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Seizure Annotation SOP

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Relevant Documents

“stim\_seizure\_information”

* Google sheet: <https://docs.google.com/spreadsheets/d/1cSo5Yqh4QX5j5DC6aeBMD61kk9YNES5-YW3uCQCT638/edit?usp=sharing>
* “patient” – hup patient name, “IEEGname” – iEEG file associated with the seizure, start/end – start/end time for the seizure in iEEG time (seconds)
* onset\_time\_(your initials), onset\_channels\_(your initials)
  + this is where you will mark your onset time and channels for both spontaneous seizures and stimulation induced seizures ignoring the stimulation period.
* stim\_onset\_time\_(YI), stim\_onset\_channels\_(YI)
  + This is where you will mark the onset time and channel of stimulation induced seizures including the stimulation period.

Overall

* Hide the annotations columns of your co-annotator (select the columns with their initials, right click, select “hide”)
* Navigate to each of your assigned seizures
* For each seizure follow the relevant protocol based on its “stim” designation (0 – spontaneous, 1 – low frequency induced, 2 – high frequency induced)
* Place your annotations into your respective column

Spontaneous (naturally occurring) Seizure

1. Identify approximate iEEG seizure onset time in “stim\_seizure\_information” that is already provided in the “start” column
2. Navigate to that time in iEEG
3. Under montages select montage 2 (bipolar)
4. Set a 1-200Hz bandpass filter and a 58-62Hz notch filter (see appendix for steps)
5. Identify the onset time and channels following clinical practice
6. In your onset\_time\_(YI) and onset\_channels\_(YI) columns place the onset time and onset electrodes that you’ve identified.

Low-Frequency Induced Seizure

1. Identify approximate iEEG seizure onset time in “stim\_seizure\_information” that is already provided in the “start” column
2. Navigate to that time in iEEG
3. Under montages select montage 2 (bipolar) (if the iEEG file is a YYYYYY\_CCEP then this will be montage 1)
4. Set a 1-200Hz bandpass filter and a 58-62Hz notch filter (see appendix for steps)
5. First, ignore any time while the device is stimulating at the beginning of the seizure
   1. Identify the onset time and channels immediately after the stimulation period has ended as the contacts involved in the fastest type of ictal discharge at the beginning or during the primary organization of the stimulated seizures
   2. In your onset\_time\_(YI) and onset\_channels\_(YI) columns place the onset time and onset electrodes that you’ve identified.
6. Second, including the stimulation period but exclude any channels that are actively stimulating or are adjacent to the stimulating channels and as a result have uninterpretable noise
   1. Identify the onset time and channels as the contacts involved in the fastest type of ictal discharge at the beginning or during the primary organization of the stimulated seizure.
   2. in your stim\_onset\_time\_(YI) and stim\_onset\_channels\_(YI) columns place the onset time and onset electrodes that you’ve identified.

High-Frequency Induced Seizure

1. Identify approximate iEEG seizure onset time in “stim\_seizure\_information” that is already provided in the “start” column
2. Navigate to that time in iEEG
3. Under montages select montage 2 (bipolar)
4. Set a 1-200Hz bandpass filter and a 58-62Hz notch filter (see appendix for steps)
5. First, ignore any time while the device is stimulating at the beginning of the seizure
   1. Identify the onset time and channels immediately after the stimulation period has ended as the contacts involved in the fastest type of ictal discharge at the beginning or during the primary organization of the stimulated seizures
   2. In your onset\_time\_(YI) and onset\_channels\_(YI) columns place the onset time and onset electrodes that you’ve identified.
6. Second, including the stimulation period but exclude any channels that are actively stimulating or are adjacent to the stimulating channels and as a result have uninterpretable noise
   1. **Experimental**: change the notch filter to form a +/- 2 Hz window around the stimulation frequency to help remove noise from the other channels caused by stimulation
   2. Identify the onset time and channels as the contacts involved in the fastest type of ictal discharge at the beginning or during the primary organization of the stimulated seizure.
   3. in your stim\_onset\_time\_(YI) and stim\_onset\_channels\_(YI) columns place the onset time and onset electrodes that you’ve identified.

Appendix

* Filtering
  + Click filters, select “bandpass”, set to 1 and 200 for the two cutoff frequencies, select the notch filter button, and set the low and high stop frequencies to be 58 and 62. Then press “copy settings to all channels” and press “ok” *Note: may take a bit to apply filter*
  + A screenshot of a computer

    Description automatically generated