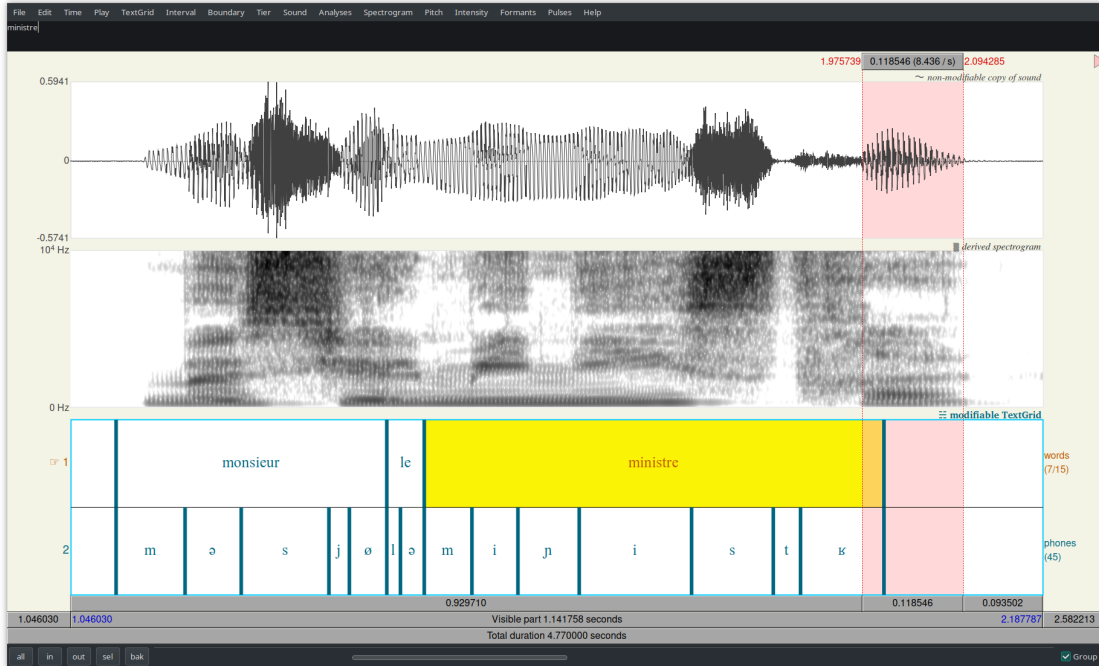


Use Case 1b: Modifying the dictionary

As you may have noticed, the alignments for the French speech data is overall good, but there may be room for improvement. One reason may be that there are pronunciation alternations that are not handled so far. We saw already an example where a final schwa is missing:



If we open the respective dictionary under `/Documents/MFA/pretrained_models/dictionary/french_mfa.dict` with a TextEditor, we can see the general structure of a dictionary: Every line contains a word in its orthographic transcription and a phone transcription. In the case of the downloaded pretrained model, the dictionary is enriched with probabilistic information, but this is not necessary for the MFA to run:

```

75 abainvillose» 0.99» 0.2»1.0»1.0»a b ẽ v i j w a z
76 abaissa»0.99» 0.2»0.59» 1.13» a b ẽ s a
77 abaissable» 0.99» 0.2»1.0»1.0»a b ẽ s a b
78 abaissable» 0.99» 0.2»1.0»1.0»a b ẽ s a b l
79 abaissables»0.99» 0.2»1.0»1.0»a b ẽ s a b
80 abaissables»0.99» 0.2»1.0»1.0»a b ẽ s a b l
81 abaissai» 0.99» 0.1»0.99» 1.01» a b ẽ s e
82 abaissaient»0.99» 0.28» 0.99» 1.01» a b ẽ s ẽ
83 abaissait» 0.99» 0.14» 0.96» 1.01» a b ẽ s ẽ
84 abaissant» 0.99» 0.12» 1.43» 0.89» a b ẽ s ä
85 abaissants» 0.99» 0.2»1.0»1.0»a b ẽ s ä
86 abaisse»0.99» 0.28» 1.2»0.94» a b ẽ s
87 abaissement»0.99» 0.39» 0.91» 1.01» a b ẽ s m ä
88 abaissements» 0.99» 0.28» 0.82» 1.09» a b ẽ s m ä
89 abaissent» 0.99» 0.23» 0.98» 1.01» a b ẽ s
90 abaisser» 0.99» 0.05» 1.79» 0.77» a b ẽ s e
91 abaisser» 0.29» 0.14» 1.0»1.0»a b ẽ s e
92 abaissera» 0.99» 0.14» 1.49» 0.67» a b ẽ s ɤ a
93 abaisserait»0.99» 0.14» 1.0»1.0»a b ẽ s ɤ ẽ
94 abaisseur» 0.99» 0.2»1.0»1.0»a b ẽ s œ ɤ
95 abaisseurs» 0.99» 0.2»1.0»1.0»a b ẽ s œ ɤ
96 abaissèrent»0.99» 0.23» 0.85» 1.06» a b ẽ s ẽ ɤ
97 abaissé»0.99» 0.16» 1.13» 0.94» a b ẽ s e
98 abaissée» 0.99» 0.28» 0.81» 1.11» a b ẽ s e
99 abaissées» 0.99» 0.57» 0.67» 1.19» a b ẽ s e
100 abaissés» 0.99» 0.2»1.0»1.0»a b ẽ s e
101 abajoue»0.99» 0.14» 1.19» 0.81» a b a ʒ u
102 abajoues» 0.99» 0.2»1.0»1.0»a b a ʒ u
103 abakan» 0.99» 0.47» 1.0»1.0»a b a k ä
104 abakoumov» 0.99» 0.2»1.0»1.0»a b a k u m v
105 abakovski» 0.99» 0.2»1.0»1.0»a b a k o v s k i

```

Here is a minimal example of a dictionary that is completely sufficient for the alignment procedure. Note that in each line the orthographic transcription and the phone transcription is separated by a tab. The dictionaries themselves are simple .txt files (Note: dictionaries from pretrained models have a .dict suffix, but for your custom dictionaries you can use .txt).

```

235150 æillet» æ j ɛ
235151 æilleton» æ j t ʃ
235152 æillets»æ j t
235153 æillères» æ j ɛ ɤ
235154 æils» æ j
235155 æit»æ j ɛ
235156 ækoumène» e k u m ɛ n
235157 ænanthique» e n ä t i k
235158 ænochoé»e n ɔ k ɔ e
235159 ænologie» e n ɔ l ɔ ʒ i
235160 ænologie» ø n ɔ l ɔ ʒ i
235161 ænologies» e n ɔ l ɔ ʒ i
235162 ænologies» ø n ɔ l ɔ ʒ i
235163 ænologique» e n ɔ l ɔ ʒ i k
235164 ænologue» e n ɔ l ɔ g
235165 ænologues» e n ɔ l ɔ g
235166 ænomel» e n ɔ m ɛ l
235167 ænone» e n ɔ n
235168 ænophile» e n ɔ f i l
235169 ænophiles» e n ɔ f i l
235170 ænophyta» æ n ɔ f i t a
235171 ænothèque» e n ɔ t ɛ k
235172 ænotourisme»e n o t u ɤ i s m
235173 ænotros»æ n ɔ t ɤ o

```

If we take a look now at the entry for “ministre”, we will see that there is no alternative with a

word-final schwa. Luckily, since we see that this alternation exists, we can simply add a line and add a schwa at the end. Ensure to use the respective transcription of the dictionary.

```

137452 minimoy» m i ɲ i m w a
137453 minimum»m i ɲ i m ɔ m
137454 minimums» m i ɲ i m ɔ m
137455 minine» m i ɲ i n
137456 minions»m i ɲ ñ
137457 minirobe» m i ɲ i ʁ ɔ b
137458 ministe»m i ɲ i s t
137459 ministre» m i ɲ i s t ʁ
137460 ministre» m i ɲ i s t ʁ ə
137461 ministres» m i ɲ i s t ʁ
137462 ministry» m i ɲ i s t ʁ i
137463 ministère» m i ɲ i s t ɛ ʁ
137464 ministères» m i ɲ i s t ɛ ʁ
137465 ministérielisme»m i ɲ i s t e ʁ j a ʎ i s m
137466 ministériel»m i ɲ i s t e ʁ j ɛ l
137467 ministérielle» m i ɲ i s t e ʁ j ɛ l
137468 ministérielles» m i ɲ i s t e ʁ j ɛ l
137469 ministériels» m i ɲ i s t e ʁ j ɛ l
137470 miniserie» m i ɲ i s e ʁ i
137471 miniseries» m i ɲ i s e ʁ i
137472 minitel»m i ɲ i t ɛ l
137473 minitrack» m i ɲ i t ʁ a k
137474 minitrix» m i ɲ i t ʁ i
137475 minitéliste»m i ɲ i t e ʎ i s t

```

This modified dictionary is saved as french_mfa_dict.txt. You can place this new dictionary anywhere you want, but ensure not note the path, because it is used for the alignment.

Start your terminal/console/command line and activate your MFA environment. In order to align the data again, run the following command but use this time the path to the modified dictionary:

The acoustic model for French was trained on more than 1950 hours of speech, so it will be hard to account for every single alternation in pronunciation

```

[ ]: mfa align --clean ~/Documents/MyFrenchCorpus/data/ ~/Documents/MyFrenchCorpus/
      ↪french_mfa_dict_modified.txt french_mfa ~/Documents/MyFrenchCorpus/
      ↪modified_alignments/

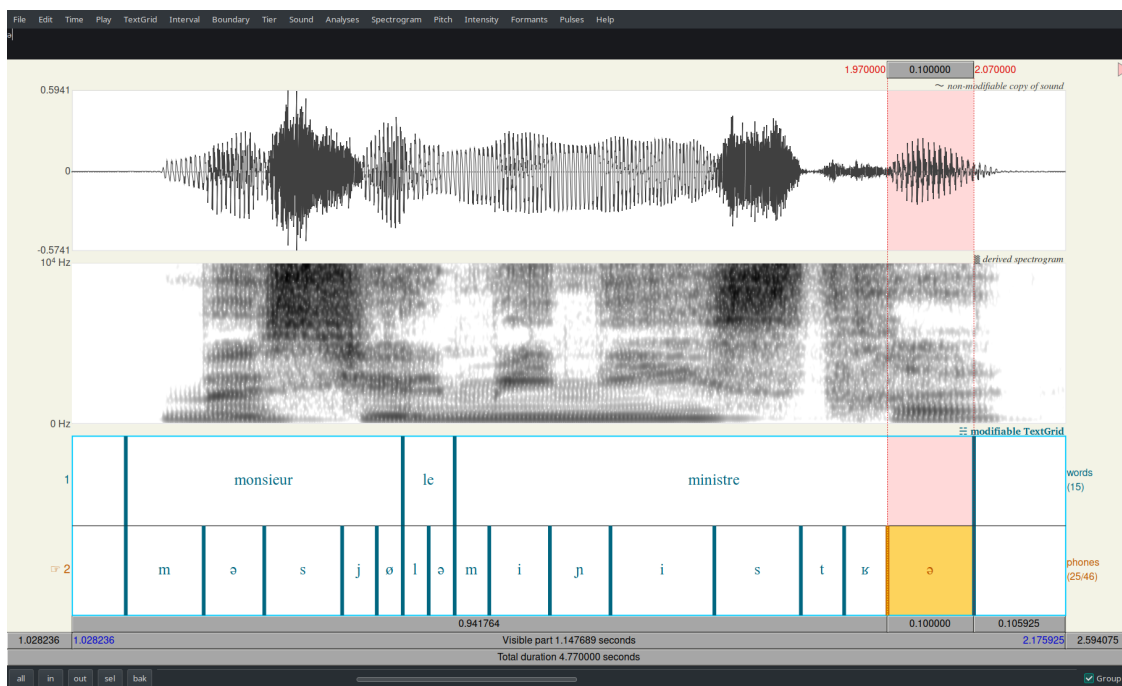
```

```

File Edit View Bookmarks Plugins Settings Help
New Tab Split View Copy Paste Find
source ~/anaconda3/bin/activate
conda activate myMFA
mfa align --clean ~/Documents/MyFrenchCorpus/data/ ~/Documents/MyFrenchCorpus/french_mfa_dict_modified.txt french_mfa ~/Documents/MyFrenchCorpus/modified_alignments/
INFO - Loading corpus from source files...
INFO - Found 1 speaker across 4500 files, average number of utterances per speaker: 4500.0
INFO - Initializing multiprocessing jobs...
WARNING - Number of jobs was specified as 3, but due to only having 1 speakers, MFA will only use 1 jobs. Use the --single-speaker flag if you would like to split utterances across jobs regardless of their speaker.
INFO - Normalizing text...
INFO - Creating corpus split for feature generation...
INFO - Generating MFCCs...
INFO - Calculating CMVN...
INFO - Generating final features...
INFO - Creating corpus split with features...
INFO - Compiling training graphs...
INFO - Performing first-pass alignment...
INFO - Generating alignments...
INFO - Calculating FMLLR for speaker adaptation...
INFO - Performing second-pass alignment...
INFO - Generating alignments...
INFO - Collecting phone and word alignments from alignment lattices...
INFO - Exporting alignment TextGrids to /home/philipp/Documents/MyFrenchCorpus/modified_alignments...
Exception during reset or similar
Traceback (most recent call last):
  File ~/home/philipp/anaconda3/envs/myMFA/lib/python3.10/site-packages/sqlalchemy/pool/base.py, line 991, in _finalize_fairy
    fairy._reset()
  File ~/home/philipp/anaconda3/envs/myMFA/lib/python3.10/site-packages/sqlalchemy/pool/base.py, line 1440, in _reset
    pool._dialect.do_rollback(self)
  File ~/home/philipp/anaconda3/envs/myMFA/lib/python3.10/site-packages/sqlalchemy/engine/default.py, line 657, in do_rollback
    dbapi_connection.rollback()
psycopg2.OperationalError: server closed the connection unexpectedly
This probably means the server terminated abnormally
before or while processing the request.
INFO - Finished exporting TextGrids to /home/philipp/Documents/MyFrenchCorpus/modified_alignments!
INFO - Done! Everything took 230.282 seconds

```

If you open the respective TextGrid, this time with an alignment of the schwa, you will see that it was recognized and the alignments are more accurate for the word in general:



The acoustic model for French was trained on more than 1950 hours of speech, so it will be hard to account for every single alternation in pronunciation. So be aware that these alternations are not recognized, if you use the vanilla dictionary of the MFA. However, most people will probably use the MFA to align their experimental data, so one may be aware all the possible alternations in the

dataset and can modify the dictionary accordingly. Depending on the data, all alternations may not be recognized, but most of them, depending on your setup. For example, if you use a custom dictionary that contains only the words of your dataset, the recognition of these alternations will be better. But as it holds for forced alignment in general, it is necessary to inspect the TextGrids afterwards.