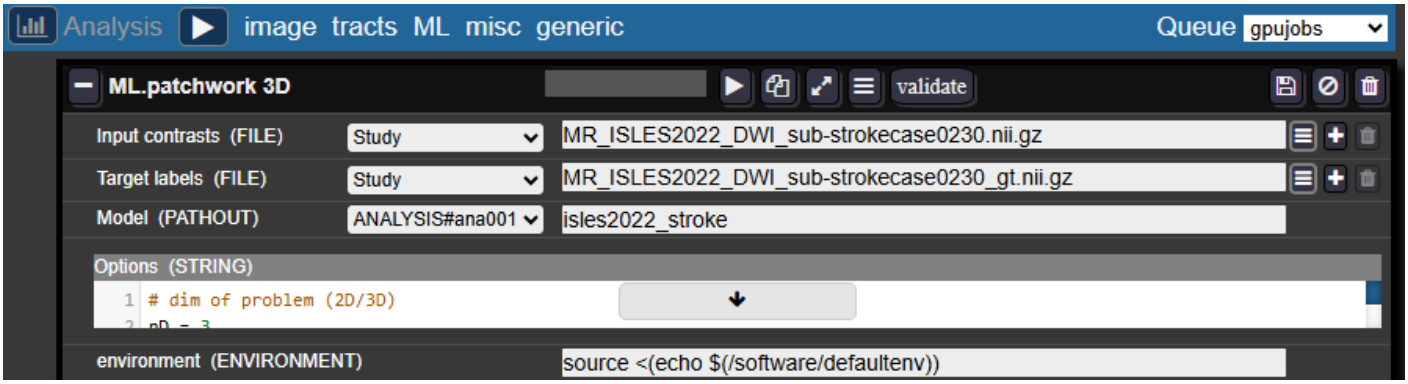
Segmentation (Deep Learning)

Training and Using Segmentation Models

The Batchtool allows you to train custom 3D segmentation models on your own data and apply them to new studies.

Here's a short tutorial on how to use the patchwork segmentation model (Deep Neural Patchworks: Coping with Large Segmentation Tasks, Reisert et. al, 2022)

1. Training a Segmentation Model on Your Data



In the Batchtool:

- Create a new **Analysis → ML → Patchwork 3D**

Entry fields:

- **Inputs contrasts and Target labels:** Enter the filenames of your images and masks as they appear in each study
- **Model:** Select an analysis folder (create one in your project if needed) and provide a name for your model folder, for example: `isles2022_stroke`

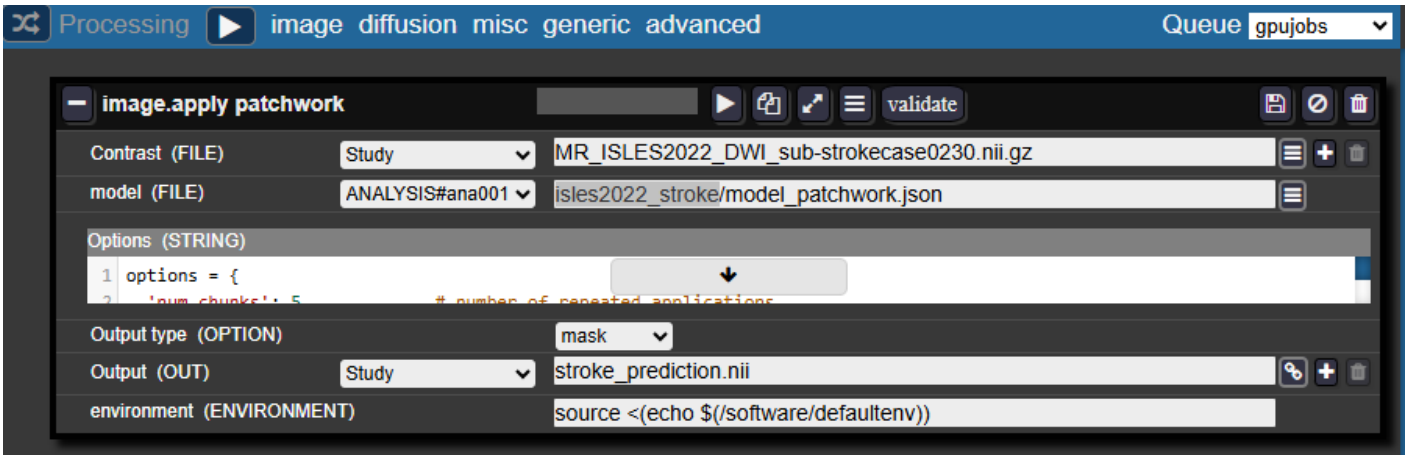
Configuration:

- In the **Studies panel**, check the studies you want to train the model on
- Select a job queue and run the analysis
- The job should appear in the Gridstats. You can monitor training progress in the log.

Training notes:

- The default number of iterations is 2500
- The model is saved after each epoch, so you can also terminate the job early if performance is satisfactory

2. Applying the Trained Model to New Studies



In the Batchtool:

- Create a new **Processing → Image → Apply Patchwork**

Entry fields:

- **Contrast:** The filename of your image in your studies
- **Model:** Select the same analysis folder and specify: `<model_folder_name>/model_patchwork.json`
  - For example: `isles2022_stroke/model_patchwork.json`
- **Output type:** Select **Mask**

- **Output:** Specify the desired name for the resulting mask

Configuration:

- In the **Studies panel**, check the studies you want to apply the model to
- Select a job queue and run the processing
- Monitor the job progress through the logs in Gridstats

Detailed documentation :

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