PARROT COMMUNICATION PROTOCOL

This is the communication protocol of PARROT system.
This protocol based on TCP network communication. You may get the running status or send the command to PARROT with below command definition.
TCP network port 8000.

PACKAGE FORMAT

HEAD (1 BYTE)	COMMAND ID (1 BYTE)	DATA LENGTH (2 BYTE)	DATA (N BYTES)	CHECKSUM (1 BYTE)	TAIL (1 BYTE)
0xFA	command identify	'Data' field's length	content	checksum from 'COMMAND ID' to 'Data', auto overflow	0xAF

1. System Status

1.1 Query System Info

COMMAND ID: 0x01

Query the version of protocol.

Example:

Client send: '0xFA 0x01 0x00 0x00 0x?? 0xAF'

PARROT reply: '0xFA 0x01 0x01 0x00 0x11 0x?? 0xAF'

Data: 0x11 (protocol version 1.1)

1.2 Status Report

COMMAND ID: 0x03

During the PARROT system working, it will send the working mode and record time to the client every 1/10 second.

This command can also be used as the heartbeat detection of the network communication. The client program need to try reconnect when it can not receive this command in a certain interval (like 10 seconds).

Data:

1) Working mode: real-time = 0x01, playback = 0x02
2) Record Status: not recording = 0x00, recording = 0x01
3) Record time: Int64 (8 Byte) Data for the current record time. 1/1000 second. Ex: 0x10 0x27 0x00 0x00 0x00 0x00 0x00 0x00 as "00:00:10.000".
4) Playback time: Int64 (8 Byte) Data for the current playback time. 1/1000 second.

Example:

PARROT send: '0xFA 0x03 0x12 0x00
0x11 0x00
0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
0x?? 0xAF'

2. Record & Playback Control

2.1 Start record

COMMAND ID: 0x11

Example:

Client send: '0xFA 0x11 0x00 0x00 0x?? 0xAF'

PARROT reply: '0xFA 0x11 0x01 0x00 0x01 0x?? 0xAF'

Data: 0x00 (failed), 0x01(success)

2.2 Stop record

COMMAND ID: 0x12

Example:

Client send: '0xFA 0x12 0x00 0x00 0x?? 0xAF'

PARROT reply: '0xFA 0x12 0x01 0x00 0x01 0x?? 0xAF'

Data: 0x00 (failed), 0x01(success)

2.3 Enter real-time mode

COMMAND ID: 0x13

Switch the video display mode into REAL-TIME mode.

Example:

Client send: '0xFA 0x13 0x00 0x00 0x?? 0xAF'

PARROT reply: '0xFA 0x13 0x01 0x00 0x01 0x?? 0xAF'

Data: 0x00 (failed), 0x01(success)

2.4 Enter playback mode

COMMAND ID: 0x14

Data: Int64 value as the start position of playback.

Switch the video display mode into PLAYBACK mode. The start position of playback should be specified by this command as a Int64 value.

This command will enter the playback mode, but will not start the playback automatically, you need to send the Start Playback command (0x15) for that.

Example:

Client send: '0xFA 0x14 0x08 0x00
0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00
0x?? 0xAF'

PARROT reply: '0xFA 0x14 0x01 0x00 0x01 0x?? 0xAF'

Data: 0x00 (failed), 0x01(success)

2.5 Start playback

COMMAND ID: 0x15

PARROT need to be in the PLAYBACK mode by following commands before start the playback.

1) Enter playback mode (0x14). You may specify the start position of playback with this command. There is no stop position specified, so once the playback started, it will keep play until there is no mode contents.
2) Select a mark (0x??). Enter a mark and have the start & stop position of the playback by this command.

Example:

Client send: '0xFA 0x15 0x00 0x00 0x?? 0xAF'

PARROT reply: '0xFA 0x15 0x01 0x00 0x01 0x?? 0xAF'

Data: 0x00 (failed), 0x01(success)

2.6 Pause playback

COMMAND ID: 0x16

Only available when PARROT is playing back the video.

Example:

Client send: '0xFA 0x16 0x00 0x00 0x?? 0xAF'

PARROT reply: '0xFA 0x16 0x01 0x00 0x01 0x?? 0xAF'

Data: 0x00 (failed), 0x01(success)

2.7 Stop playback

COMMAND ID: 0x17

This command will stop the playing back video, and back to the position where the playback starting.

Example:

Client send: '0xFA 0x17 0x00 0x00 0x?? 0xAF'

PARROT reply: '0xFA 0x17 0x01 0x00 0x01 0x?? 0xAF'

Data: 0x00 (failed), 0x01(success)

2.8 Step forward

COMMAND ID: 0x18

Example:

Client send: '0xFA 0x18 0x00 0x00 0x?? 0xAF'

PARROT reply: ‘0xFA 0x18 0x01 0x00 0x01 0x?? 0xAF’

Data: 0x00 (failed), 0x01(success)

2.9 Step backward

COMMAND ID: 0x19

Example:

Client send: ‘0xFA 0x19 0x00 0x00 0x?? 0xAF’

PARROT reply: ‘0xFA 0x19 0x01 0x00 0x01 0x?? 0xAF’

Data: 0x00 (failed), 0x01(success)

2.10 Set playback channel

COMMAND ID: 0x1A

Data: The ID of the channel 1 BYTE. No output (black screen)=0x00. Channel 1=0x01. Channel 2=0x02. Channel 3=0x03. Channel 4=0x04.

Example:

Client send: ‘0xFA 0x1A 0x01 0x00 0x01 0x?? 0xAF’

PARROT reply: ‘0xFA 0x1A 0x01 0x00 0x01 0x?? 0xAF’

Data: 0x00 (failed), 0x01(success)

2.11 Set playback speed

COMMAND ID: 0x1B

Data: Playback speed ID 1 BYTE.

Speed ID	Speed Value
0x01	1/5
0x02	1/3
0x03	1/2
0x04	3/4
0x05	1.0
0x06	1.5
0x07	2.0
0x08	3.0
0x09	5.0

Example:

Client send: ‘0xFA 0x1B 0x01 0x00 0x05 0x?? 0xAF’

PARROT reply: ‘0xFA 0x1B 0x01 0x00 0x01 0x?? 0xAF’

Data: 0x00 (failed), 0x01(success)

3. Overlap Object

The overlap object can be an image or a text which be overlapped on the video. You may specify the object to be overlap on the preview window on PARROT only, or be overlap on both the preview window and the recorded video. The difference is the first one will not be able to see on the playback window.

3.1 Add Overlap Object

COMMAND ID: 0X31

Data:

1) ID of the object 1 BYTE. Start from 0x01. When the same ID of object already existing in the PARROT, it will simply be replaced with the new property.
2) Overlap method 1 BYTE. On preview only=0x01. On recorded video only=0x02. On both=0x03.
3) Position 1 BYTE. It's a combination of following bit flags:
   Horizontal align: Align center=0x00, Align left=0x10, Align right=0x20
   Vertical align: Align center=0x00, Align top=0x01, Align bottom=0x02
4) Horizontal offset 2 BYTE. The offset to the boundary of the screen in horizontal. Not available when the message be aligned center in horizontal.
5) Vertical offset 2 BYTE: The offset to the boundary of the screen in vertical. Not available when the object be aligned center in vertical.
6) Type 1 BYTE: Text=0x01, Image=0x02
7) Content, Different according to the Text or Image.
   6.1) Text: Font Size 1 BYTE. Font Color 3 BYTE (R,G,B). Text content (All rest are the text content). UTF-8 based string.
   6.2) Image: Image file name. UTF-8 based string.

In case it's the text object. Following wildcard variable also can be used, so the system will replace the real time Data onto the overlapped text.

Variable Name	Description
%SYSTEM_TIME%	The system time of PARROT. In format: 2017-01-01 18:00:00
%MATCH_CLOCK%	Only available when PARROT synchronizing with Ultra Score. In format: 05:00
%MATCH_TITLE%	Only available when PARROT synchronizing with Ultra Score.

Example:

Client send: '0xFA 0x32 0x12 0x00
0x01 0x03 0x00 0x64 0x00 0x64 0x00 0x01 0x10 0xFF 0xFF 0xFF
0x41 0x00 0x42 0x00 0x43 0x00 0x44 0x00
0x?? 0xAF'

PARROT reply: ‘0xFA 0x32 0x01 0x00 0x01 0x?? 0xAF’
Data: 0x00 (failed), 0x01(success)

3.2 Remove Object

COMMAND ID: 0x32
Data: ID of the object which is going to be remove.

Example:
Client send: ‘0xFA 0x32 0x01 0x00 0x01 0x?? 0xAF’

PARROT reply: ‘0xFA 0x32 0x01 0x00 0x01 0x?? 0xAF’
Data: 0x00 (failed), 0x01(success)

3.3 Clear all Objects

COMMAND ID: 0x33

Example:
Client send: ‘0xFA 0x33 0x00 0x00 0x?? 0xAF’

PARROT reply: ‘0xFA 0x32 0x01 0x00 0x01 0x?? 0xAF’
Data: 0x00 (failed), 0x01(success)

4. Mark

The mark can be used to define a time period of the recorded video. Then you may select and playback a specified mark without select the time period manually.
Several mark can be grouped as a "Mark Group", so you may view and control them together on the PARROT.

4.1 Create mark group

COMMAND ID: 0X51

Example:

Client send: '0xFA 0x51 0x00 0x00 0x?? 0xAF'

PARROT reply: '0xFA 0x51 0x04 0x00 0x01 0x00 0x00 0x00 0x?? 0xAF'

Data: The ID of created mark group. Return 0 when the command failed.

4.2 Remove mark group

COMMAND ID: 0x52
Data: ID of mark group 4 BYTE.

Example:

Client send: '0xFA 0x52 0x40 0x00 0x01 0x00 0x00 0x00 0x?? 0xAF'

PARROT reply: '0xFA 0x51 0x01 0x00 0x01 0x?? 0xAF'

Data: 0x00 (failed), 0x01(success)

4.3 Create mark with specified time

COMMAND ID: 0X55
Data:

1) ID of the mark group. Use 0 when there is no mark group need to be attach.
2) Start time of the video 8 Byte.
3) Stop time of the video 8 Byte.

Example:

Client send: '0xFA 0x55 0x14 0x00
0x01 0x00 0x00 0x00
0xE8 0x03 0x00 0x00 0x00 0x00 0x00 0x00
0xD0 0x07 0x00 0x00 0x00 0x00 0x00 0x00
0x?? 0xAF'

PARROT reply: '0xFA 0x55 0x04 0x00 0x01 0x00 0x00 0x00 0x?? 0xAF'

Data: The ID of created mark. Return 0 when the command failed.

4.4 Create mark according to recording position

COMMAND ID: 0x56

Data:

1) ID of the mark group. Use 0 when there is no mark group need to be attach.
2) The reverse offset (second) to the current recording position. 4 Byte.

Example:

Client send: '0xFA 0x56 0x08 0x00 0x01 0x00 0x00 0x00 0x05 0x00 0x00 0x00 0x?? 0xAF'

PARROT reply: '0xFA 0x56 0x04 0x00 0x01 0x00 0x00 0x00 0x?? 0xAF'

Data: The ID of created mark. Return 0 when the command failed.

4.5 Remove all marks

COMMAND ID: 0x57

Example:

Client send: '0xFA 0x57 0x00 0x00 0x?? 0xAF'

PARROT reply: '0xFA 0x57 0x01 0x00 0x01 0x?? 0xAF'

Data: 0x00 (failed), 0x01(success)

5. Event

The event is a special symbol which used to record a time point of some special event. Like the scoring of referee.

5.1 Append event

COMMAND: 0x61

Data:

1) Position 1 BYTE. The display position of the event symbol. From 1-5. This can be the ID of the judge, so each judge's scoring event will be shown on different line on the screen.
2) Color of the symbol 3 BYTE (RGB).
3) Shape 1 BYTE. The shape of the symbol. 0x01=circle, 0x02=rectangle, 0x03=triangle.
4) Text content which need to be display on the symbol N BYTE. In utf-8.

Example:

Client send: '0xFA 0x61 0x07 0x00 0x01 0xFF 0xFF 0xFF 0x01 0x31 0x00 0x32 0x00 0x33 0x00 0x?? 0xAF'

PARROT reply: '0xFA 0x61 0x04 0x00 0x01 0x00 0x00 0x00 0x?? 0xAF'

Data: The ID of the appended event. Return 0 when operation failed.

5.2 Remove event

COMMAND: 0x62

Data: ID of the event 4 Byte.

Example:

Client send: '0xFA 0x62 0x04 0x00 0x01 0x00 0x00 0x00 0x?? 0xAF'

PARROT reply: '0xFA 0x61 0x01 0x00 0x01 0x?? 0xAF'

Data: 0x00 (failed), 0x01(success)

5.3 Clear all events

COMMAND: 0x63

Example:

Client send: '0xFA 0x63 0x00 0x00 0x?? 0xAF'

PARROT reply: '0xFA 0x63 0x01 0x00 0x01 0x?? 0xAF'

Data: 0x00 (failed), 0x01(success)