Merit LILIN Ent. Co., Ltd.
HTTP AiEngine SDK

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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

IP Camera IVS API/SDK

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.
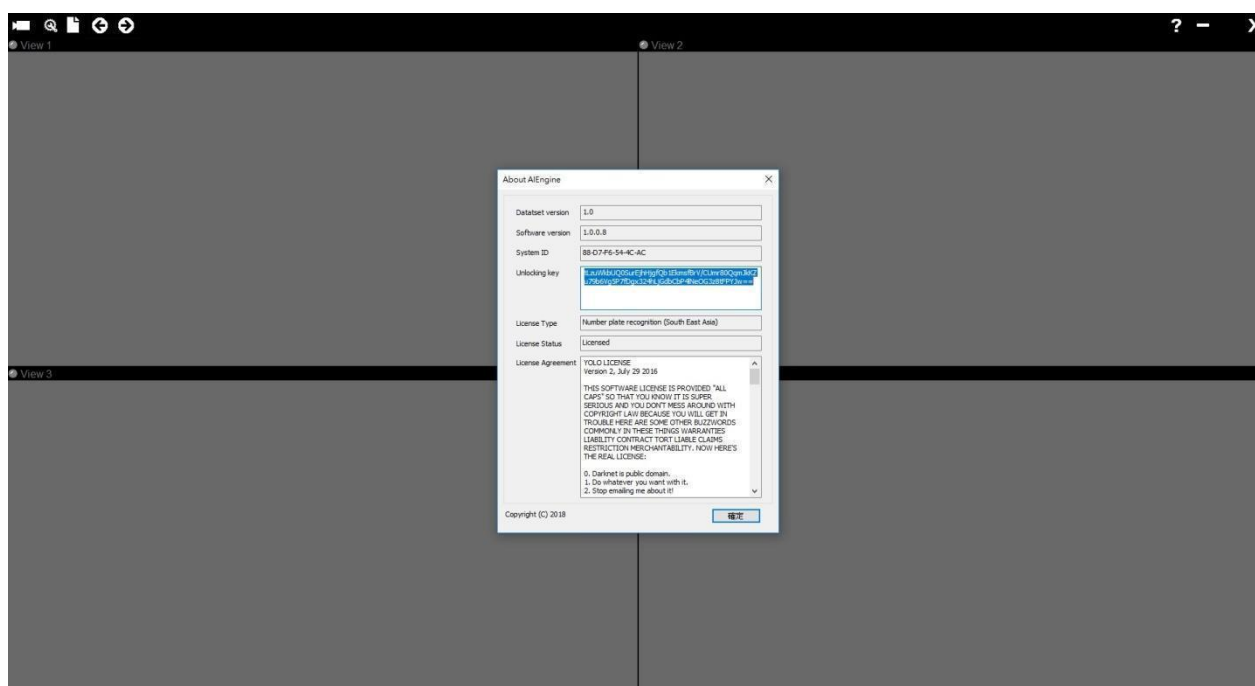
Launch GYNet
gynet server
-unlockingkey
"orp7JfGbe7F5l5ktL9Gt65xcd1E+8gZnSu38aJUiXbqi9ACbzI+xatjre0SdQQ=="
-ip_address 192.168.1.100
-tcp_port 8591 (YUV)
-http_port 8592 (JPEG)
-gpu_idx

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 AiEngines

Chapter 3.2.1. Number plates recognition results by AiEngine

```
{
        "AiEngine":
        [
                {
                        "id": 0,
                        "confidence": 93,
```

```
                    "engine_type": 256,
                    "class_id": 0,
                    "obj_type": 0,
                    "label_name": "License Plate",
                    "x": 773,
                    "y": 363,
                    "w": 349,
                    "h": 182,
                    "parent_idx":-1,
                    "properties":
                    {
                        "plate": "BMW5957",
                        "country": "USA",
                        "area": "California",
                    }
            },
            {

                    "id": 1,
                    "confidence": 78,
                    "engine_type": 256,
                    "class_id": 45,
                    "obj_type": 2,
                    "label_name": "California",
                    "x": 848,
                    "y": 391,
                    "w": 60,
                    "h": 86,
                    "parent_idx":0
            },
            {

                    "id": 2,
                    "confidence": 75,
                    "engine_type": 256,
                    "class_id": 11,
                    "obj_type": 3,
                    "label_name": "B",
                    "x": 793,
                    "y": 381,
                    "w": 30,
                    "h": 82,
                    "parent_idx":0
            },
            {

                    "id": 3,
                    "confidence": 54,
                    "engine_type": 256,
                    "class_id": 22,
                    "obj_type": 3,
                    "label_name": "M",
                    "x": 702,
                    "y": 313,
                    "w": 28,
                    "h": 78,

                    "parent_idx":0

            },
```

```
                    {
                                "id": 4,
                                "confidence": 43,
                                "engine_type": 256,
                                "class_id": 32,
                                "obj_type": 3,
                                "label_name": "W",
                                "x": 813,
                                "y": 400,
                                "w": 26,
                                "h": 80,
                                "parent_idx":0
                    },
                    {
                                "id": 5,
                                "confidence": 78,
                                "engine_type": 256,
                                "class_id": 4,
                                "obj_type": 3,
                                "label_name": "5",
                                "x": 822,
                                "y": 422,
                                "w": 31,
                                "h": 81,
                                "parent_idx":0
                    },
                    {
                                "id": 6,
                                "confidence": 91,
                                "engine_type": 256,
                                "class_id": 8,
                                "obj_type": 3,
                                "label_name": "9",
                                "x": 831,
                                "y": 430,
                                "w": 33,
                                "h": 76,
                                "parent_idx":0
                    },
                    {
                                "id": 7,
                                "confidence": 88,
                                "engine_type": 256,
                                "class_id": 4,
                                "obj_type": 3,
                                "label_name": "5",
                                "x": 843,
                                "y": 439,
                                "w": 29,
                                "h": 79,
                                "parent_idx":0
                    },
                    {
                                "id": 8,
                                "confidence": 77,
```

```
                "engine_type": 256,
                "class_id": 6,
                "obj_type": 3,
                "label_name": "7",
                "x": 866,
                "y": 448,
                "w": 29,
                "h": 81,
                "parent_idx":0
            },
        ],
        "Count":9
}
```

Parameters:

Parameter	Value (integer)	Description
engine_type		
0x0100	256	TWN: Taiwan
0x0200	512	EUR: Europe
0x0400	1024	SEA:
0x0800	2048	CNA: China
0x1000	4096	MEA
0x2000	8192	USA
0x4000	16384	AUS: Australia
0x8000	32768	GBR: UK
0x10000	65536	IDN: Indonesia
0x20000	131072	JPN

Parameters:

Parameter	Value (integer)	Description
obj_type	0	0: Plate: A plate is detected.
	1	1: Logo: A logo is detected (reserved).
	2	2: States/Countries/Provinces
	3	3: Number: The digits of the plates

Chapter 3.2.2. Object detection results by AiEngine

```
{
        "AiEngine":
        [
                {
                        "id": 1,
                        "confidence": 94,
                        "engine_type": 1,
                        "class_id": 10,
```

                    "obj_type": 0,
                    "label_name": "tvmonitor",
                    "x": 5,
                    "y": 3,
                    "w": 351,
                    "h": 293,
                    "parent_idx":-1
        },
        {

                    "id": 2,
                    "confidence": 97,
                    "engine_type": 1,
                    "class_id": 19,
                    "obj_type": 0,
                    "label_name": "keyboard",
                    "x": 20,
                    "y": 387,
                    "w": 455,
                    "h": 129,
                    "parent_idx":-1
        },
        {

                    "id": 3,
                    "confidence": 49,
                    "engine_type": 1,
                    "class_id": 17,
                    "obj_type": 0,
                    "label_name": "cell phone",
                    "x": 476,
                    "y": 391,
                    "w": 343,
                    "h": 105,
                    "parent_idx":-1
        },
        {

                    "id": 4,
                    "confidence": 42,
                    "engine_type": 1,
                    "class_id": 18,
                    "obj_type": 0,
                    "label_name": "mouse",
                    "x": 570,
                    "y": 347
                    "w": 135,
                    "h": 42,
                    "parent_idx":-1
        },
        {

                    "id": 5,
                    "confidence": 82,
                    "engine_type": 1,
                    "class_id": 0,
                    "obj_type": 0,
                    "label_name": "person",
                    "x": 579,

```
                    "y": 298,
                    "w": 381,
                    "h": 202,
                    "parent_idx":-1
            },
            {

                    "id": 6,
                    "confidence": 56,
                    "engine_type": 1,
                    "class_id": 7,
                    "obj_type": 0,
                    "label_name": "book",
                    "x": 568,
                    "y": 107,
                    "w": 80,
                    "h": 222,
                    "parent_idx":-1
            },
        ],
        "Count":6
}
```

Parameters:

Parameter	Value (integer)	Description
engine_type		
0x0001	1	0x0001: Objects
0x0002	2	0x0002: Poker cards detection
0x0004	4	0x0004: Beverage detection
0x0010	16	0x0010: LED digits detection
0x0020	32	0x0020: Sport shoes detection

Chapter 3.2.3. Human pose estimation results by AiEngine

{

"AiEngine":
[
                {
                        "id": 0,
                        "confidence": 100,
                        "engine_type": 8,
                        "class_id": 1,
                        "obj_type": 0,
                        "label_name": "Person",
                        "x": 713,
                        "y": 460,
                        "w": 177,
                        "h": 346,
                        "parent_idx":-1,
                        "properties":
                        {
                            "pose": "stand"
                        }
                },
                {
                        "id": 1,
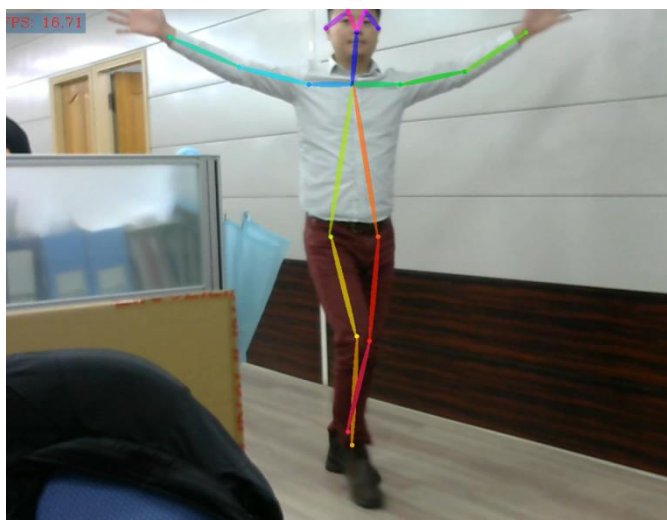   "confidence": 100,
                        "engine_type": 8,
                        "class_id": 0,
                        "obj_type": 1,
                        "label_name": "nose",
                        "x": 814,
                        "y": 468,
                        "w": 0,
                        "h": 0,
                        "parent_idx":0
                },
                {
                        "id": 2,
                        "confidence": 100,
                        "engine_type": 8,
                        "class_id": 1,
                        "obj_type": 2,
                        "label_name": "neck",
                        "x": 814,
                        "y": 527,
                        "w": 0,
                        "h": 0,
                        "parent_idx":0
                },
                {
                        "id": 3,
                        "confidence": 100,
                        "engine_type": 8,
                        "class_id": 2,
                        "obj_type": 3,
                        "label_name": "right shoulder",
                        "x": 764,
                        "y": 527,
                        "w": 0,

```
                                        "h": 0,
                                        "parent_idx":0
                        },
                        {

                                        "id": 4,
                                        "confidence": 100,
                                        "engine_type": 8,
                                        "class_id": 3,
                                        "obj_type": 4,
                                        "label_name": "right elbow",
                                        "x": 713,
                                        "y": 603,
                                        "w": 0,
                                        "h": 0,
                                        "parent_idx":0
                        },
                        {

                                        "id": 5,
                                        "confidence": 100,
                                        "engine_type": 8,
                                        "class_id": 4,
                                        "obj_type": 5,
                                        "label_name": "right wrist",
                                        "x": 789,
                                        "y": 629,
                                        "w": 0,
                                        "h": 0,
                                        "parent_idx":0
                        },
                        {

                                        "id": 6,
                                        "confidence": 100,
                                        "engine_type": 8,
                                        "class_id": 5,
                                        "obj_type": 6,
                                        "label_name": "left shoulder",
                                        "x": 865,
                                        "y": 519,
                                        "w": 0,
                                        "h": 0,
                                        "parent_idx":0
                        },
                        {

                                        "id": 7,
                                        "confidence": 100,
                                        "engine_type": 8,
                                        "class_id": 6,
                                        "obj_type": 7,
                                        "label_name": "left elbow",
                                        "x": 890,
                                        "y": 595,
                                        "w": 0,
                                        "h": 0,
                                        "parent_idx":0
                        },
```

```
{
        "id": 8,
        "confidence": 100,
        "engine_type": 8,
        "class_id": 7,
        "obj_type": 8,
        "label_name": "left wrist",
        "x": 857,
        "y": 620,
        "w": 0,
        "h": 0,
        "parent_idx":0
},
{
        "id": 9,
        "confidence": 100,
        "engine_type": 8,
        "class_id": 8,
        "obj_type": 9,
        "label_name": "right hip",
        "x": 755,
        "y": 645,
        "w": 0,
        "h": 0,
        "parent_idx":0
},
{
        "id": 10,
        "confidence": 100,
        "engine_type": 8,
        "class_id": 9,
        "obj_type": 10,
        "label_name": "right knee",
        "x": 814,
        "y": 629,
        "w": 0,
        "h": 0,
        "parent_idx":0
},
{
        "id": 11,
        "confidence": 100,
        "engine_type": 8,
        "class_id": 10,
        "obj_type": 11,
        "label_name": "right ankle",
        "x": 823,
        "y": 789,
        "w": 0,
        "h": 0,
        "parent_idx":0
},
{
        "id": 12,
        "confidence": 100,
```

```
                    “engine_type”: 8,
                    “class_id”: 11,
                    “obj_type”: 12,
                    “label_name": “left hip”,
                    "x": 831,
                    "y": 654,
                    "w": 0,
                    "h": 0,
                    “parent_idx”:0
        },
        {

                    "id": 13,
                    "confidence": 100,
                    “engine_type”: 8,
                    “class_id”: 12,
                    “obj_type”: 13,
                    “label_name": “left knee”,
                    "x": 798,
                    "y": 671,
                    "w": 0,
                    "h": 0,
                    “parent_idx”:0
        },
        {

                    "id": 14,
                    "confidence": 100,
                    “engine_type”: 8,
                    “class_id”: 13,
                    “obj_type”: 14,
                    “label_name": “left ankle”,
                    "x": 806,
                    "y": 806,
                    "w": 0,
                    "h": 0,
                    “parent_idx”:0
        },
        {

                    "id": 15,
                    "confidence": 100,
                    “engine_type”: 8,
                    “class_id”: 14,
                    “obj_type”: 15,
                    “label_name": “right eye”,
                    "x": 798,
                    "y": 460,
                    "w": 0,
                    "h": 0,
                    “parent_idx”:0
        },
        {

                    "id": 16,
                    "confidence": 100,
                    “engine_type”: 8,
                    “class_id”: 15,
                    “obj_type”: 16,
```

```
                            "label_name": "left eye",
                            "x": 823,
                            "y": 460,
                            "w": 0,
                            "h": 0,
                            "parent_idx":0
                },
                {

                            "id": 17,
                            "confidence": 100,
                            "engine_type": 8,
                            "class_id": 16,
                            "obj_type": 17,
                            "label_name": "right ear",
                            "x": 789,
                            "y": 468,
                            "w": 0,
                            "h": 0,
                            "parent_idx":0
                },
                {

                            "id": 18,
                            "confidence": 100,
                            "engine_type": 8,
                            "class_id": 17,
                            "obj_type": 18,
                            "label_name": "left ear",
                            "x": 840,
                            "y": 460,
                            "w": 0,
                            "h": 0,
                            "parent_idx":0
                },


        ],
        "Count":10
}
```

Parameters:

Parameter	Value (integer)	Description
obj_type		
0	0	0: Person
1	1	1: Nose
2	2	2: Neck
3	3	3: Right shoulder
4	4	4: Right elbow
5	5	5: Right wrist
6	6	6: Left shoulder
7	7	7: Left elbow

8	8	8: Left wrist
9	9	9: Right hip
10	10	10: Right knee
11	11	11: Right ankle
12	12	12: Left hip
13	13	13: Left knee
14	14	14: Left ankle
15	15	15: Right eye
16	16	16: Left eye
17	17	17: Right ear
18	18	18: Left ear

Chapter 3.2.4. 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 detection 5: LED digits recognition 6: Sport shoes detection 7: Human pose estimator 8: Number plate recognition	
LicenseStatus		1: Invalid license 2: Licensed 3: License mismatch the system ID 4: License not initialized 5: License expired	

Appendix State/Province/Country Code for Japan

Parameter	Value	State	State, Country
100	100	尾張小牧	Owari-Komaki, Japan
101	101	一宮	Ichinomiya, Japan
102	102	春日井	Kasugai, Japan
103	103	名古屋	Nagoya, Japan
104	104	愛	AC, Japan
105	105	豊橋	Toyohashi, Japan
106	106	三河	Mikawa, Japan
107	107	岡崎	Okazaki, Japan
108	108	豊田	Toyota, Japan
109	109	秋田	Akita, Japan
110	110	秋	AT, Japan
111	111	青森	Aomori, Japan
112	112	青	AM, Japan
113	113	八戸	Hachinohe, Japan
114	114	千葉	Chiba, Japan
115	115	千	CB, Japan
116	116	成田	Narita, Japan
117	117	習志野	Narashino, Japan
118	118	野田	Noda, Japan
119	119	柏	Kashiwa, Japan
120	120	袖ヶ浦	Sodegaura, Japan
121	121	愛媛	Ehime, Japan
122	122	福井	Fukui, Japan
123	123	福岡	Fukuoka, Japan
124	124	福	FO, Japan
125	125	筑豊	Chikuho, Japan

126	126	北九州	Kitakyūshū, Japan
127	127	久留米	Kurume, Japan
128	128	福島	Fukushima, Japan
129	129	会津	Aizu, Japan
130	130	郡山	Koriyama, Japan
131	131	いわき	Iwaki, Japan
132	132	岐阜	Gifu, Japan
133	133	岐	GF, Japan
134	134	飛騨	Hida, Japan
135	135	群馬	Gunma, Japan
136	136	群	GM, Japan
137	137	前橋	Maebashii, Japan
138	138	高崎	Takasaki, Japan
139	139	福山	Fukuyama, Japan
140	140	広島	Hiroshima, Japan
141	141	広	HS, Japan
142	142	旭川	Asahikawa, Japan
143	143	旭	AK, Japan
144	144	函館	Hakodate, Japan
145	145	函	HD, Japan
146	146	北見	Kitami, Japan
147	147	北	KI, Japan
148	148	釧路	Kushiro, Japan
149	149	釧	KR, Japan
150	150	室蘭	Muroran, Japan
151	151	室	MR, Japan
152	152	帯広	Obihiro, Japan
153	153	帯	OH, Japan

154	154	札幌	Sapporo, Japan
155	155	札	SP, Japan
156	156	姫路	Himeji, Japan
157	157	神戸	Kōbe, Japan
158	158	兵	HG, Japan
159	159	水戸	Mito, Japan
160	160	茨城	IGI, Japan
161	161	茨	IG, Japan
162	162	土浦	Tsuchiura, Japan
163	163	つくば	Tsukuba, Japan
164	164	石川	Ishikawa, Japan
165	165	石	IK, Japan
166	166	金沢	Kanazawa, Japan
167	167	岩手	Iwate, Japan
168	168	岩	IT, Japan
169	169	平泉	Hiraizumi, Japan
170	170	盛岡	Morioka, Japan
171	171	香川	Kagawa, Japan
172	172	香	KA, Japan
173	173	鹿児島	Kagoshima, Japan
174	174	鹿	KO, Japan
175	175	奄美	Amami, Japan
176	176	相模	Sagami, Japan
177	177	湘南	Shonan, Japan
178	178	川崎	Kawasaki, Japan
179	179	横浜	Yokohama, Japan
180	180	神	KN, Japan
181	181	高知	Kōchi, Japan

182	182	高	KC, Japan
183	183	熊本	Kumamoto, Japan
184	184	熊	KU, Japan
185	185	京都	Kyōto, Japan
186	186	京	KT, Japan
187	187	三重	Mie, Japan
188	188	三	ME, Japan
189	189	鈴鹿	Suzuka, Japan
190	190	宮城	Miyagi, Japan
191	191	宮	MG, Japan
192	192	仙台	Sendai, Japan
193	193	宮崎	Miyazaki, Japan
194	194	松本	Matsumoto, Japan
195	195	諏訪	Suwa, Japan
196	196	長野	Nagano, Japan
197	197	長	NN, Japan
198	198	長崎	Nagasaki, Japan
199	199	長崎	No Use
200	200	佐世保	Sasebo, Japan
201	201	奈良	Nara, Japan
202	202	奈	NR, Japan
203	203	長岡	Nagaoka, Japan
204	204	新潟	Niigata, Japan
205	205	新	NG, Japan
206	206	大分	Ōita, Japan
207	207	岡山	Okayama, Japan
208	208	岡	OY, Japan
209	209	倉敷	Kurashiki, Japan

210	210		
211	211	沖縄	Okinawa, Japan
212	212		
213	213	沖	ON, Japan
214	214	和泉	Izumi, Japan
215	215	泉	OSI, Japan
216	216	堺	Sakai, Japan
217	217	大阪	Ōsaka, Japan
218	218	大	OS, Japan
219	219	なにわ	Naniwa, Japan
220	220	佐賀	Saga, Japan
221	221	佐	SA, Japan
222	222	春日部	Kasukabe, Japan
223	223	越谷	Koshigaya, Japan
224	224	熊谷	Kumagaya, Japan
225	225	大宮	Omiya, Japan
226	226	埼玉	STS, Japan
227	227	埼	ST, Japan
228	228	川口	Kawaguchi, Japan
229	229	所沢	Tokorozawa, Japan
230	230	川越	Kawagoe, Japan
231	231	滋賀	Shiga, Japan
232	232	滋	SI, Japan
233	233	島根	Shimane, Japan
234	234	嶋	SM, Japan
235	235	浜松	Hamamatsu, Japan
236	236	沼津	Numazu, Japan
237	237	富士山	Fujisan, Japan

238	238	伊豆	Izu, Japan
239	239	静岡	Shizuoka, Japan
240	240	静	SZ, Japan
241	241	とちぎ	Tochigi, Japan
242	242	宇都宮	Utsunomiya, Japan
243	243	栃木	TGT, Japan
244	244	栃	TG, Japan
245	245	那須	Nasu, Japan
246	246	徳島	Tokushima, Japan
247	247	徳	TS, Japan
248	248	足立	Adachi, Japan
249	249	足	TOA, Japan
250	250	八王子	Hachioji, Japan
251	251	多摩	Tama, Japan
252	252	多	TOT, Japan
253	253	練馬	Nerima, Japan
254	254	練	TON, Japan
255	255	杉並	Suginami, Japan
256	256	品川	Shinagawa, Ogasawara
257	257	品	TOS, Japan
258	258	世田谷	Setagaya, Japan
259	259	鳥取	Tottori, Japan
260	260	鳥	TT, Japan
261	261	富山	Toyama, Japan
262	262	富	TY, Japan
263	263	和歌山	Wakayama, Japan
264	264	和	WK, Japan
265	265	庄内	Shonai, Japan

266	266	山形	Yamagata, Japan
267	267	山口	Yamaguchi, Japan
268	268	山	YU, Japan
269	269	下関	Shimonoseki, Japan
270	270	山梨	Yamanashi, Japan
271	271	富士山	Fujisan, Japan
272	272	使	FORN, Japan
273	273	SPACE	Space
274	274	上越	Joetsu, Japan
275	275	秋名	Haruna, Japan

Appendix State/Province/Country Code for Middle East Asia

Parameter	Value	State, Country
72	72	Abu Dhabi, UAE
73	73	Abu Dhabi, UAE
74	74	Abu Dhabi, UAE
75	75	Abu Dhabi, UAE
76	76	Reserved
77	77	Reserved,
78	78	Dubai, UAE
79	79	Dubai, UAE
80	80	Reserved
81	81	Ajman, UAE
82	82	Ajman, UAE
83	83	Reserved
84	84	Reserved
85	85	Reserved
86	86	Sharjah, UAE
87	87	Reserved
88	88	Reserved
89	89	Reserved
90	90	Reserved

91	91	Reserved
92	92	Saudi Arabia, UAE
93	93	Saudi Arabia, UAE
94	94	Reserved
95	95	Iran, UAE
96	96	Iran, Taxi
97	97	Iran, Public cars
98	98	Iran, Agricultural cars
99	99	Iran, Governmental cars
100	100	Iran, Protocol vehicles
101	101	Iran, Police vehicles
102	102	Iran, IRGC
103	103	Iran, Ministry of Defense
104	104	Iran, General Staff of Armed Forces
105	105	Iran, Disabilities
106	106	Reserved
107	107	Oman, UAE

Appendix State/Province/Country Code for USA

Parameter	Value	State, Country
36	36	Alabama, USA
37	37	Alaska, USA
38	38	Arizona, USA
39	39	Arkansas, USA
40	40	Armed Forces America
41	41	Armed Forces Europe
42	42	Armed Forces Pacific
43	43	California, USA
44	44	Connecticut, USA
45	45	Colorado, USA
46	46	Delaware, USA
47	47	District of Columbia, US A
48	48	Florida, USA
49	49	Georgia, USA
50	50	Hawaii, USA

51	51	Idaho, USA
52	52	Illinois, USA
53	53	Indiana, USA
54	54	Iowa, USA
55	55	Kansas, USA
56	56	Kentucky, USA
57	57	Louisiana, USA
58	58	Maine, USA
59	59	Maryland, USA
60	60	Massachusetts, USA
61	61	Michigan, USA
62	62	Minnesota, USA
63	63	Mississippi, USA
64	64	Missouri, USA
65	65	Montana, USA
66	66	Nebraska, USA
67	67	Nevada, USA
68	68	New Hampshire, USA
69	69	New Jersey, USA
70	70	New Mexico, USA
71	71	New York, USA
72	72	North Carolina, USA
73	73	North Dakota, USA
74	74	Ohio, USA
75	75	Oklahoma, USA
76	76	Oregon, USA
77	77	Pennsylvania, USA
78	78	Rhode Island, USA
79	79	South Carolina, USA
80	80	South Dakota, USA
81	81	Tennessee, USA
82	82	Texas, USA
83	83	Utah, USA
84	84	Vermont, USA
85	85	Virginia, USA

86	86	Washington, USA
87	87	West Virginia, USA
88	88	Wisconsin, USA
89	89	Wyoming, USA
90	90	Guam
91	91	Puerto Rico
100	100	USA, Wheelchair
101	101	USA, Trailer
102	102	USA, Veteran
103	103	USA, Official
104	104	USA, Commercial
105	105	USA, Bus
106	106	USA, Dealer
107	107	USA, Taxi

Appendix Object Code for Object Recognition

Parameter	Value	Object
0	0	Person
1	1	Bicycle
2	2	Car
3	3	Motorbike
4	4	Aeroplane
5	5	Bus
6	6	Train
7	7	Truck
8	8	Boat
9	9	Traffic light
10	10	Fire hydrant
11	11	Stop sign
12	12	Parking meter
13	13	Bench
14	14	Bird
15	15	Cat
16	16	Dog
17	17	Horse

18	18	Sheep
19	19	Cow
20	20	Elephant
21	21	Bear
22	22	Zebra
23	23	Giraffe
24	24	Backpack
25	25	Umbrella
26	26	Handbag
27	27	Tie
28	28	Suitcase
29	29	Frisbee
30	30	Skis
31	31	Snowboard
32	32	Sports ball
33	33	Kite
34	34	Baseball bat
35	35	Baseball glove
36	36	Skateboard
37	37	Surfboard
38	38	Tennis racket
39	39	Bottle
40	40	Wine glass
41	41	Cup
42	42	Fork
43	43	Knife
44	44	Spoon
45	45	Bowl
46	46	Banana
47	47	Apple
48	48	Sandwich
49	49	Orange
50	50	Broccoli
51	51	Carrot
52	52	Hotdog

53	53	Pizza
54	54	Donut
55	55	Cake
56	56	Chair
57	57	Sofa
58	58	Potted plant
59	59	Bed
60	60	Dining table
61	61	Toilet
62	62	TV monitor
63	63	Laptop
64	64	Mouse
65	65	Remote
66	66	Keyboard
67	67	Cell phone
68	68	Microwave
69	69	Oven
70	70	Toaster
71	71	Sink
72	72	Refrigerator
73	73	Book
74	74	Clock
75	75	Vase
76	76	Scissors
77	77	Teddy bear
78	78	Hair dryer
79	79	Toothbrush

Appendix Car Make Code for LILIN AI Engine

Keys	ID		ID	F5	ID	F6	ID	F7	ID	F8	ID	F9	ID	F10	ID	F11	ID	F12
0-9	0-9	License Plates	36-45	No Use	72-81	No Use	108-117	No Use	144-153	No Use	180-189	No Use	216-225	No Use	252-261	No Use	288-297	No Use
A	10	Aston Martin	46	Audi	82	Acura	118	Alfa Romeo	154	Abarth	190	Austin Healey	226		262		298	
B	11	Bentley	47	BMW	83	Bugatti	119	Buick	155	Borgward	191		227		263		299	
C	12	Citroen	48	Chevrolet	84	Chrysler	120	CMC	156	Cadillac	192	Corvette	228		264		300	
D	13	Dodge	49	Daihatsu	85	Dennis Eagle	121	Delorean DMC	157	Datsun	193		229		265		301	
E	14	E	50		86		122		158		194		230		266		302	
F	15	Ferrari	51	Ford	87		123	FIAT	159	Fisker	195		231		267		303	
G	16	GMC	52	Greyhound	88	Genesis	124	Gibson	160		196		232		268		304	
H	17	Honda	53	Hyundai	89	Holden	125	Hino	161	Hummer	197		233		269		305	
I	18	Infiniti	54	ISUZU	90	IVECO	126		162		198		234		270		306	
J	19	Jaguar	55	Jeep	91		127		163		199		235		271		307	
K	20	Kia	56	KenWorth	92		128		164		200		236		272		308	
L	21	Lamborghini	57	Land Rover	93	Lexus	129	Lotus	165	Luxgen	201	Lincoln	237	Lotus	273	Lada	309	
M	22	M-Benz	58	Mahindra	94	Mustang	130	Mazda	166	McLaren	202	Mini	238	Mitsubishi	274	Maserati	310	Maxus
N	23	Nissan	59		95		131	Mercury	167	Mopar	203	Mack	239	MG	275	Morgan	311	
O	24	Opel	60	Oldsmobile	96		132		168		204		240		276		312	
P	25	Peugeot	61	Porsche	97	Pontiac (Firebird)	133	Plymouth	169		205		241		277		313	
Q	26	Q	62		98		134		170		206		242		278		314	
R	27	Renault	63	Rolls-Royce	99	Rover	135		171		207		243		279		315	
S	28	Skoda	64	Smart	100	Ssangyong	136	Subaru	172	Suzuki	208	SCANIA	244	Shelby	280	Saturn	316	Scion
T	29	Tesla	65	Toyota	101	Toyota	137	Tata	173	Thunderbird	209		245	Sunbeam	281	Spyker	317	Saab
U	30	UD	66		102		138		174		210		246		282		318	
V	31	Volkswagen	67	Volvo	103	Viper	139		175		211		247		283		319	
W	32	W	68		104		140		176		212		248		284		320	
X	33	X	69		105		141		177		213		249		285		321	
Y	34	Y	70		106		142		178		214		250		286		322	
Z	35	Z	71		107		143		179		215		251		287		323	

Appendix

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