MFA and Pretrained Acoustic Models

The *Montreal Forced Aligner* (MFA) is a third-party tool developed by Michael McAuliffe and others for time aligning orthographic and phonological forms from a pronunciation dictionary to orthographically transcribed audio files. It is open source software based on the Kaldi ASR toolkit.

LaBB-CAT includes a layer manager module called "MFA Manager" which integrates with MFA in order to facilitate forced alignment of LaBB-CAT corpus data.

The layer manager can work in two modes:

- *Train and Align* - acoustic models are trained on the data you want to align, which can be in any language as long as you have a pronunciation dictionary for it.
- *Pre-trained Models/Dictionaries* - pre-trained models and pronunciation dictionaries are supplied by the Montreal Forced Aligner and used for forced alignment. Languages for which dictionaries are available listed on the MFA website and include:
  - English
  - French
  - German
  - Brazilian Portuguese
  - Spanish
  - Catalan

These instructions assume that your corpus is in one of these languages, and uses the *Pre-trained Models/Dictionaries* approach...

MFA Installation

MFA is a 3rd-party tool that LaBB-CAT integrates with via a Layer Manager module. MFA is *not included* as part of LaBB-CAT, and so it must be installed on the server you have installed LaBB-CAT on before you can integrate LaBB-CAT with it.

If MFA has not been installed already, please follow the steps detailed under MFA Installation. This is a one-time process.

Layer Manager Installation

Once MFA has been installed, you have to install the MFA Manager, which is the LaBB-CAT module that provides MFA with all the data it needs, and then saves to alignments MFA produces back to your database.

1. Select the *layer managers* menu option.
2. Follow the *List of layer managers that are not yet installed* link.

3. Find *MFA Manager* in the list, and press its *Install* button and then press *Install* again.
   As long as MFA has been installed for all users, you should see a box that's already filled in with the location that MFA was installed to.
4. Click *Configure* to continue the layer manager installation.
   You will see a window open with some information about integrating with MFA, including the information you've already read above.

Forced Alignment

Once you've

1. Now you need to add a phrase layer for the HTK configuration:

   - **Layer ID**: `mfa`
   - **Type**: *Text*
   - **Alignment**: *Intervals*
   - **Manager**: *MFA Manager*
   - **Generate**: *always*
   - **Description**: *MFA alignment time*

2. When you configure the layer, set the following options:

   - **Dictionary Name**: the dictionary language, e.g. *english_uk_mfa*
   - **Pretrained Acoustic Models**: the models language, e.g. *english_mfa*
   - The rest of the options can be left as their default values.
   - If you're curious about what the configuration options do, hover your mouse over each option to see a 'tool tip' that describes what the option is for.

3. Press *Set Parameters*
4. Press *Regenerate*
   You will see a progress bar while LaBB-CAT force-aligns all the transcripts in the corpus, which may take a few minutes.
5. When the layer manager has finished, you'll see a message saying:
   Complete - words and phones from selected utterances are now aligned.

> **Tip**
>
> Not all MFA pre-trained acoustic models can be used with all dictionaries.
> Apart from matching the language (e.g. English-trained acoustic models should be used only with English dictionaries), the phoneme symbol sets must also match.
> MFA uses several symbol sets, including:
>
> - IPA - model and dictionary names ending in `..._mfa`
> - ARPAbet - model and dictionary names ending in `..._arpa`

So if you use an acoustic model ending in `...arpa`, then the dictionary you choose must also end in `...arpa`.
See the MFA documentation on models and dictionaries for more detailed information:
https://mfa-models.readthedocs.io