

# Changes to Analysis of Eye Data from EyeRIS

Soma Mizobuchi - May 30, 2022

Due to the patches implemented in the `bitflow` source for EyeRIS, there will be several changes to the way eye data should be analyzed. This document will outline those instructions, as well as supplementary debug information provided through the virtual channels. This applies to both `dDPI Mk-1` and `dDPI Mk-2`.

## Data Analysis

The `bitflow` source will recover from any accumulation of lag once it detects that the frame-grabber is behind on frames or did not respond in time. In other words, `bitflow` source will always get the latest data, eliminating the need for post hoc adjustments to the timestamps. However, if the recovery should fall during a critical period of the experiment, that trial should be discarded. Check virtual channels `channel_32` and `channel_35` for the reset flags of frame grabber 1 and 2, respectively:

Extract the logicals and timing for reset

```
resetFlag1 = data.eye_data.virtual_channels.channel_32 == 1 % Logical for Frame
Grabber 1 reset
resetTime1 = data.eye_data.timing.elapsed(resetFlag1) % The timestamps at
which reset occurred
% Check whether the time of reset falls within your trials
...
```

## Data Structure

### Additional debug information available through the `virtual_channels` field

Virtual channels are located at `eis_data.eye_data.virtual_channels`

Channel Name	Name	Description
<code>channel_30</code> , <code>channel_33</code>	Frames in Buffer	The number of frames in the buffer after acquiring a single frame for FG1 and FG2, respectively.
<code>channel_31</code> , <code>channel_34</code>	Frame ID	The ID of the frame acquired given by BitFlow. Starts at 0, increments by 1.
<code>channel_32</code> , <code>channel_35</code>	Reset Flag	Flag indicating whether a reset was initiated on each respective frame grabber

