MFA Installation

The *Montreal Forced Aligner* (MFA) is a 3rd-party tool that LaBB-CAT integrates with via a Layer Manager module:
https://montrealcorpustools.github.io/Montreal-Forced-Aligner/

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 following steps, depending on the operatings system of your LaBB-CAT server:

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i Linux

To install the Montreal Forced Aligner on Linux systems for all users, so that your web server can access it if required:

1. Download Miniconda:
   `wget https://repo.anaconda.com/miniconda/Miniconda3-py38\_4.10.3-Linux-x86\_64.sh`
2. Start the installer:
   `sudo bash Miniconda3-py38\_4.10.3-Linux-x86\_64.sh`
3. When asked the location to install Miniconda, use:
   `/opt/conda`
4. When asked whether the installer should initialize Miniconda, this is unnecessary so you can respond no
5. Change ownership of the conda files):
   `sudo chown -R $USERNAME:$USERNAME /opt/conda`
6. Make conda accessible to all users (so you web server can access MFA):
   `chmod -R go-w /opt/conda`
   `chmod -R go+rX /opt/conda`
7. Install the Montreal Forced Aligner
   `/opt/conda/bin/conda create -n aligner -c conda-forge montreal-forced-aligner=2.2.17`

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i Windows

To install the Montreal Forced Aligner on Windows systems for all users, so that your web server can access it if required:

1. Download the Miniconda installer:
   https://repo.anaconda.com/miniconda/Miniconda3-latest-Windows-x86_64.exe
2. Start the installer by double-clicking it.

3. When asked, select the "Install for all users" option. This will install conda somewhere like
   C:\ProgramData\Miniconda3
4. When asked, tick the *add to PATH* option.
5. Install the Montreal Forced Aligner by specifying a path to the environment
   ```
   conda create -c conda-forge -p C:\ProgramData\Miniconda3\envs\aligner
   montreal-forced-aligner=2.2.17
   ```

⚠ Troubleshooting on Windows

The 3rd party MFA software requires:

- the possibility of running command-line programs during installation and forced alignement
- the possibility that these programs can download data from the internet

On Windows, this can sometimes be complicated by the fact that Apache Tomcat and LaBB-CAT are installed as a 'Windows Service'. Windows Services usually run using the permissions of a special anonymous login account called 'Local System', which in some environments has restricted permissions to access different resources.
If you install the MFA Manager LaBB-CAT integration module, but you find it returns errors when trying to interact with MFA, the problem may be that the Windows Service:

- does not have permission to access the folder where MFA is installed, or
- is not allowed to execute other programs, or
- cannot access the internet.

Sometimes problems can be resolved by:

- running the Apache Tomcat Windows Service as a different user other than 'Local System'. (or if it was running as some other used, try setting it back to 'Local System'), or
- adjusting the permissions of the Windows Service users, or
- adjusting the permissions of the folders where MFA is installed
- configuring the service to use the local Internet Proxy settings to enable connecting to the internet.

PSexec is a tool that can be used to diagnose and solve problems on Windows.

PSexec

1. Download PStool.zip from Microsoft:
   http://technet.microsoft.com/en-us/sysinternals/bb897553.aspx
2. Unzip it

3. Put *PSexec.exe* into `C:\Windows\System32`
4. Open `cmd` using "Run as Administrator"
5. Run the command:
   `Psexec.exe -i -s cmd.exe`
   This opens a new command prompt for local system account
6. In the new command prompt window, check you have the correct account type with the command:
   `whomai`

Then you can use the command prompt to run MFA commands to diagnose errors - e.g.:

- `conda activate montreal-forced-aligner` - activates the MFA environment
- `mfa version` - ensures MFA is installed and accessible, and confirms the version
- `mfa model download dictionary` - ensures MFA can connect to the internet to get models etc.; this command should return a long list of language dictionaries, and not report errors.

Proxy Settings

To update proxy server settings:

1. type `inetcpl.cpl`
2. goto *Connections* tab
3. click on the *LAN Settings* button
4. Fill in the *Proxy* section with the correct details

> **ℹ Docker Container**
>
> If your LaBB-CAT server is installed in a Docker Container, it can download and install Miniconda and MFA itself, as part of the process of installing the MFA Manager LaBB-CAT module. There is no need for a separate installation of the MFA software.