Skeleton Recordings Binary Format (Version 1)

Skeleton Recordings Binary Format of API `GET /recordings`

Disclaimer

Revision Note

Version	Date	Author	Description
1	8 August 2023	Andrew Au	Initial version

```
Skeleton recordings have the following binary data format, starting with the header:
==============================
Version (1 byte int unsigned)
==============================
Record Type (1 byte int unsigned)
```

- Value of 1 for now to indicate "skeleton_record" type, may extend in the future

```
==============================
Aspect Ratio (1 byte int unsigned)
```

- The most significant 4 bits represent width scale minus 1, the least significant 4 bits represent height scale minus 1.
- | Width Scale - 1 (bit 7 to bit 4) | Height Scale - 1 (bit 3 to bit 0) |
- Example: 16:9 aspect ratio is represented as 0xF8

```
==============================
Padding (1 byte)
```

- Ignore

```
==============================
Group ID (4 bytes int unsigned)
==============================
Camera ID (4 bytes int unsigned)
==============================
Timestamp in seconds (4 bytes int unsigned)
==============================
Number of Frames (4 bytes int unsigned)
==============================
Frame Data Begins: e.g. Frame 1, Frame 2, Frame 3...
==============================
```

```
Each frame data has the following format:
========================================
Delta Time from last frame, in milliseconds (2 bytes int unsigned)
========================================
Number of people (2 bytes int unsigned)
========================================
People data begins: e.g. Person 1, Person 2, Person 3...
========================================
```

```
Each person data has the following format:
========================================
Person ID (4 bytes int signed)
========================================
Tracker ID (1 byte int unsigned)
========================================
Number of Key Points (1 byte int unsigned)
========================================
Event: fight, fall, hand-wave, region of interest (1 byte)
```

- | Reserved (bit 7 to bit 4) | Fight (bit 3) | ROI (bit 2) | Wave (bit 1) | Fall (bit 0) |
- Set bit indicates a detected event. Otherwise the bit is cleared.

```
========================================
Action Label (1 byte)
```

- Ignore. For internal use only.

```
========================================
Action Probabilities (8 bytes)
```

- Ignore. For internaly use only.

```
========================================
Keypoints Data Begins: e.g. Keypoint 1, Keypoint 2, Keypoint 3...
========================================
```

```
Each keypoint data has the following format (note that undetected/missing keypoints are removed):
========================================
Descriptor (1 byte)
```

- | Ignore (bit 7 to bit 5) | Skeleton Keypoint Index (bit 4 to bit 0) |

```
========================================
Probability (1 byte int unsigned)
```

- Ignore. For internal use only.

```
========================================
X-coordinate (2 bytes int unsigned) (must divide by 65536 to get the normalized value)
========================================
Y-coordinate (2 bytes int unsigned) (must divide by 65536 to get the normalized value)
========================================
```

Note that if a key point is missing or undetected, the keypoint is removed from the data. This is unlike the stream data where undetected keypoints are simply zeroed out. The skeleton keypoint

0: Nose
1: Neck
2: Rshoulder
3: Relbow
4: Rwrist
5: Lshoulder
6: Lelbow
7: Lwrist
8: Rhip
9: Rknee
10: Rankle
11: Lhip
12: Lknee
13: Lankle
14: Reye
15: Leye
16: Rear
17: Lear