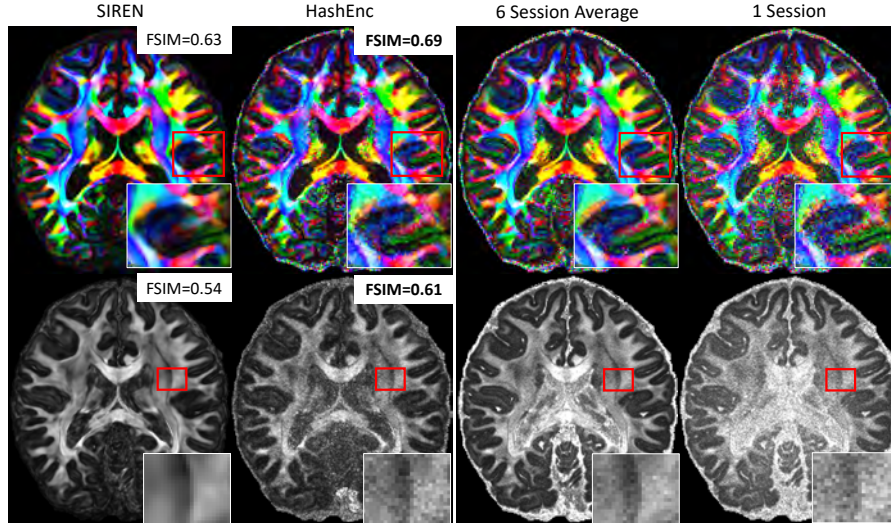


# Supplementary Material: Estimating Neural Orientation Distribution Fields on High Resolution Diffusion MRI Scans

Mohammed Munzer Dwedari<sup>\*1,2</sup>, William Consagra<sup>\*1</sup>, Philip Müller<sup>2</sup>, Özgün Turgut<sup>2</sup>, Daniel Rueckert<sup>2</sup>, and Yogesh Rathi<sup>1</sup>

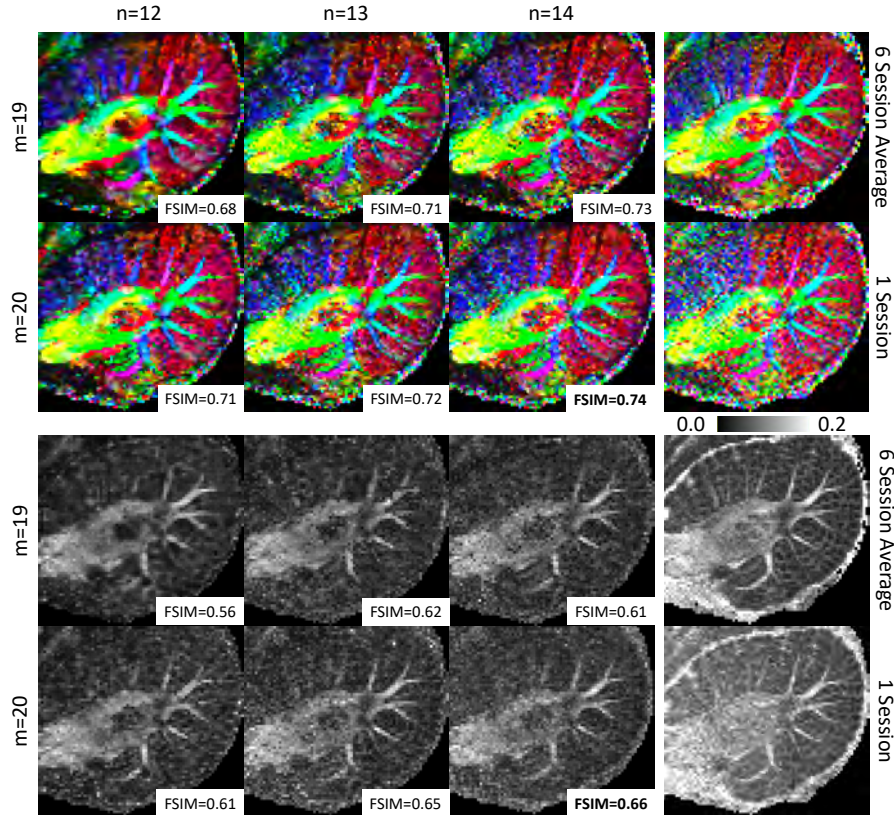
<sup>1</sup> Psychiatry Neuroimaging Laboratory, Brigham and Women's Hospital, Harvard Medical School, Boston, USA {wconsagra,yogesh}@bwh.harvard.edu

<sup>2</sup> Technical University of Munich, Munich, Germany {munzer.dwedari,philip.j.mueller,oezguen.turgut,daniel.rueckert}@tum.de

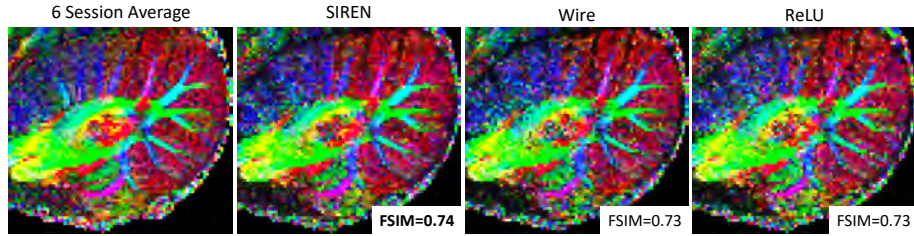


**Fig. 1.** DTI and GFA images of an axial slice of SIREN and HashEnc methods trained on  $M = 70$  gradient directions. On the right side are the DTI and GFA images of the 6 session average and 1 session. For each of the SIREN and HashEnc images we report the FSIM score to the 6 session average. We also highlight a small section indicated by the red box to demonstrate the over-smoothing effect of SIREN in comparison to the other images. HashEnc shows a better structural similarity to the 6 session average, indicated both visually and by the higher FSIM score.

<sup>\*</sup> Authors contributed equally to this work



**Fig. 2.** Cerebellum DTI and GFA images of HashEnc method with different resolutions levels  $n$  and lookup table sizes  $2^m$ . Right are the 6 session average and 1 session images. We report the FSIM score of every image to the 6 session average on the bottom right corner. Based on the FSIM score, the network configuration of  $n = 14$  and  $m = 20$  shows the best structural similarity to the 6 session average.



**Fig. 3.** Cerebellum DTI images of HashEnc trained with different types of MLP heads (SIREN, Wire, and ReLU). We include the DTI image of the 6 session average on the left and the FSIM score of the rest of the images. All networks are trained with 14 resolution levels and a  $2^{20}$  lookup table size on  $M = 70$  gradient directions. We see no significant difference in performance with different MLP heads.