

Testing results

This document lists detailed evaluation metrics for the MIMIR inference engine¹ for image-based deep regression on UK Biobank data.

The listed metrics resulted from comparing predictions made with MIMIR for 40,000 subjects, which were shared as Return data with Upload ID 1112 for Application 14237, against a subsequent release of about 15,000 new reference values covering 12 body composition fields.

1 Evaluation Metrics

The tables contain the following columns:

Description	A descriptive term for the estimated measurement or property, taken either from the UK Biobank Showcase or assigned from external sources
Field	The UK Biobank field ID (Left blank if the reference values were not obtained from UK Biobank)
N	Number of subjects
Unit	Measurement unit
ICC	Intraclass correlation coefficient, using a two-way random, single measures, absolute agreement definition
R²	Coefficient of determination
MAE	Mean absolute error
MAPE	Mean absolute percentage error ³

Additional documentation on each target can be found by searching for a given field ID in the publicly accessible UK Biobank showcase:

<https://biobank.ndph.ox.ac.uk/showcase/search.cgi>

¹https://github.com/tarolangner/ukb_mimir/

³Calculated with (prediction - reference), so that positive shifts indicate overestimation

Table 1: Body Composition

Description	Field	N	Unit	ICC	R ²	MAE	MAPE
AtlasAbdominalFatRatio	22434	14,708	L/L	0.996	0.992	0.007	1.5
AtlasAnteriorThighLeanMuscleLeft	22405	18,363	L	0.983	0.968	0.066	3.9
AtlasAnteriorThighLeanMuscleRight	22403	18,518	L	0.985	0.971	0.064	3.8
AtlasAsatVolume	22408	14,764	L	0.995	0.991	0.218	3.3
AtlasMuscleFat	22435	14,725	%	0.957	0.916	0.413	5.9
AtlasPosteriorThighLeanMuscleLeft	22406	18,387	L	0.987	0.974	0.102	3.1
AtlasPosteriorThighLeanMuscleRight	22404	18,525	L	0.989	0.979	0.095	2.9
AtlasTotalAbdominalAdiposeTissueIndex	22432	14,764	L/m ²	0.996	0.991	0.108	3.1
AtlasTotalThighMuscleVolume	22409	14,718	L	0.994	0.988	0.231	2.4
AtlasTotalTrunkFat	22410	18,634	L	0.997	0.995	0.233	2.3
AtlasVatVolume	22407	14,772	L	0.996	0.991	0.149	4.8
AtlasWeightToMuscleRatio	22433	14,718	kg/L	0.978	0.958	0.215	2.7