

**Supplementary Table 5.** SARDU-Net measurement selection in each of the 3 leave-one-out folds performed on brain DRI. The table shows results for the selection of  $D = 16$ ,  $D = 8$  and  $D = 4$  measurements out of  $M = 32$ . In training fold 1, 2 and 3, subject 1, 2 and 3 was respectively left out as test set and not used to train a SARDU-Net via back-propagation. The table also reports the best learning option in each fold (i.e. those providing the lowest validation loss).

	Fold 1	Fold 2	Fold 3
<b>(b, TI) selection for <math>D = 16</math> [(s mm<sup>-2</sup>, ms)]</b>	(0,70), (2000,320), (0,570), (0,820), (1000,820), (0,1070), (1000,1070), (3000,1070), (0,1320), (2000,1320), (0,1570), (1000,1570), (2000,1570), (0,1820), (1000,1820), (3000,1820)	(0,70), (3000,320), (0,570), (1000,570), (0,820), (2000,820), (0,1070), (1000,1070), (0,1320), (1000,1320), (0,1570), (1000,1570), (3000,1570), (0,1820), (1000,1820), (3000,1820)	(3000,320), (0,570), (3000,570), (0,820), (2000,820), (0,1070), (1000,1070), (0,1320), (1000,1320), (2000,1320), (0,1570), (1000,1570), (2000,1570), (3000,1570), (0,1820), (1000,1820)
	<u>Best learning options:</u> 100-voxel mini-batch; learning rate of 10 <sup>-3</sup> ; dropout of 0.0	<u>Best learning options:</u> 100-voxel mini-batch; learning rate of 10 <sup>-3</sup> ; dropout of 0.0	<u>Best learning options:</u> 100-voxel mini-batch; learning rate of 10 <sup>-3</sup> ; dropout of 0.0
<b>(b, TI) selection for <math>D = 8</math> [(s mm<sup>-2</sup>, ms)]</b>	(0,820), (3000,820), (0,1070), (0,1320), (2000,1320), (0,1570), (0,1820), (1000,1820)	(2000,320), (0,820), (2000,820), (2000,1070), (0,1320), (0,1570), (0,1820), (1000,1820)	(0,320), (0,820), (2000,1070), (0,1320), (1000,1320), (0,1570), (0,1820), (1000,1820)
	<u>Best learning options:</u> 100-voxel mini-batch; learning rate of 10 <sup>-3</sup> ; dropout of 0.0	<u>Best learning options:</u> 1500-voxel mini-batch; learning rate of 10 <sup>-3</sup> ; dropout of 0.0	<u>Best learning options:</u> 100-voxel mini-batch; learning rate of 10 <sup>-3</sup> ; dropout of 0.0
<b>(b, TI) selection for for <math>D = 4</math> [(s mm<sup>-2</sup>, ms)]</b>	(0,1070), (3000,1570), (0,1820), (1000,1820)	(0,1320), (1000,1320), (0,1820), (3000,1820)	(0,1070), (3000,1320), (0,1820), (1000,1820)
	<u>Best learning options:</u> 100-voxel mini-batch; learning rate of 10 <sup>-4</sup> ; dropout of 0.0	<u>Best learning options:</u> 1500-voxel mini-batch; learning rate of 10 <sup>-3</sup> ; dropout of 0.0	<u>Best learning options:</u> 100-voxel mini-batch; learning rate of 10 <sup>-3</sup> ; dropout of 0.0