Format

For Day 3 of our workshop, we have three distinct sessions, each divided into a morning and an evening part. The moderators for these sessions are drawn from two expert teams: the NWB/DANDI team, represented by Dorota, Cody, and Horea, and the Flatiron team, represented by William, Guillaume, and Edoardo.

- I. Common infrastructure -Moderators: **Horea Christian** (Dartmouth: Department of Psychological and Brain Sciences) & **Edoardo Balzani** (Flatiron-CCN: Center for Computational Neuroscience)
- II. Data formats and standards -Moderators: **Dorota Jarecka** (MIT: McGovern Institute for Brain Research) & **William Broderick** (Flatiron-CCN: Center for Computational Neuroscience)
- III. AI/ML, computing, visualization, in improving neuroinformatics -Moderators: **Cody Baker** (CatalystNeuro) & **Giullaume Vejo** (Flatiron-CCN: Center for Computational Neuroscience)

Locations for parallel sessions:

I: Building 46; MIBR Seminar Room: 4199

II: Building 46; MIBR Seminar Room: 5193

III: Building 46; PILM Rm 5313

Locations for Group reports:

Morning (all 3 groups): Building 46; PILM Seminar Room: 3310

Evening (all 3 groups): Building 46; MIBR Seminar Room: 3189

Our vision for these sessions is to have the morning parts moderated by the NWB/DANDI team, focusing on their areas of expertise. The evening parts will then be moderated by the Flatiron team, bringing their unique perspective to the discussions.

However, we also aim for a seamless transition from the morning to the evening parts. To achieve this, we encourage each moderator to actively communicate with their counterpart from the other team. The goal is to moderate “together”, ensuring a smooth handover and continuity of discussions.

While maintaining this collaborative approach, it’s important to keep in mind the distinct focus of the morning and evening parts. Each part should delve deep into its specific focus area while also integrating insights from the other part. This way, we can ensure a comprehensive exploration of each session’s topic.

We believe this approach will maximize the productivity of our workshop and look forward to insightful discussions and outcomes.

Syncing between co-moderators

The moderators of the morning and evening sessions play crucial roles in ensuring the continuity and effectiveness of the discussions. Here are some strategies for communication and synchronization:

1. **Pre-Session Meeting**: Before the workshop, the moderators of the morning and evening sessions should meet (online or/and in-person) to discuss the objectives and expected outcomes of their sessions. They should align their plans to ensure continuity.
2. **Shared Notes**: Moderators should have access to shared notes or a collaborative document where they can jot down key points, ideas, and action items from their sessions. This will help the evening session moderators to pick up where the morning session left off. Please also share these with all others who are CCed on this email (Flatiron team, NWB/DANDI team, Allen team, and organizers Nima and Satra)
3. **Handover Briefing**: After the morning session, there should be a brief handover meeting where the morning session moderators can update the evening session moderators about the discussion, any significant points, ideas that emerged, and issues that need further exploration.
4. **Active Participation**: The evening session moderators should actively participate in the morning session (and vice versa) to have a first-hand understanding of the discussions.
5. **Feedback Loop**: After the evening session, both sets of moderators should meet again to discuss the outcomes, feedback received, and any follow-up actions needed. This will help in preparing a comprehensive report and in planning future sessions.

Remember, open communication and collaboration between the moderators are key to ensuring a seamless transition between sessions and maximizing the productivity of the workshop.

Session management

Beyond the general communication and syncing strategy, here are some suggestions for the moderators to ensure an organized and systematic way of running the sessions, generating ideas, cultivating discussions, brainstorming, and reporting:

1. **Preparation**: Before the session, moderators should prepare a list of topics or questions related to the theme of the breakout session. This will help guide the discussion and ensure that all important aspects are covered.
2. **Introduction**: At the start of each session, moderators should briefly introduce the session's objectives and expected outcomes. This will help set the tone and expectations for the participants.
3. **Time Management**: Moderators should keep track of time to ensure that all topics are discussed and that there is enough time for brainstorming and reporting.

4. **Active Participation**: Encourage all participants to contribute to the discussion. This can be done by asking open-ended questions or by inviting participants to share their thoughts and ideas. Note that some people are less inclined to express their opinions while others may hijack valuable time. Use your judgment to tacitly maneuver this issue.
5. **Note-Taking**: Assign a note-taker for each session who will document key points, ideas, and action items from the discussion. This will be helpful for the regrouping and presenting sessions.
6. **Brainstorming**: Use brainstorming techniques such as mind mapping or round-robin to generate ideas. Encourage participants to think outside the box and consider different perspectives.
7. **Reporting**: At the end of each session, summarize the key points, ideas, and action items discussed during the session. This summary will be presented during the regrouping sessions. It would be good if both co-moderators get to present together; but if you decide between yourselves to have one presenter at the end of morning/evening parts, that is also totally fine. The decisions is up to you
8. **Follow-Up**: After the workshop, send out a summary of each breakout session along with any action items or next steps to all participants.

Remember, our goal is to foster a collaborative environment where everyone feels comfortable sharing their ideas and insights.

Special topics for sessions

Here are some more specific guidelines for each of the breakout sessions:

1. **Common Infrastructure**: The challenge lies in creating a common infrastructure that can handle diverse neurophysiology data. This infrastructure needs to be robust, scalable, and capable of handling large datasets.
    - Discuss the current state of (neurophysiology/neuroinformatics) infrastructure.
    - Identify common challenges and potential solutions.
    - Explore opportunities for collaboration and resource sharing.
    - Brainstorm on how to improve accessibility and usability of neuroinformatics tools and resources.
2. **Data Formats and Standards**: With the advent of cloud computing and large-scale data analysis, the challenge is to standardize data formats that can handle large datasets efficiently. The focus should be on NWB files, Zarr, and other cloud-native formats.
    - Review existing data formats and standards in neuroinformatics.
    - Discuss their strengths and weaknesses.
    - Brainstorm on how to improve interoperability and compatibility between different data formats.
    - Explore the need for new standards or modifications to existing ones.
3. **AI/ML, Computing, Visualization in Improving Neuroinformatics**: The challenge is to leverage AI/ML for data analysis and dimensional reduction in neuroinformatics. The

focus should be on developing tools that can handle large datasets and extract meaningful insights from them.
    - Discuss the role of AI/ML in neuroinformatics, including current applications and future potential.
    - Explore how advances in computing can drive progress in neuroinformatics.
    - Brainstorm on how visualization tools can aid in data analysis and interpretation.
    - Discuss the challenges in implementing these technologies and brainstorm potential solutions.

Remember, the goal of these sessions is not only to discuss these topics but also to generate actionable ideas that can drive progress in neuroinformatics. Encourage participants to think creatively and collaboratively, and ensure that all ideas are captured and considered. The integration of these three topics can be achieved by focusing on a common theme - improving neuroinformatics for large-scale data analysis.

Lastly, it would be good to discuss emerging topics such as how can large language models be integrated into these sessions in several ways:

1. **Common Infrastructure**: Large language models can be used to develop intelligent interfaces for the common infrastructure.
2. **Data Formats and Standards**: Large language models can be used to automate the process of data annotation and metadata generation.
3. **AI/ML, Computing, Visualization in Improving Neuroinformatics**: Large language models can play a crucial role in data analysis.

Here are some specific questions that could guide each breakout session:

Common Infrastructure:

- What are some challenges you've faced when dealing with diverse neurophysiology data?
- How can we ensure that our infrastructure is robust enough to handle these challenges?
- What features should this infrastructure have to support a wide range of research activities?

Data Formats and Standards:

- What are some strengths and weaknesses of current data formats used in neuroinformatics?
- How can we improve interoperability between different data formats?
- What are some best practices when using NWB files, Zarr, or other cloud-native formats?

AI/ML, Computing, Visualization in Improving Neuroinformatics:

- How has AI/ML been leveraged for data analysis in your work?

- What are some effective AI/ML techniques you've used when analyzing complex neuroscience data?
- How have advances in computing or visualization aided your data analysis?

You can use these questions to engage the participants.

Time allocation

Here's a comprehensive plan including specific questions for each session:

Morning Session (Focus on Standards):

1. **Introduction (5 minutes)**: Briefly introduce the session's objectives, expected outcomes, and the focus on standards.
2. **Discussion (60 minutes)**: Guide the discussion towards understanding and improving standards in neuroinformatics. Use prepared questions to stimulate discussion.
3. **Brainstorming (15 minutes)**: Encourage participants to brainstorm ideas on how to improve or develop new standards.
4. **Summary (10 minutes)**: Summarize the key points, ideas, and action items discussed during the session. This summary will be used for the regrouping session.
5. **Report Writing (Post-Meeting)**: After the meeting was adjourned, write a detailed report covering all aspects of the discussion, including key points, ideas, action items, and potential strategies for improving standards in neuroinformatics.

Evening Session (Focus on Analysis):

1. **Introduction (5 minutes)**: Briefly introduce the session's objectives, expected outcomes, and the focus on analysis. Recap the morning session to ensure continuity.
2. **Discussion (60 minutes)**: Guide the discussion towards understanding and improving data analysis tools in neuroinformatics. Use prepared questions to stimulate discussion.
3. **Brainstorming (15 minutes)**: Encourage participants to brainstorm ideas on how to improve or develop new data analysis tools.
4. **Summary (10 minutes)**: Summarize the key points, ideas, and action items discussed during the session. This summary will be used for the regrouping session.
5. **Report Writing (Post-Meeting)**: After the meeting was adjourned, write a detailed report covering all aspects of the discussion, including key points, ideas, action items, and potential strategies for improving data analysis tools in neuroinformatics.

Integration of Reports:

1. **Combine Reports**: Combine the reports from the morning and evening sessions into a single document. The report should be structured in a way that clearly shows the continuity between the two sessions.

2. **Review and Edit**: Review and edit the combined report to ensure that it is coherent, focused, and well-integrated. Please share the documents with the
3. **Finalize Report**: I am communicating with journals for potential publications of the finalize report as a paper. We will decide on the details of this later on, but please have it in mind that the finalized report (or a variation of it) may also be used for communicating with funding agencies.

Thank you and good luck!
Nima & Satra