

Adjudicator's Guide

Note: Adjudicators should also read the Annotator's Guide. All information in that guide applies to adjudicators as well.

What is Adjudication?

Adjudication is the process of reconciling the inconsistencies between two different annotations of the same text, so as to produce a gold standard annotation that can be called the “ground truth” of the annotation for that text. In our annotation projects we follow a procedure called *double annotation*, which means that every text is annotated by two different annotators. These two different sets of annotations are produced separately, with no collusion between the two annotators as to the specific content of the annotations. The adjudicator, with input from the annotators, is then responsible for *merging* these two texts into the final gold standard annotation document.

Double-annotation serves several purposes. The first and most important is it allows for more complete error checking. Annotation is mentally taxing and time-consuming, and it is easy for annotators to make incorrect annotations. These incorrect annotations may be the result of not properly understanding the annotation scheme, mental fatigue while annotating, or typographical errors, such as hitting the wrong button or editing the wrong part of the file. Having two annotators do the same annotations, with a third person checking the work, provides a triply-redundant means of finding and eliminating errors in the annotations.

Double-annotation, secondarily, also provides a measure of quality of the annotations and the annotation scheme itself. By comparing the two sets of annotations of the same text, before merging, one can calculate an *inter-annotator agreement*, which is a score or set of scores (that may depend on the annotation scheme) that allow us to judge how much the two annotators agree with each other. Low inter-annotator agreement scores may mean several things. It often means that the annotators have either different understandings of annotation scheme, or different interpretations of the text. We strive to start with high inter-annotator agreements **before** merging. The primary means of achieving this is training the annotators well.

Inter-annotator agreements also give us feedback on the quality of the annotation scheme itself. If, even in the face of well trained annotators who are paying close attention, the inter-annotator agreements are still low, this means that the annotation scheme itself may be at fault. The scheme may be confusing, unintuitive, not cover all relevant aspects of the linguistic phenomenon at hand, or be fundamentally ambiguous. In this case we must adjust the annotation scheme itself.

The project manager is responsible for calculating inter-annotator agreements and keeping you informed of how well your team is doing. You should share this information with your annotators so they can get a sense of how well they are doing. If agreement is low or declining, encourage your annotators to pay closer attention, re-read the annotation guide, or discuss their confusions with you or the other annotator in more detail. If the agreement is high or increasing, do not be stingy in your praise. Inter-annotator agreement is one of our only concrete measures of annotation

quality, and these numbers are directly reported in the academic papers and technical reports the project lead writes, so it is critically important to the project that they be kept high.

Merge Tool

Your main interaction with your annotators will be at your weekly merge meeting, during which you and your two annotators will come together to examine the texts that were annotated that week

Once you have made sure all the annotators have checked in their latest work, and you have downloaded that work to your computer, start merging. For the first document, create the initial gold standard file by merging the two annotator's copies into one, using the merge tool. Use the merge tool to create the gold standard file by selecting the two annotator files and running the tool from the menubar, as shown in Figure 1.

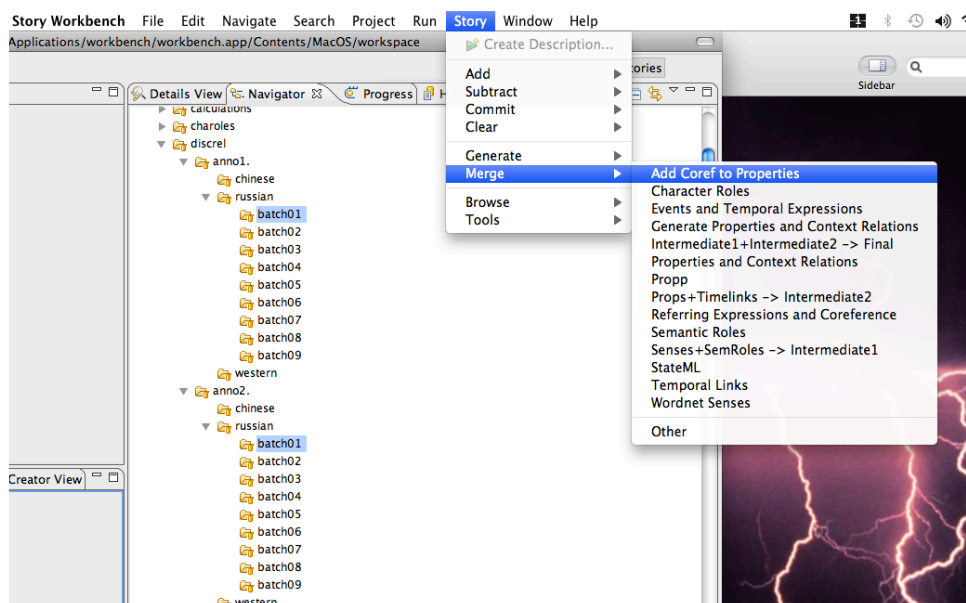


Figure 1: Running the Merge Tool

If the representation you are merging is included in the list of options under the 'Merge' tool, then you only need to select the location and the name of the gold standard file: the location should be the project that has been assigned for holding the gold standard files, and the name should be the same as the annotator's files. As shown in Figure 2, make sure to type in the annotator's name into each box, as this makes merging much easier.

Pressing 'finish' at this point should complete the merge process. By pressing 'next', you will go to the representation selection page, as shown in Figure 3. The two left tables indicate which annotations from the first and second annotator's files will be transferred into the new file. The rightmost table indicates which representations will be included in the output file, and how those annotations will be generated. The icons indicate three different ways that the annotations may be generated. The supervisor will tell you what the rightmost list should look like for each representation you are merging.

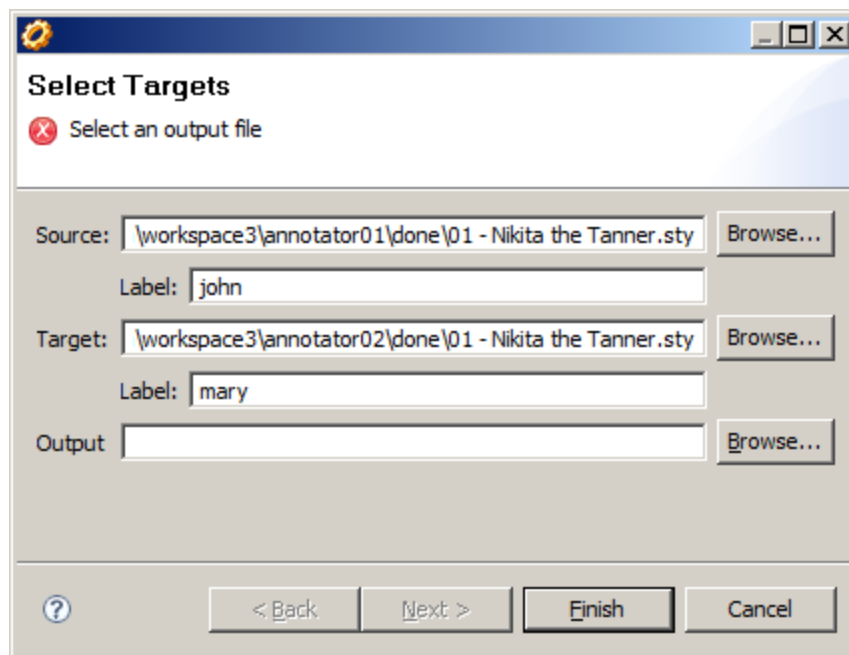


Figure 2: Define the annotator's names and location of the gold standard merge file

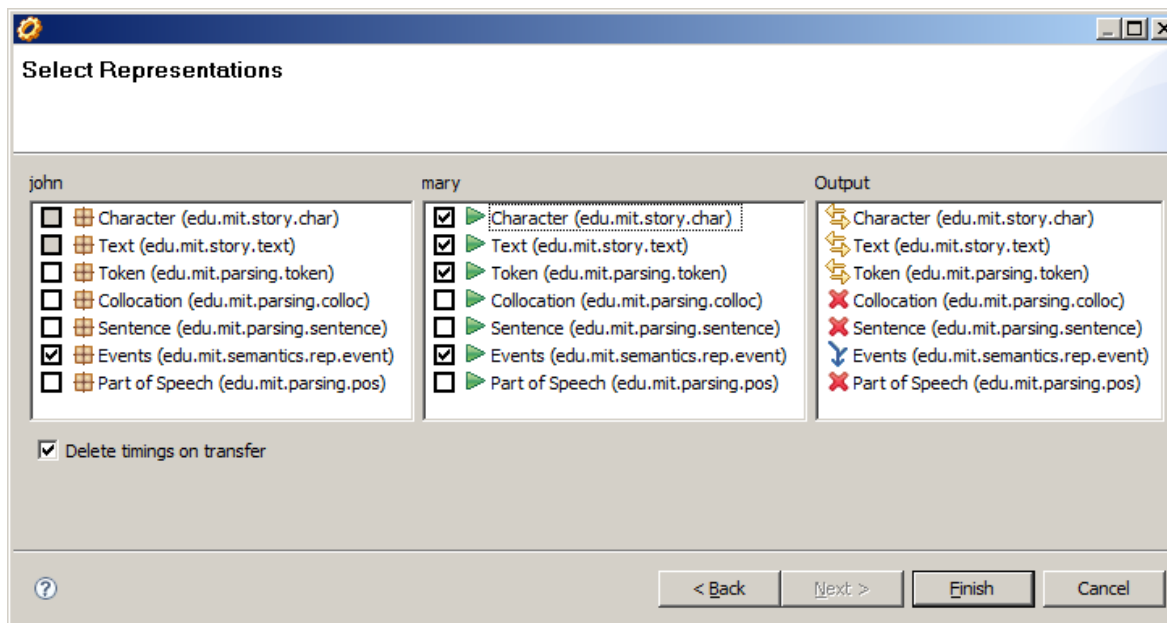







Figure 3: Representation selection page.

	A representation in the first annotator's file
	A representation in the second annotator's file
	This representation will be matched between the two files. If the annotations in this representation do not match exactly between the two annotator's files, the merge will fail.
	The annotations from each annotator's files will be merged, with identical pairs of annotations producing only a single annotation in the output file.
	This representation will not be included in the output file.

If you receive an error during this process, it likely means that the text or annotations that should be identical between the two files do not match in some way. If you have no experience in fixing this problem, consult the supervisor.

At this point you will have an initial gold standard annotation file, and you can begin the merge process. Use a projector to display your Story Workbench screen for all both annotators to see, and work your way through the file, correcting discrepancies between the two annotators' annotations. You should be able to see which annotations came from one, the other, or both annotators by the presence of their name in red in the Details View, as shown in Figure 4.

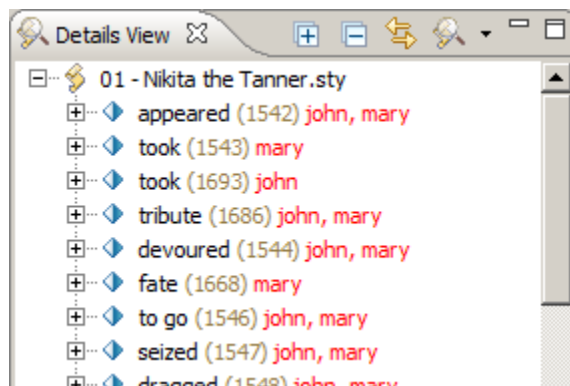


Figure 4: Details View showing which annotator created each annotation. When both annotators are listed this means they agreed exactly.

At the end of the merge session, also record, along with your inter-annotator agreement scores, your throughput (in number of words **and** number of texts) for the session. This information will be used by the supervisor to track both the progress of your team and the progress of the project as a whole.

Team Interaction & Training

In annotation there is a tension between collusion and discussion. On the one hand, we seek for each annotator to work independently and generate their annotations without consulting the other annotators or the adjudicator. On the other hand, some amount of interaction and discussion is necessary, especially when training new annotators. A rough rule of thumb should be that, early on, no restriction or discouragement should be made regarding questions new annotators can ask about their annotations. As they become more highly trained, they will naturally ask fewer questions. At some point, they will learn enough to know when an annotation decision is ambiguous or questionable, and will mark these decisions with notes for discussion during the merge meeting. Until that point, discussion should be encouraged in the interest of training.

Adjudicator Responsibilities

The following section lays out annotator responsibilities. Please read this section carefully as it contains information on not only what is expected of you, but also how to avoid administrative headaches and get paid in a timely manner.

Quality of Annotation

Your primary responsibility as an adjudicator is to manage your team so that you produce consistently high quality gold-standard annotations at a reasonable rate. You should strive for high inter-annotator agreements within your team, and accurate annotations throughout.

The primary responsibility of the adjudicator is to produce high quality gold-standard annotations.

Throughput

You are also expected to maintain your team at a reasonable throughput of annotation, without sacrificing quality of the annotations. For a standard annotation project we aim for between 1500-3000 words/week, on average, depending on the annotation scheme. Expect the throughput to vary from week depending on annotator's schedules, health, and the difficulty of the texts. If your throughput is consistently falling below this average, discuss the situation with the supervisor to determine if there is any way of addressing the problem.

Recording Discussion and Interpretation

Any major amount of discussion that happens during the merge meeting should be documented by the adjudicator in a note attached to the relevant annotations. These notes allow the project lead to see where there was confusion or problems, or understand the context or a particularly difficult decision. This data is used to improve the annotation scheme for future work.

Managing the Annotation Team

You are responsible for the well-being of your annotation team. First, you are responsible for scheduling meetings at a time and place convenient for all team members. At the very least, you should schedule next week's meeting at the end of each merge meeting. Ask annotators to come prepared with their schedule for the next week. Some teams prefer to have a set meeting time; this is the preferred method if it is possible within the team's schedule.

The supervisor will provide you with a common calendar on which to enter in your team meetings. Make sure to keep this calendar up to date with your actual team meetings, as the supervisor may stop by to check on your progress and make sure the team is functioning smoothly and everyone is comfortable with their work.

It is not a problem for teams to meet via teleconference. However, if your team is new, it is better to meet in person at the beginning so everyone can get to know each other. Once the team is comfortable with each other, you can transition to teleconference.

Second, you are responsible for making sure each annotator has all of their questions answered, has their views heard, and is able to voice their opinion during meetings. You should treat your annotators and their interpretations with respect. When you must overrule their judgments, such as

when you are deciding between two opposing annotations, do not do so in a flippant or derogatory manner. Your annotators are doing their best to provide an accurate interpretation of the text, and there are legitimate ambiguities that you will have to decide between (hence your title: adjudicator). If you are open and detailed about your decisions regarding annotations, your annotators will see your logic and integrate this knowledge into their annotation style, reducing disagreements in the future and improving your team's output.

Keep the Supervisor Informed

You are also responsible for keeping your supervisor informed about the state of your team. At the very least, this means a weekly email including the following information:

- A summary of the meetings held – time spent, reasons for not having the meeting as scheduled, or reasons for cutting a meeting short.
- When will the next meeting occur?
- Any performance-related issues. This can include whether annotators finished the expected amount of work prior to the meeting. Comments pointing out high-quality work or dedication are also good things to note.
- Extra comments or questions about the representation or management are always welcome.

If you are concerned about one of your annotator's performance or behavior, make sure to bring this up with the supervisor so that the problem can be resolved as soon as possible. Remember that no news is **not necessarily** good news: this means to report your team status to the supervisor periodically, whether good, bad, or just average.

It will likely be best to write this email immediately after a meeting is held. What day they are written is not so important as the frequency of writing. Please send one every week.

Keep the supervisor informed when you or one of your annotators are sick and won't be able to make a meeting or do their work that week. Any major changes of schedule or availability should be discussed with supervisor if they negatively impact your ability to do your manage your team. You should also notify the supervisor and your team members if your email or phone number changes. Changes of address and contact information should be reported both to your supervisor and the MITemp administration.

Reporting your Hours

Each employee is responsible for keeping track of the number of hours they work. Work time includes time spent annotating at home, as well as annotation merge meetings, but does **not** include time it takes to travel to the merge meeting.

You should expect your work hours to vary somewhat from week to week. However, there is a general range of time that the supervisor is expecting to see you work – if your reported hours diverges significantly from the expected time be prepared to explain why this is so.

Because of problems we have had in the past with unreported time, hours worked should be reported **within 7 days of the end of a work week**. Work weeks end on Sundays. This means that you must have submitted your time sheet for a week by the end of the next Sunday. Preferably you

will submit your time at the end of the Sunday which ends that work week – that is, you will not wait a week, but submit your hours immediately.

We have also problems in the past with MITemps not paying annotators the correct amount. Be aware of your hourly rate, how much you have worked, and how much you should be getting paid. If your paycheck does not match that expectation, bring up the issue with your supervisor.

Problems

If you have a problem with your work, or with another member of your team, bring up the issue with your supervisor. Happy adjudicators make for quality annotations, so don't hesitate to bring up issues with your supervisor so they can be resolved as soon as possible.