Convolutional Neural Networks for cytoarchitectonic brain mapping at large scale - supplementary material

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Screenshots of the web-based interactive mapping tool

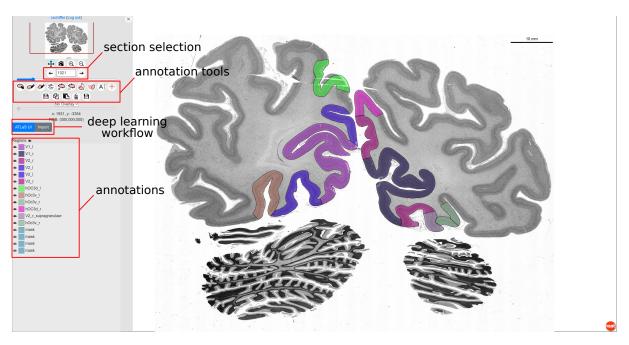


Figure 1: Main page of the web-based interactive mapping tool. The tool extends the web-based annotation tool *microdraw*, reusing it's rich capabilities for creating and managing annotations. Users can create and save annotations in their user account. Alternatively, an import function can be used to import annotations created using other annotation tools.

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	Brain
Projects	20
2 Visual BigBrain mapping Brain 20 Tasks 2 Edit Delete	Tasks
4 Thalamus (Torch) Brain 20 Tasks 7 Edit Delete	1 hOc2 - 901 · Annotations 14 Jobs 4 Edit Jobs 🖻 Delete
17 SFS/MFG Brain 20 Tasks 1 Edit Delete	2 hOc2 - 541 · Annotations 20 Jobs 3 Edit Jobs 🖻 Delete
32 Publication hOc2 Brain 20 Tasks 2 Edit Delete	
New project Close	New task Task wizard
	Save Close

Figure 2: *Left:* The web interface enables organization of mapping tasks into projects (e.g. one project per brain area). *Right:* Each project can consist of multiple tasks. One task corresponds to the training of one neural network model.

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Annotation filter	Brain					
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Figure 3: *Left:* User interface used to associate annotations with a task. Annotations added to a task will be used as training data for neural network training. Filters assist the user in selecting the wanted annotations, and automatic renaming ensures consistent naming. *Right:* User interface to control jobs running on a connected HPC system. Users can submit training jobs or trigger predictions for already trained models. Users can further monitor the status of running jobs or cancel them. Requests to the connected HPC system are relayed through a backend service.

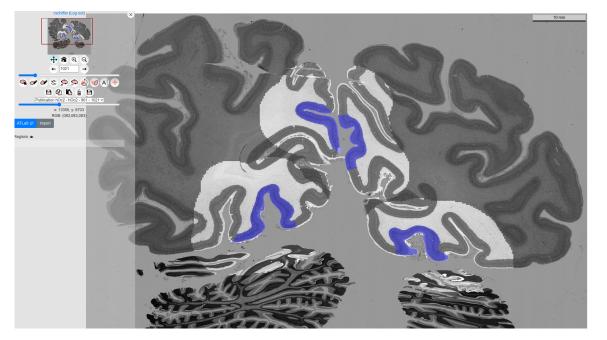


Figure 4: Predictions created by a trained neural network model displayed as overlay within *microdraw*. Predictions associated with a task can be accessed directly through the user interface.

Import an	Import annotations										
Source host	ource host imedv02.ime.kfa-juelich.de			Import predictions							
Project ID		32			Desti	nation user	cschiffer				
Task ID		1			Desti	nation path	data/brainm				
Retrieve source annotations											
Section	1015		Annotations	24			Add	Overwrite	-		
Section	1016		Annotations	25			Add	Overwrite			
Section	1017		Annotations	19			Add	Overwrite			
Section	1018		Annotations	21			Add	Overwrite			
Section	1019		Annotations	10			Add	Overwrite			
Section	1020		Annotations	7			Add	Overwrite			
Section	1021		Annotations	6			Add	Overwrite			
Section	1022		Annotations	18			Add	Overwrite	-		
Add all	Overw	rite all									
									Close		

Figure 5: The import function enables automatic import of annotations created using other annotation tools. It further enables users to import predictions created by models of arbitrary tasks as editable annotations into *microdraw*, which allows manual refinement and correction of predictions for later use.

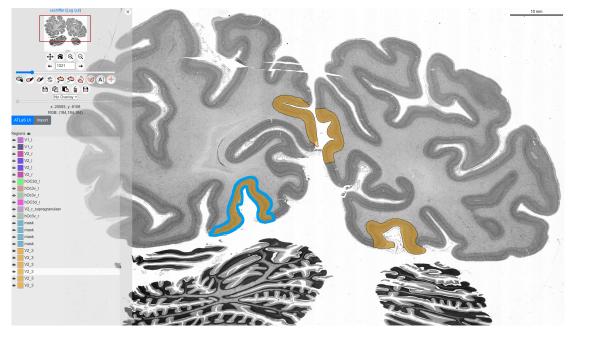


Figure 6: Predictions of a trained model shown in Fig. 4 which where imported as editable annotations into *microdraw* using the import functionality shown in Fig. 5. Imported predictions can be modified to correct errors, or to be used as input for the training of further models.

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