

-unlockingkey "orp7JfGbe7F5l5ktL9Gt65xcd1E+8gZnSu38aJUiXbqi9ACbzI+xatjre0SdQQ=="

HTTP AiEngine SDK

-ip_address 192.168.1.100

-tcp_port 8591 (choose one of TCP or HTTP only)

-http_port 8592

-gpu_idx

Parameter

Parameter	Type	Description	Note
unlockingkey	string	License key	Default: as Configuration
ip_address	string	IPv4 address	Default:127.0.0.1
tcp_port	number	TCP server port	Receive only YUV image
http_port	number	Web server port	Receive only JPEG image
gpu_idx	number	GPU index	Choose NVIDIA graphic card Default: 0

Chapter 3.1.1. Send JPEG image to AiEngine

Send a JPEG to LILIN AiEngine.

Syntax:

http://<*serverIP:8592*>/sendjpeg

Return: meta data, see meta data for detail.

POST /sendjpeg HTTP/1.1\r\n (POST /sendyuv?w=1920&h=1080 HTTP/1.1\r\n)

Host:127.0.0.1\r\n

User-Agent:curl/7.62.0\r\n

Accept:*/*\r\n

Content-Length:794\r\n

Content-Type:application/x-www-form-urlencoded\r\n

\r\n

<JPEG binary data>...

Return code

JPEG received OK

Chapter 3.2. Meta data of AiEngine

Chapter 3.2.1. Number plates recognition results by AiEngine

```
{
        "AiEngine":
         [
                {
```

```
                "id": 0,
                "confidence": 93,
                “obj_type”: 0,
                “label_name": “License Plate”,
                "x": 773,
                "y": 363,
                "w": 349,
                "h": 182,
                “parent_idx”:-1,
                "properties":
                {
                    “country”: “USA”,
                    “area”: “California”,
                    “logo”: “BMW”
                }
        },
        {
                "id": 1,
                "confidence": 70,
                “obj_type”: 1,
                “label_name": “BMW”,
                "x": 848,
                "y": 391,
                "w": 60,
                "h": 86,
                “parent_idx”:-1
        },
        {
                "id": 2,
                "confidence": 78,
                “obj_type”: 2,
                “label_name": “California”,
                "x": 848,
                "y": 391,
                "w": 60,
                "h": 86,
                “parent_idx”:0
        },
        {
                "id": 3,
                "confidence": 75,
                “obj_type”: 3,
                “label_name": “B”,
                "x": 793,
                "y": 381,
                "w": 30,
                "h": 82,
                “parent_idx”:0
        },
        {
                "id": 4,
                "confidence": 54,
                “obj_type”: 3,
                “label_name": “M”,
                "x": 702,
                "y": 313,
                "w": 28,
```

```
                "h": 78,
                “parent_idx”:0
        },
        {
                "id": 5,
                "confidence": 43,
                “obj_type”: 3,
                “label_name": “W”,
                "x": 813,
                "y": 400,
                "w": 26,
                "h": 80,
                “parent_idx”:0
        },
        {
                "id": 6,
                "confidence": 78,
                “obj_type”: 3,
                “label_name": “5”,
                "x": 822,
                "y": 422,
                "w": 31,
                "h": 81,
                “parent_idx”:0
        },
        {
                "id": 7,
                "confidence": 91,
                “obj_type”: 3,
                “label_name": “9”,
                "x": 831,
                "y": 430,
                "w": 33,
                "h": 76,
                “parent_idx”:0
        },
        {
                "id": 8,
                "confidence": 88,
                “obj_type”: 3,
                “label_name": “5”,
                "x": 843,
                "y": 439,
                "w": 29,
                "h": 79,
                “parent_idx”:0
        },
        {
                "id": 9,
                "confidence": 77,
                “obj_type”: 3,
                “label_name": “7”,
                "x": 866,
                "y": 448,
                "w": 29,
                "h": 81,
                “parent_idx”:0
```

```
                },
        ],
        “Count”:10
}
```

When ANPR is active, the value of *obj_type* indicates what the received object is. The three number 0, 1, 2 stand for license plate, logo name and plate number respectively. Also, if a object of license plate received, *property* has any additional parameters besides necessary ones.

Chapter 3.2.2. Object detection results by AiEngine

```
{
        "AiEngine":
         [
                {
                        "id": 1,
                        "confidence": 94,
                        “obj_type”: 0,
                        “label_name": “tvmonitor”,
                        "x": 5,
                        "y": 3,
                        "w": 351,
                        "h": 293,
                        “parent_idx”:-1
                },
                {
                        "id": 2,
                        "confidence": 97,
                        “obj_type”: 0,
                        “label_name": “keyboard”,
                        "x": 20,
                        "y": 387,
                        "w": 455,
                        "h": 129,
                        “parent_idx”:-1
                },
                {
                        "id": 3,
                        "confidence": 49,
                        “obj_type”: 0,
                        “label_name": “cell phone”,
                        "x": 476,
                        "y": 391,
                        "w": 343,
                        "h": 105,
                        “parent_idx”:-1
                },
                {
                        "id": 4,
                        "confidence": 42,
                        “obj_type”: 0,
                        “label_name": “mouse”,
                        "x": 570,
                        "y": 347
                        "w": 135,
                        "h": 42,
                        “parent_idx”:-1
```

```
                },
                {
                        "id": 5,
                        "confidence": 82,
                        “obj_type”: 0,
                        “label_name": “person”,
                        "x": 579,
                        "y": 298,
                        "w": 381,
                        "h": 202,
                        “parent_idx”:-1
                },
                {
                        "id": 6,
                        "confidence": 56,
                        “obj_type”: 0,
                        “label_name": “book”,
                        "x": 568,
                        "y": 107,
                        "w": 80,
                        "h": 222,
                        “parent_idx”:-1
                },
        ],
        “Count”:6
}
```


Chapter 3.2.3. AI Engine Configuration

Syntax:

http://<*serverIP:8592*>/server

DeviceName=GYNet
GYNet SystemID=88-D7-F6-54-4C-AC
Version=1.0.0.8
Language=English
SysFeature= 1
SysStatus=GPU
LicenseType=Number plate recognition (South East Asia)
LicenseStatus=Licensed

Parameter

Parameter	Type	Description	Note
SysStatus		GPU No GPU	
LicenseType		1: No license 2: Object detection	

		3: Poker pattern recognition 4: Beverage recognition 5: LED digits recognition 6: Number plate recognition	
LicenseStatus		1: Invalid license 2: Licensed 3: License mismatch the system ID 4: License not initialized 5: License expired	

Appendix

NVidia Cuda requirement: please download NVidia Cuda 9.2 or higher at here.

Contact

Contact http://lilin.zendesk.com for technical support.
For more information, visit www.meritlilin.com.