Supplementary Materials: Regression of the Rician Noise Level in 3D Magnetic Resonance Images from the Distribution of the First Significant Digit

Rosa Maza-Quiroga [1,3,†] , **Karl Thurnhofer-Hemsi** [1,3,†] , **Domingo López-Rodríguez** [2,3,†] and **Ezequiel López-Rubio** [1,3,†]*

In this study, two repositories are used, Mindboggle and fastMRI. The following paragraphs show the results regarding each sub-dataset described in the main document.

In the following paragraphs, we will refer to the R^2 value because its interpretation is the clearest. In general, the ranking of the best-performing metrics does not include either M1 or M3 metrics. Therefore, we greatly outperform the prior proposal [29] .

HLN repository shows KR as a better model taking into the values of MSE and R^2 = 0.9826, see Tables S1 and S3. Both determine M4 as the best metric, see Figure 1 . MAE shows the combination of M1 + M10 with close results, see Table S2 and Figure S5. Peeking the first three positions of the score of MSE, MAE and R^2, we can conclude that M4, M10, and M1 + M10 are the three better metrics to predict the Rician noise for the HLN repository. On the other hand, the M1 option is positioned at the bottom of the score, indicating that the metrics used in this analysis outperform the previous results in [29] .

With good precision, MAE and R^2 = 0.9823 determine SVR as the best model for the MMRR repository, see Tables S4 and S6. M4 is the best regarding a single input metric, see Figure S1. The metrics M1 and M2 as input in the model are the most successful results, see Figure 2 . MSE shows KR as the best model with a value close to SVR (SVR = 2.59; KR = 2.45).

PR is the best model for MSE value and R^2 = 0.9141 for the NKI-RS repository, see Tables S7 and S9. M10 achieves the highest score when evaluating a single input, see Figure S2. The combination of M4 and M6 is the most successful, see Figure 3 . On the other hand, MAE shows SVR is the best, see Table S8.

NKI-TRT dataset shows LR as a better model if check MSE and R^2 = 0.7059, see Tables S10 and S12. M6 is the top-performing metric when considering a single input, see Figure S3. MAE determines that the SVM model is the best, see Table S11. The metrics are similar for MSE and R^2, and vaguely different for MAE. The model's most significant achievements are attributed to using metrics M6 and M15 as inputs, see Figure 4.

According to the OASIS repository, KR is the most significant model considering the MSE, MAE, and R^2 = 0.9545, see Tables S13, S14 and S15. M4 outperforms other single input metrics, indicating it is the top performer, see Figure S4. The model performs its highest success when utilizing the metrics M5 and M8 as inputs, see Figure 5 .

The AX-T1-1.5 dataset shows KR as a better model taking into the value of R^2 = 0.76, see Table S18. It determines M8 + M12 as the best metric. Also, *MSE* determines the same regressor and metrics, see TableS31. *MAE* indicates this metric as the fifth place. M12 is the best regarding a single input metric, see Figure S6.

The precision of R^2 = 0.8687 determines SVR as the best model for the AX-T1-POST-1.5 repository, see Table S21. The metrics M5 and M9 as input in the model are the most successful results. For *MAE*, see Figure S7, this metric ranks fifth. On the other hand, M3 is the best regarding a single input metric, S7.

SVR is the best model with the combination of M5 and M10 scored by MSE, MAE, and R^2 = 0.8517 for the Axial-T1-SE dataset, see Tables S22, S23 and S24. Figure S8 shows M6, which is the best regarding a single input metric.

T1-AXIAL dataset shows KR as a better model if check *MSE* and R^2 = 0.9341, see Table S25 and S27. The model's most significant achievements are attributed to using metrics M1 and M6 as inputs. M1 is the best for a single input metric, see Figure S9.

According to the T1-AXIAL-POST-GAD repository, KR is the most significant model considering the MSE, MAE, and R^2 = 0.9431, see Tables S28, S29 and S30. The model
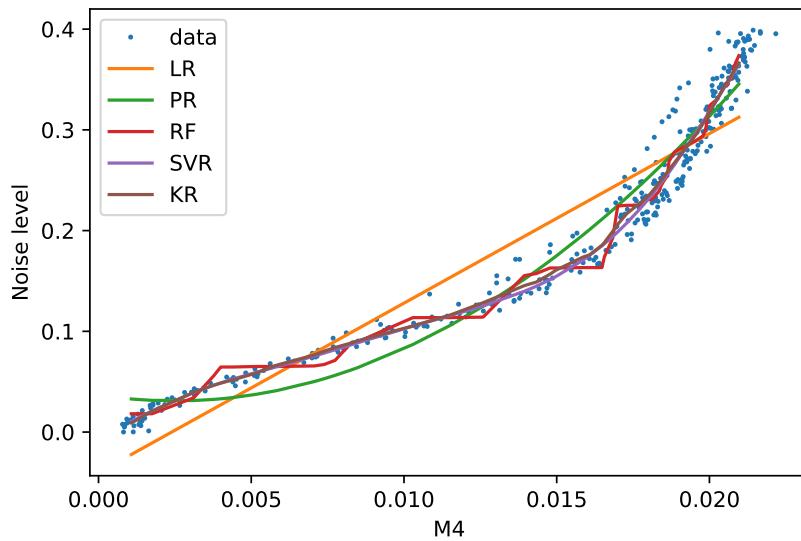
Figure S1. M4 training data (blue dots) are displayed along with the five models in MMRR repository.
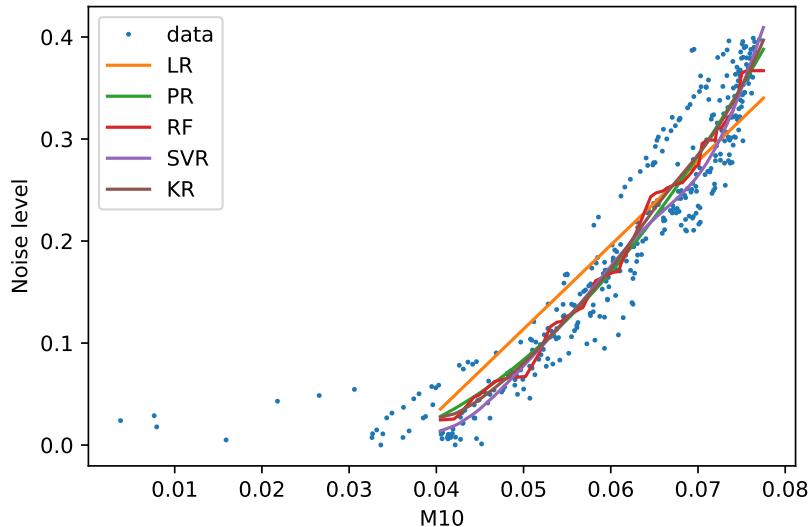
Figure S2. M10 training data (blue dots) are displayed along with the five models in NKI-RS repository.

performs its highest success when utilizing the metrics M6 and M10 as inputs. In Figure S10 is represented M10, the best single metric.

AX-T1-3 dataset shows KR as the best model taking into the value of MSE and $R^2 = 0.8061$, see Table S31 and S33. It determines M11 + M13 as the best metric. MAE shows this metric as third in the score. M6 is the best regarding a single input metric, see Figure S11.

The precision of MSE, MAE and $R^2 = 0.9465$ determines KR as the best model for the AX-T1-FLASH-POST repository with the metrics M11 and M13, see Tables S34, S35 and S36. M6 demonstrates superiority when only a single input metric is assessed, as illustrated in Figure S12.

The metrics M5 and M10 as input in the model are the most successful results for AX-T1-POST as indicated by MSE, MAE, and $R^2 = 0.8527$, see Tables S37, S38 and S39. M1 is the best regarding a single input metric, see Figure S13.
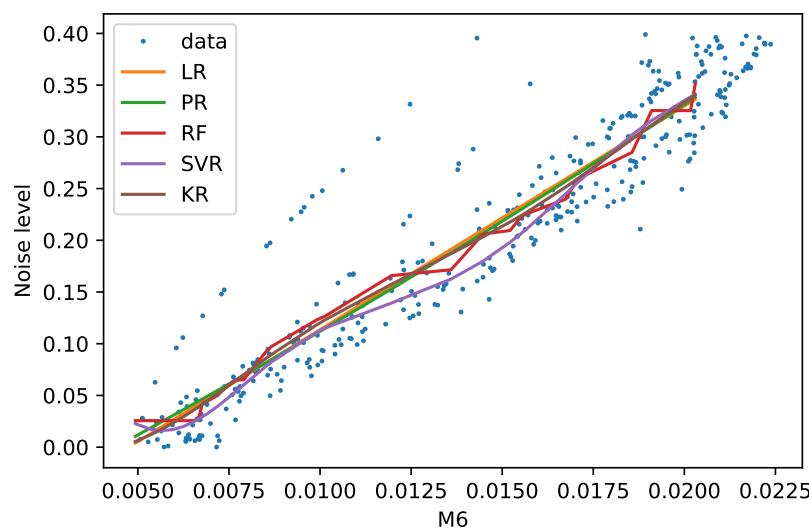
Figure S3. M6 training data (blue dots) are displayed along with the five models in NKI-TRT repository.
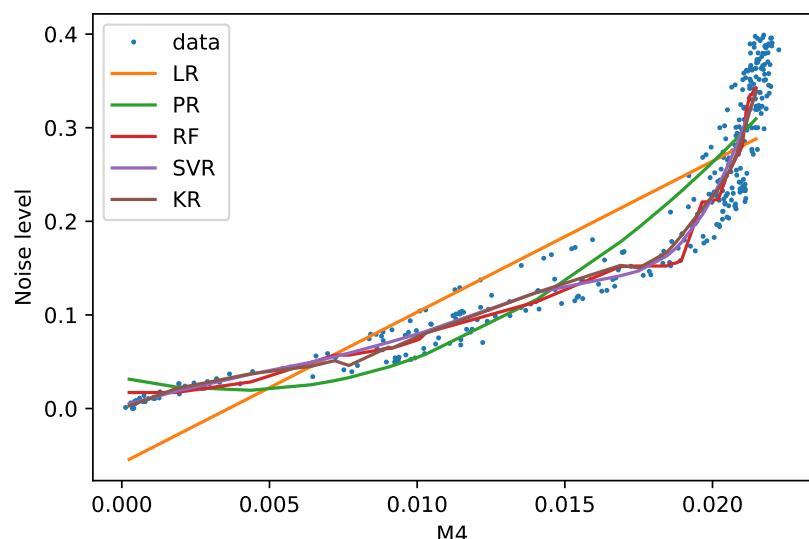
Figure S4. M4 training data (blue dots) are displayed along with the five models in OASIS-TRT repository.

Table S1. *MSE* results of the prediction models using the HLN dataset. MSE is multiplied by 10^{-4}

Metrics	Score	LR	PR	RF	SVR	KR
M4	120	14.05	5.25	6.30	2.55	**2.49**
M1 + M10	119	9.81	2.71	6.16	2.66	2.54
M10	118	26.36	9.84	6.25	2.71	2.54
M10 + M13	117	9.87	2.82	5.94	2.67	2.59
M1 + M4	116	14.78	3.71	6.02	2.59	2.89
M4 + M13	115	14.28	3.97	6.21	2.60	2.83
M1 + M13	114	5.73	2.72	6.10	2.61	3.01
M1	113	14.13	5.44	6.05	2.61	3.21
M13	112	14.20	5.47	6.19	2.62	3.21
M4 + M10	111	9.45	2.88	6.12	2.63	2.81
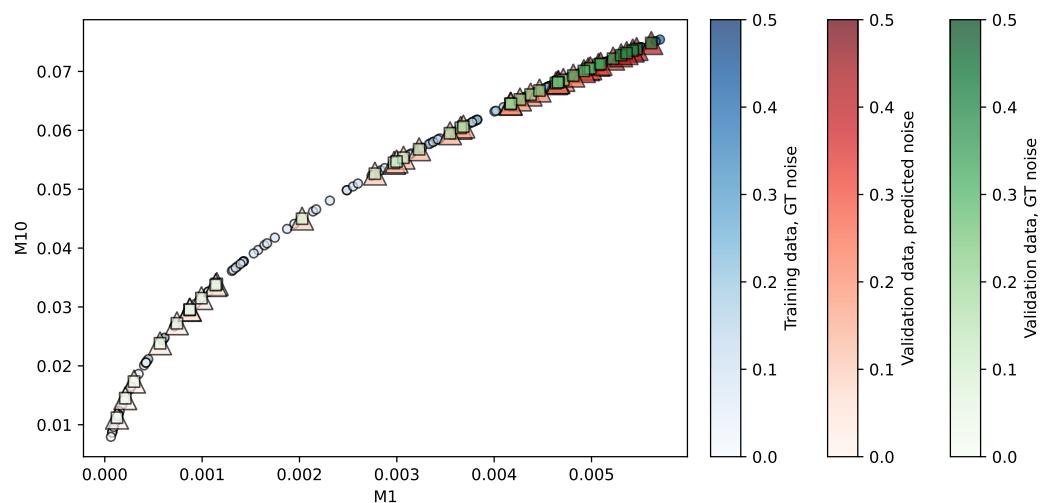
Figure S5. Regression on the HLN repository using KR. Predictors are (M1, M10). The opacity of each shape indicates the noise level associated. More details in the main text.
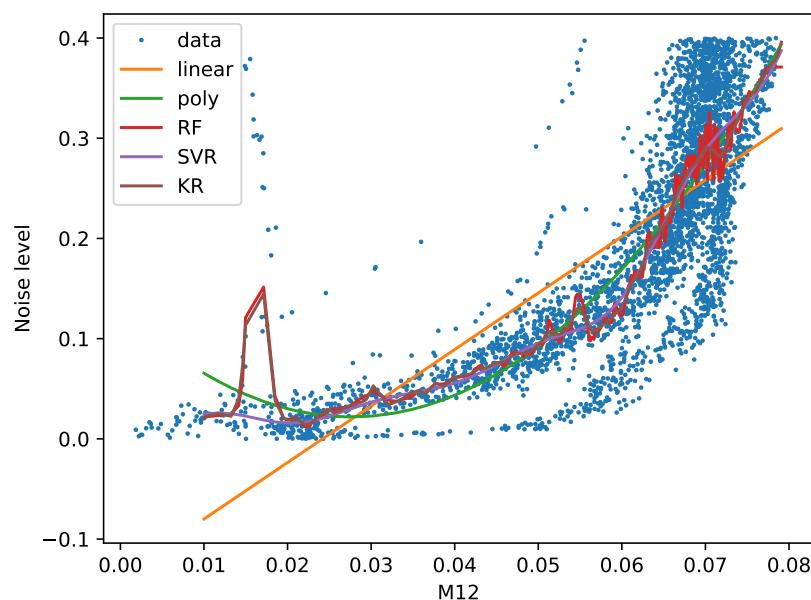
Figure S6. M12 training data (blue dots) are displayed along with the five models in the AX-T1 dataset with 1.5 Tesla acquisition .

Table S2. *MAE* results of the prediction models using the HLN dataset. MAE is multiplied by 10^{-3}

Metrics	Score	LR	PR	RF	SVR	KR
M1 + M10	120	27.50	12.06	20.91	12.05	**11.59**
M4	119	32.04	19.43	21.20	11.74	11.60
M10 + M13	118	27.59	12.65	20.54	12.06	11.74
M10	117	44.29	27.55	21.24	12.17	11.75
M1 + M4	116	32.54	15.42	20.87	11.78	12.26
M4 + M13	115	31.47	16.20	21.12	11.80	12.19
M1	114	32.19	19.71	20.82	11.82	13.61
M1 + M13	113	20.19	12.29	20.91	11.83	13.05
M13	112	32.27	19.76	21.02	11.86	13.63
M4 + M10	111	26.93	12.48	20.87	11.91	12.32
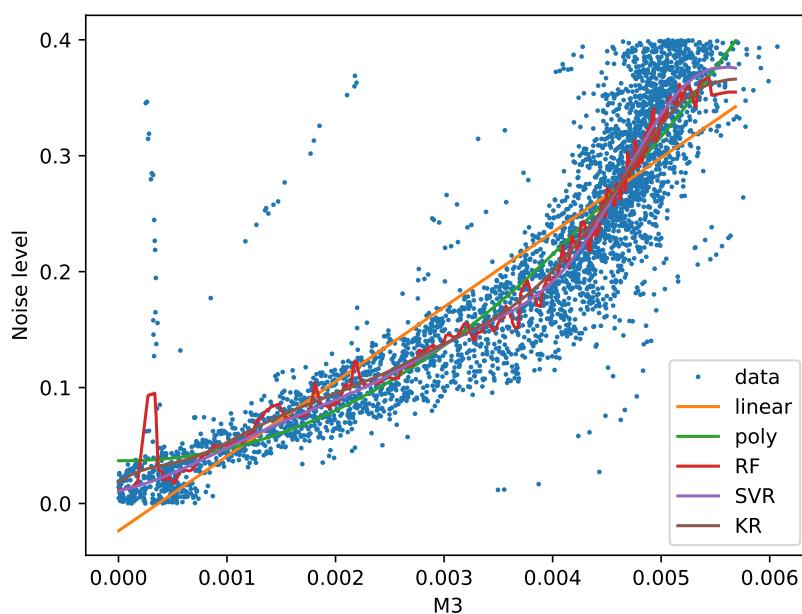
Figure S7. M3 training data (blue dots) are displayed along with the five models in the AX-T1-POST dataset with 1.5 Tesla acquisition.
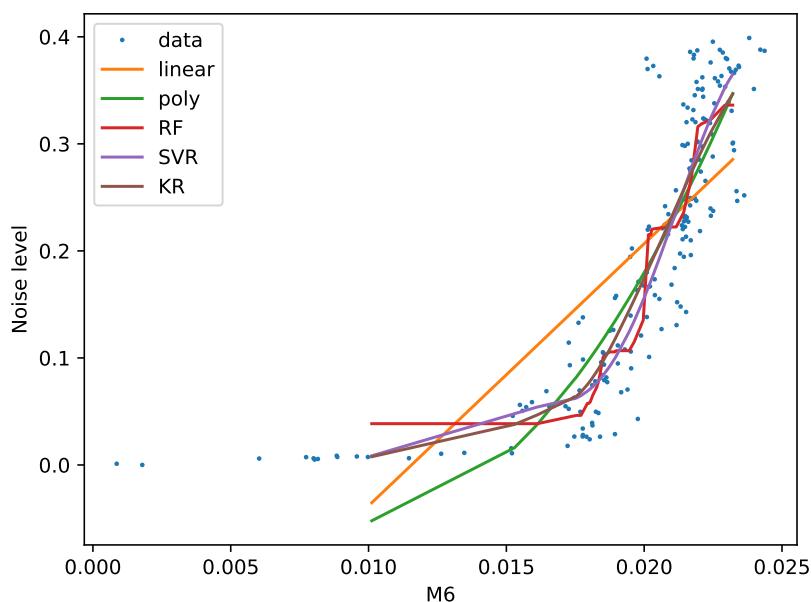
Figure S8. M6 training data (blue dots) are displayed along with the five models in the Axial-T1-SE dataset with 1.5 Tesla acquisition.
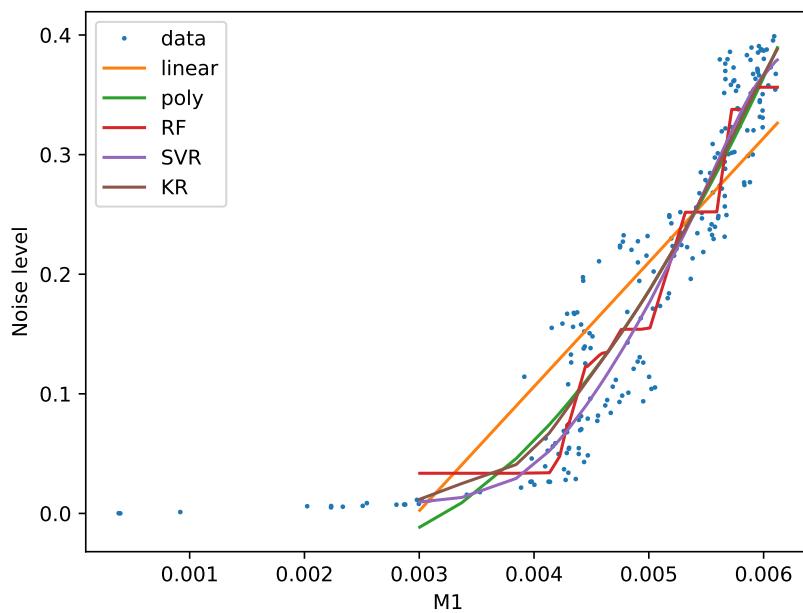
Figure S9. M1 training data (blue dots) are displayed along with the five models in the T1-AXIAL dataset with 1.5 Tesla acquisition.
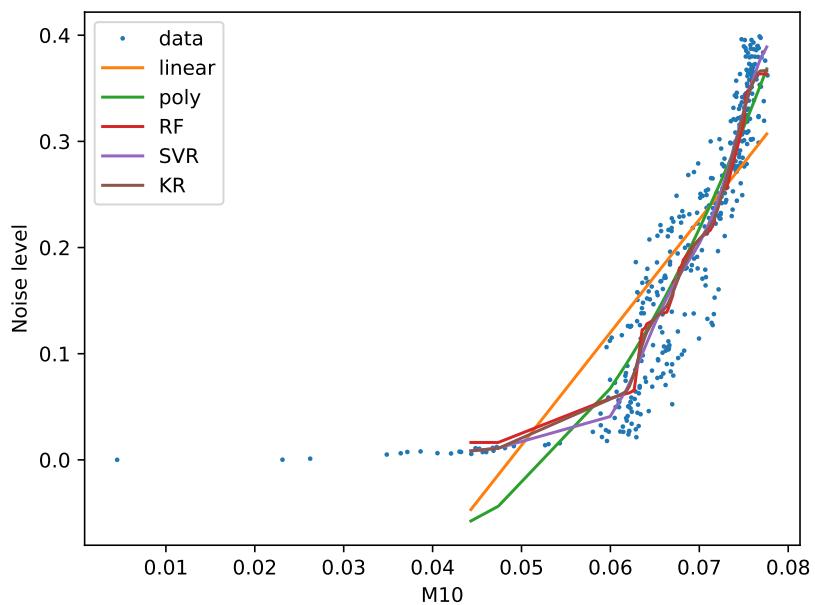
Figure S10. M10 training data (blue dots) are displayed along with the five models in the T1-AXIAL-POST-GAD dataset with 1.5 Tesla acquisition.
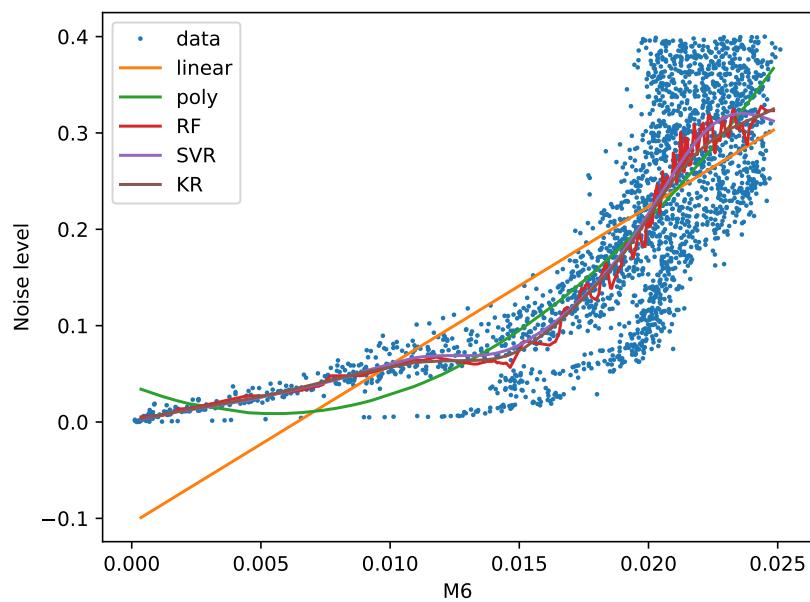
Figure S11. M6 training data (blue dots) are displayed along with the five models in the AX-T1 dataset with 3 Tesla acquisitions.
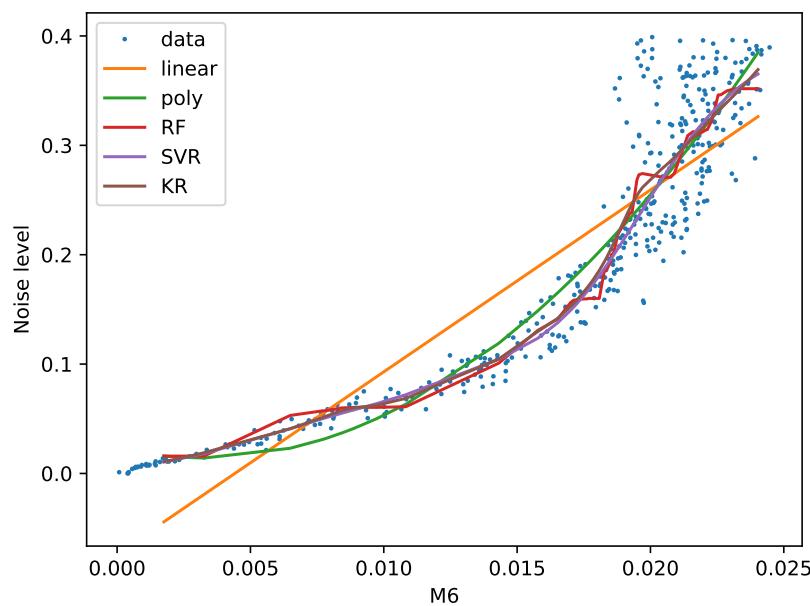
Figure S12. M6 training data (blue dots) are displayed along with the five models in the AX-T1-FLASH-POST dataset with 3 Tesla acquisitions.
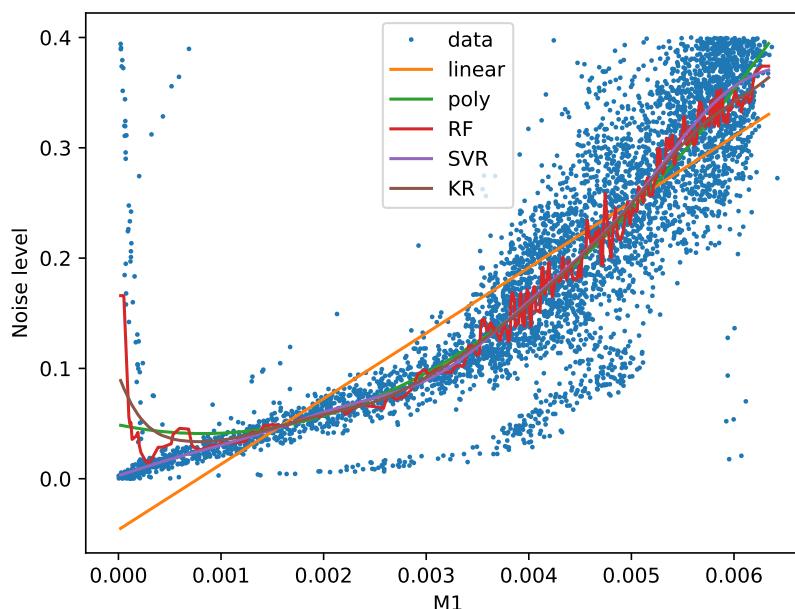
Figure S13. M1 training data (blue dots) are displayed along with the five models in the AX-T1-POST dataset with 3 Tesla acquisitions.

Table S3. R^2 results of the prediction models using the HLN dataset.

| Metrics	Score	LR	PR	RF	SVR	KR
M4	120	0.8962	0.9615	0.9545	0.9822	**0.9826**
M10	119	0.8069	0.9270	0.9549	0.9810	0.9823
M1 + M10	118	0.9272	0.9809	0.9556	0.9814	0.9823
M10 + M13	117	0.9268	0.9802	0.9570	0.9813	0.9820
M1 + M4	116	0.8908	0.9740	0.9566	0.9819	0.9799
M4 + M13	115	0.8938	0.9721	0.9554	0.9818	0.9802
M1 + M13	114	0.9587	0.9811	0.9559	0.9818	0.9788
M1	113	0.8958	0.9601	0.9563	0.9818	0.9768
M13	112	0.8952	0.9599	0.9554	0.9817	0.9767
M4 + M10	111	0.9297	0.9797	0.9558	0.9816	0.9804

Table S4. *MSE* results of the prediction models using MMRR dataset. MSE is multiplied by 10^{-4}

Metrics	Score	LR	PR	RF	SVR	KR
M2 + M10	120	9.82	3.72	3.54	2.59	**2.45**
M10 + M14	119	9.88	3.73	3.64	2.58	2.48
M1 + M2	118	11.64	3.15	3.54	2.49	2.62
M13 + M14	117	11.71	3.17	3.62	2.49	2.62
M2 + M13	116	11.65	3.17	3.63	2.49	2.62
M1 + M14	115	11.71	3.15	3.56	2.49	2.62
M3 + M13	114	11.68	3.15	3.61	2.50	2.63
M10 + M15	113	9.88	3.71	3.57	2.61	2.50
M1 + M15	112	11.75	3.13	3.56	2.50	2.63
M11 + M13	111	15.27	2.70	3.56	2.51	2.84

Table S5. *MAE* results of the prediction models using MMRR dataset. MAE is multiplied by 10^{-3}

Metrics	Score	LR	PR	RF	SVR	KR
M1 + M12	120	32.84	12.48	14.31	**10.92**	12.06
M12 + M13	119	32.94	12.49	14.24	10.95	12.08
M3 + M13	118	28.10	14.16	14.42	10.95	12.28
M1 + M15	117	28.23	14.11	14.36	10.95	12.29
M1 + M3	116	28.12	14.12	14.29	10.96	12.28
M1 + M11	115	32.89	12.42	14.34	10.97	12.39
M13 + M15	114	28.21	14.15	14.30	10.97	12.29
M1 + M2	113	28.11	14.09	14.36	10.99	12.23
M11 + M13	112	33.00	12.43	14.50	10.99	12.38
M2 + M13	111	28.10	14.13	14.60	11.01	12.23

Table S6. R^2 results of the prediction models using MMRR dataset.

Metrics	Score	LR	PR	RF	SVR	KR
M1 + M2	120	0.9136	0.9767	0.9740	**0.9823**	0.9809
M13 + M14	119	0.9130	0.9766	0.9735	0.9822	0.9808
M2 + M13	118	0.9135	0.9766	0.9734	0.9822	0.9808
M1 + M14	117	0.9131	0.9768	0.9739	0.9822	0.9808
M3 + M13	116	0.9133	0.9767	0.9737	0.9822	0.9807
M1 + M15	115	0.9128	0.9769	0.9739	0.9822	0.9807
M11 + M13	114	0.8854	0.9802	0.9738	0.9821	0.9791
M1 + M11	113	0.8861	0.9802	0.9742	0.9821	0.9790
M1 + M3	112	0.9133	0.9769	0.9738	0.9821	0.9808
M13 + M15	111	0.9127	0.9768	0.9741	0.9821	0.9807

Table S7. *MSE* results of the prediction models using NKI-RS dataset. MSE is multiplied by 10^{-4}

Metrics	Score	LR	PR	RF	SVR	KR
M4 + M6	120	17.26	**11.15**	11.54	12.08	21.51
M4 + M5	119	17.25	11.22	11.89	11.77	19.46
M6 + M13	118	16.78	11.24	11.70	12.08	20.13
M3 + M4	117	17.25	11.25	11.50	12.15	21.17
M4 + M15	116	17.25	11.25	11.58	12.16	21.18
M1 + M6	115	16.72	11.25	11.64	12.10	20.05
M5 + M13	114	16.77	11.33	11.85	11.76	21.43
M2 + M4	113	17.24	11.33	11.90	11.85	20.46
M4 + M14	112	17.24	11.34	11.85	11.81	20.46
M1 + M5	111	16.71	11.34	11.96	11.76	21.36

Table S8. *MAE* results of the prediction models using NKI-RS dataset. MAE is multiplied by 10^{-3}

Metrics	Score	LR	PR	RF	SVR	KR
M1 + M5	120	31.96	26.81	26.94	**25.89**	31.27
M5 + M13	119	32.01	26.80	26.84	25.91	31.27
M4 + M5	118	32.45	26.69	26.93	25.92	30.39
M4 + M14	117	32.40	26.84	26.70	25.95	30.48
M2 + M4	116	32.40	26.83	26.78	25.98	30.49
M13 + M14	115	31.97	26.94	26.65	26.04	29.03
M2 + M13	114	31.97	26.93	26.74	26.07	29.03
M1 + M2	113	31.92	26.95	26.91	26.07	29.02
M4 + M14	112	31.91	26.95	26.62	26.08	29.02
M3 + M13	111	31.91	26.92	26.19	26.60	29.17

Table S9. R^2 results of the prediction models using NKI-RS dataset.

Metrics	Score	LR	PR	RF	SVR	KR
M4 + M6	120	0.8734	**0.9141**	0.9113	0.9080	0.8517
M4 + M5	119	0.8734	0.9135	0.9086	0.9104	0.8638
M3 + M4	118	0.8735	0.9133	0.9116	0.9075	0.8539
M6 + M13	117	0.8768	0.9133	0.9100	0.9080	0.8594
M4 + M15	116	0.8735	0.9133	0.9111	0.9074	0.8538
M1 + M6	115	0.8772	0.9133	0.9106	0.9078	0.8600
M5 + M13	114	0.8768	0.9127	0.9089	0.9103	0.8519
M2 + M4	113	0.8735	0.9127	0.9087	0.9098	0.8583
M4 + M14	112	0.8735	0.9127	0.9092	0.9101	0.8582
M1 + M5	111	0.8772	0.9126	0.9080	0.9105	0.8523

Table S10. *MSE* results of the prediction models using NKI-TRT dataset. MSE is multiplied by 10^{-4}

Metrics	Score	LR	PR	RF	SVR	KR
M6 + M15	120	**35.91**	36.52	38.70	37.47	40.73
M3 + M6	119	36.10	36.73	38.77	37.49	40.89
M6 + M14	118	36.30	36.66	38.66	37.49	37.73
M5 + M14	117	36.35	36.97	39.00	37.73	41.34
M2 + M6	116	36.35	36.67	38.51	37.50	37.78
M2 + M5	115	36.55	37.18	38.95	37.76	41.56
M6 + M11	114	36.61	37.42	38.80	37.61	37.60
M6	113	36.77	36.72	38.41	37.45	37.93
M6 + M12	112	36.78	37.29	38.47	37.49	40.03
M5 + M6	111	36.89	37.23	38.36	37.72	37.80

Table S11. *MAE* results of the prediction models using NKI-TRT dataset. MAE is multiplied by 10^{-3}

Metrics	Score	LR	PR	RF	SVR	KR
M6 + M13	120	41.61	40.05	42.03	**36.60**	42.03
M1 + M6	119	41.60	40.04	42.18	36.62	41.81
M13 + M15	118	41.79	40.02	42.72	36.67	41.28
M1 + M15	117	41.78	40.01	42.54	36.68	41.28
M1 + M3	116	41.77	40.02	42.75	36.68	41.28
M3 + M13	115	41.78	40.02	42.82	36.71	41.28
M7 + M10	114	45.24	41.46	45.37	36.75	47.27
M12 + M13	113	43.13	40.79	42.59	36.77	42.73
M1 + M12	112	43.10	40.80	42.62	36.78	42.74
M4 + M6	111	41.68	39.98	42.01	36.81	42.22

Table S12. R^2 results of the prediction models using NKI-TRT dataset.

Metrics	Score	LR	PR	RF	SVR	KR
M6 + M15	120	**0.7059**	0.7010	0.6812	0.6868	0.6659
M3 + M6	119	0.7043	0.6993	0.6805	0.6866	0.6647
M6 + M14	118	0.7024	0.7000	0.6816	0.6865	0.6918
M5 + M14	117	0.7024	0.6975	0.6791	0.6848	0.6614
M2 + M6	116	0.7020	0.6999	0.6831	0.6865	0.6914
M2 + M5	115	0.7007	0.6958	0.6793	0.6846	0.6598
M6 + M11	114	0.6995	0.6926	0.6804	0.6856	0.6924
M6	113	0.6985	0.6988	0.6837	0.6870	0.6888
M6 + M12	112	0.6984	0.6934	0.6832	0.6868	0.6715
M5 + M6	111	0.6975	0.6953	0.6840	0.6850	0.6913

Table S13. *MSE* results of the prediction models using OASIS dataset. MSE is multiplied by 10^{-4}

Metrics	Score	LR	PR	RF	SVR	KR
M5 + M8	120	12.61	6.96	6.88	5.78	**5.77**
M5 + M9	119	12.78	6.95	6.82	5.79	6.16
M4 + M9	118	24.33	21.14	5.94	11.47	5.88
M4 + M8	117	24.26	21.17	6.25	11.66	5.93
M9 + M13	116	25.49	22.65	5.96	11.71	6.20
M1 + M8	115	25.40	22.71	6.07	12.01	5.98
M8 + M13	114	25.43	22.67	6.18	12.03	5.99
M9 + M10	113	38.82	22.14	6.03	14.00	6.74
M2 + M8	112	12.49	7.17	7.03	6.14	6.03
M6 + M9	111	12.87	7.20	7.63	6.05	6.08

Table S14. *MAE* results of the prediction models using OASIS dataset. MAE is multiplied by 10^{-3}

Metrics	Score	LR	PR	RF	SVR	KR
M4 + M9	120	39.45	33.60	18.65	24.05	**17.18**
M4 + M8	119	39.43	33.69	19.05	24.14	17.22
M1 + M8	118	40.22	34.95	18.84	24.37	17.35
M8 + M13	117	40.25	34.92	19.06	24.39	17.36
M5 + M8	116	29.09	20.51	20.06	18.01	17.38
M9 + M13	115	40.27	34.83	18.71	24.10	17.68
M8 + M10	114	50.37	35.97	19.17	27.71	17.70
M1 + M9	113	40.24	34.86	18.93	24.05	17.70
M5 + M9	112	29.26	20.55	20.02	17.94	17.76
M2 + M8	111	28.88	20.86	20.29	18.52	17.86

Table S15. R^2 results of the prediction models using OASIS dataset.

Metrics	Score	LR	PR	RF	SVR	KR
M5 + M8	120	0.9046	0.9454	0.9466	0.9539	**0.9545**
M5 + M9	119	0.9033	0.9454	0.9470	0.9539	0.9521
M4 + M9	118	0.8212	0.8454	0.9529	0.9115	0.9534
M9 + M13	117	0.8128	0.8346	0.9531	0.9098	0.9510
M4 + M8	116	0.8217	0.8452	0.9506	0.9099	0.9530
M1 + M8	115	0.8134	0.8341	0.9522	0.9076	0.9526
M8 + M13	114	0.8132	0.8343	0.9513	0.9075	0.9526
M2 + M8	113	0.9055	0.9439	0.9455	0.9515	0.9526
M9 + M10	112	0.7128	0.8381	0.9525	0.8943	0.9472
M8 + M14	111	0.7128	0.8381	0.9525	0.8943	0.9472

Table S16. *MSE* results of the prediction models using AX-T1 dataset. MSE is multiplied by 10^{-4}

Metrics	Score	LR	PR	RF	SVR	KR
M8 + M12	120	51.37	36.85	33.09	33.93	**32.52**
M6 + M8	119	39.78	36.47	32.93	33.78	32.57
M3 + M8	118	39.67	36.52	33.20	33.71	32.80
M8 + M15	117	39.72	36.51	33.20	33.70	32.80
M9 + M12	116	51.40	36.93	33.40	33.94	32.98
M6 + M9	115	39.89	36.66	33.19	33.72	33.12
M8 + M11	114	51.34	36.86	33.80	34.15	33.18
M3 + M9	113	39.75	36.65	33.34	33.69	33.18
M9 + M15	112	39.80	36.65	33.30	33.69	33.19
M5 + M8	111	39.81	36.46	33.66	33.89	33.25

Table S17. MAE results of the prediction models using AX-T1 dataset. MAE is multiplied by 10^{-3}

Metrics	Score	LR	PR	RF	SVR	KR
M6 + M9	120	47.78	44.17	41.75	**41.54**	41.95
M9 + M15	119	47.66	44.14	41.85	41.54	41.95
M3 + M9	118	47.61	44.13	41.85	41.55	41.95
M9 + M12	117	57.36	45.13	41.88	41.62	41.74
M8 + M12	116	57.35	44.98	41.88	41.65	41.64
M5 + M8	115	47.81	43.98	42.36	41.68	42.22
M2 + M8	114	47.67	43.98	42.41	41.68	42.29
M8 + M14	113	47.73	43.99	42.49	41.68	42.28
M8 + M11	112	57.45	45.10	42.46	41.69	42.06
M5 + M9	111	48.14	44.41	42.63	41.74	42.37

Table S18. R^2 results of the prediction models using AX-T1 dataset.

Metrics	Score	LR	PR	RF	SVR	KR
M8 + M12	120	0.6136	0.7232	0.7511	0.7452	**0.7554**
M6 + M8	119	0.7011	0.7260	0.7523	0.7463	0.7551
M3 + M8	118	0.7020	0.7257	0.7502	0.7468	0.7533
M8 + M15	117	0.7016	0.7257	0.7502	0.7468	0.7533
M9 + M12	116	0.6133	0.7225	0.7487	0.7451	0.7518
M6 + M9	115	0.7002	0.7246	0.7503	0.7466	0.7508
M8 + M11	114	0.6138	0.7231	0.7458	0.7437	0.7506
M3 + M9	113	0.7013	0.7247	0.7492	0.7469	0.7503
M9 + M15	112	0.7009	0.7247	0.7495	0.7469	0.7502
M5 + M8	111	0.7009	0.7262	0.7469	0.7455	0.7500

Table S19. MSE results of the prediction models using AX-T1-POST dataset with Tesla 1.5 acquisition. MSE is multiplied by 10^{-4}

Metrics	Score	LR	PR	RF	SVR	KR
M5 + M9	120	22.93	18.07	18.11	**17.34**	17.84
M9 + M14	119	22.89	18.05	18.07	17.34	17.83
M2 + M9	118	22.84	18.04	18.08	17.35	17.82
M5 + M8	117	23.06	18.00	18.12	17.36	17.99
M8 + M14	116	23.06	18.03	18.10	17.41	18.03
M2 + M8	115	23.01	18.02	18.11	17.41	18.03
M9 + M11	114	34.84	20.40	18.10	17.46	17.84
M8 + M11	113	35.06	20.56	18.10	17.47	18.19
M6 + M9	112	23.18	18.36	18.46	17.85	18.47
M4 + M5	111	25.96	19.44	18.70	17.90	18.00

Table S20. *MAE* results of the prediction models using AX-T1-POST dataset with 1.5 Tesla acquisition. MAE is multiplied by 10^{-3}

Metrics	Score	LR	PR	RF	SVR	KR
M5 + M8	120	35.19	29.38	28.80	**27.47**	28.58
M8 + M14	119	35.11	29.42	28.69	27.49	28.60
M2 + M8	118	35.05	29.41	28.70	27.49	28.60
M2 + M9	117	35.02	29.35	28.67	27.53	28.52
M9 + M14	116	35.08	29.36	28.65	27.54	28.52
M5 + M9	115	35.19	29.37	28.76	27.58	28.57
M8 + M11	114	47.66	32.41	28.69	27.83	28.70
M9 + M11	113	47.60	32.36	28.71	27.92	28.60
M6 + M9	112	35.25	29.71	29.20	27.94	29.15
M9 + M15	111	35.16	29.79	29.29	27.95	29.19

Table S21. R^2 results of the prediction models using AX-T1-POST dataset with 1.5 Tesla acquisition.

Metrics	Score	LR	PR	RF	SVR	KR
M5 + M9	120	0.8266	0.8632	0.8629	**0.8687**	0.8650
M9 + M14	119	0.8269	0.8634	0.8632	0.8687	0.8651
M2 + M9	118	0.8272	0.8634	0.8632	0.8687	0.8651
M5 + M8	117	0.8257	0.8637	0.8628	0.8686	0.8638
M8 + M14	116	0.8257	0.8636	0.8629	0.8682	0.8635
M2 + M8	115	0.8260	0.8636	0.8628	0.8682	0.8635
M9 + M11	114	0.7369	0.8456	0.8630	0.8678	0.8649
M8 + M11	113	0.7353	0.8444	0.8629	0.8678	0.8623
M6 + M9	112	0.8247	0.8610	0.8601	0.8648	0.8601
M4 + M5	111	0.8036	0.8527	0.8583	0.8644	0.8636

Table S22. *MSE* results of the prediction models using Axial-T1-SE dataset. MSE is multiplied by 10^{-4}

Metrics	Score	LR	PR	RF	SVR	KR
M5 + M10	120	63.72	31.85	36.92	**20.71**	47.97
M2 + M10	119	64.70	32.70	39.61	20.94	34.40
M10 + M14	118	64.85	32.71	39.49	20.96	34.26
M10 + M11	117	86.04	45.80	39.52	21.29	36.94
M5 + M13	116	67.33	27.72	37.27	21.53	24.53
M1 + M5	115	67.33	27.66	37.18	21.57	24.51
M2 + M4	114	68.08	27.84	39.18	21.91	25.02
M4 + M14	113	68.20	27.90	40.07	21.97	25.07
M4 + M5	112	67.37	28.09	36.53	21.99	25.44
M4 + M11	111	81.69	33.89	39.35	22.43	31.53

Table S23. *MAE* results of the prediction models using Axial-T1-SE dataset. MAE is multiplied by 10^{-3}

Metrics	Score	LR	PR	RF	SVR	KR
M5 + M10	120	65.42	44.84	45.19	**35.57**	43.48
M10 + M14	119	66.16	45.04	47.06	35.70	40.62
M2 + M10	118	66.08	45.01	47.17	35.72	40.53
M10 + M11	117	75.92	53.39	47.38	35.86	42.56
M5 + M13	116	68.46	41.89	45.17	35.90	38.31
M1 + M5	115	68.47	41.84	45.13	35.97	38.30
M4 + M5	114	68.48	42.16	45.06	36.21	38.96
M2 + M4	113	69.07	42.07	47.16	36.21	38.88
M4 + M14	112	69.13	42.10	47.44	36.23	38.90
M5 + M8	111	67.52	43.18	45.66	36.44	43.63

Table S24. R^2 results of the prediction models using Axial-T1-SE dataset.

Metrics	Score	LR	PR	RF	SVR	KR
M5 + M10	120	0.5423	0.7809	0.7402	**0.8517**	0.6821
M2 + M10	119	0.5362	0.7752	0.7219	0.8503	0.7665
M10 +M14	118	0.5351	0.7750	0.7228	0.8500	0.7677
M5 + M13	117	0.5142	0.8017	0.7381	0.8467	0.8253
M1 + M5	116	0.5142	0.8022	0.7377	0.8466	0.8254
M10 + M11	115	0.3746	0.6793	0.7225	0.8453	0.7500
M2 + M4	114	0.5095	0.8007	0.7250	0.8440	0.8207
M4 + M14	113	0.5085	0.8003	0.7182	0.8436	0.8204
M4 + M5	112	0.5138	0.7997	0.7430	0.8430	0.8190
M4 + M11	111	0.4119	0.7615	0.7233	0.8390	0.7818

Table S25. *MSE* results of the prediction models using T1-AXIAL dataset with Tesla 1.5 acquisition. MSE is multiplied by 10^{-4}

Metrics	Score	LR	PR	RF	SVR	KR
M1 + M6	120	42.83	12.45	12.53	9.21	**9.13**
M6 + M13	119	43.06	12.51	12.74	9.24	9.14
M1 + M5	118	42.80	12.73	13.51	9.73	9.45
M1 + M12	117	35.87	12.05	12.52	9.45	10.63
M1 + M11	116	36.49	12.07	12.72	9.45	11.73
M1 + M15	115	42.53	12.79	12.37	9.62	9.46
M1 + M3	114	42.56	12.81	12.40	9.59	9.46
M5 + M13	113	43.02	12.80	13.60	9.75	9.46
M12 + M13	112	36.08	12.06	12.60	9.46	10.60
M13 + M15	111	42.76	12.86	13.21	9.62	9.47

Table S26. *MAE* results of the prediction models using T1-AXIAL dataset with 1.5 Tesla acquisition. MAE is multiplied by 10^{-3}

Metrics	Score	LR	PR	RF	SVR	KR
M12 + M13	120	49.40	28.23	28.93	23.77	**23.09**
M1 + M12	119	49.29	28.22	28.76	23.76	23.14
M10 + M14	118	60.69	39.98	28.81	23.15	23.98
M2 + M10	117	60.67	39.99	29.01	23.15	23.74
M2 + M4	116	52.49	30.05	30.26	23.19	24.64
M1 + M11	115	49.60	28.26	28.76	23.20	23.92
M11 + M13	114	49.71	28.27	29.61	23.21	24.02
M10 + M11	113	61.35	35.35	28.87	23.21	24.01
M6 + M10	112	60.55	39.55	28.18	24.18	23.22
M2 + M13	111	51.58	29.46	29.36	23.24	24.12

Table S27. R^2 results of the prediction models using T1-AXIAL dataset with 1.5 Tesla acquisition.

Metrics	Score	LR	PR	RF	SVR	KR
M1 + M6	120	0.6758	0.9090	0.9105	0.9332	**0.9341**
M6 + M13	119	0.6740	0.9085	0.9085	0.9331	0.9340
M1 + M11	118	0.7281	0.9134	0.9086	0.9332	0.9119
M11 + M13	117	0.7264	0.9133	0.9006	0.9330	0.9098
M10 + M14	116	0.4868	0.8331	0.9077	0.9328	0.9114
M2 + M10	115	0.4870	0.8332	0.9072	0.9327	0.9135
M5 + M10	114	0.4897	0.8337	0.9046	0.9325	0.9107
M1 + M12	113	0.7331	0.9135	0.9106	0.9323	0.9199
M10 + M11	112	0.5159	0.8577	0.9081	0.9323	0.9095
M12 + M13	111	0.7315	0.9134	0.9098	0.9323	0.9200

Table S28. *MSE* results of the prediction models using T1-AXIAL-POST-GAD dataset with Tesla 1.5 acquisition. MSE is multiplied by 10^{-4}

Metrics	Score	LR	PR	RF	SVR	KR
M6 + M10	120	50.80	60.02	11.67	8.48	**7.52**
M3 + M10	119	51.09	58.52	10.75	8.69	7.73
M10 + M15	118	51.12	58.67	10.61	8.66	7.73
M5 + M10	117	50.60	54.75	11.14	8.75	7.83
M1 + M6	116	32.31	8.94	11.44	7.86	9.11
M6 + M13	115	32.47	8.98	11.62	7.88	9.13
M4 + M6	114	33.56	9.27	12.32	7.95	9.51
M1 + M15	113	32.09	9.26	10.60	7.97	9.27
M3 + M13	112	32.27	9.31	10.83	7.97	9.28
M13 + M15	111	32.25	9.29	10.70	7.98	9.28

Table S29. *MAE* results of the prediction models using T1-AXIAL-POST-GAD dataset with 1.5 Tesla acquisition. MAE is multiplied by 10^{-3}

Metrics	Score	LR	PR	RF	SVR	KR
M6 + M10	120	54.20	39.58	25.27	22.24	**21.42**
M3 + M10	119	54.26	39.57	24.82	22.41	21.63
M10 + M15	118	54.27	39.55	24.77	22.39	21.64
M5 + M10	117	54.19	39.39	25.45	22.35	21.74
M1 + M6	116	45.22	23.73	25.20	21.82	22.91
M6 + M13	115	45.31	23.75	25.26	21.85	22.92
M1 + M12	114	43.71	27.24	25.18	22.30	21.87
M10 + M12	113	52.44	30.60	24.86	22.44	21.91
M4 + M6	112	46.02	23.98	25.79	21.91	23.25
M12 + M13	111	43.81	27.22	24.99	22.33	21.92

Table S30. R^2 results of the prediction models using T1-AXIAL-POST-GAD dataset with 1.5 Tesla acquisition.

Metrics	Score	LR	PR	RF	SVR	KR
M6 + M10	120	0.6160	0.4975	0.9112	0.9346	**0.9431**
M3 + M10	119	0.6135	0.5107	0.9177	0.9329	0.9412
M10 + M15	118	0.6133	0.5094	0.9185	0.9331	0.9412
M5 + M10	117	0.6175	0.5436	0.9147	0.9325	0.9404
M1 + M6	116	0.7589	0.9321	0.9128	0.9399	0.9301
M6 + M13	115	0.7578	0.9319	0.9114	0.9398	0.9300
M4 + M6	114	0.7496	0.9296	0.9060	0.9392	0.9270
M1 + M15	113	0.7606	0.9297	0.9185	0.9391	0.9290
M3 + M13	112	0.7593	0.9294	0.9170	0.9390	0.9289
M13 + M15	111	0.7595	0.9295	0.9178	0.9390	0.9289

Table S31. *MSE* results of the prediction models using AX-T1 dataset with 3 Tesla acquisition. MSE is multiplied by 10^{-4}

Metrics	Score	LR	PR	RF	SVR	KR
M12 + M13	120	48.78	32.89	26.90	29.65	**25.53**
M1 + M12	119	48.65	32.89	26.81	29.65	25.53
M11 + M13	118	49.05	32.39	26.21	29.16	25.62
M4 + M11	117	50.04	32.59	26.52	29.18	25.77
M1 + M11	116	48.93	32.40	26.22	29.15	25.83
M6 + M10	115	54.41	37.84	27.04	29.33	25.89
M4 + M12	114	49.73	33.08	26.88	29.71	25.93
M5 + M10	113	54.84	37.73	26.55	28.87	26.06
M10 + M11	112	64.07	35.68	26.22	29.48	26.08
M2 + M13	111	51.07	31.27	26.13	28.97	28.52

Table S32. MAE results of the prediction models using AX-T1 dataset with 3 Tesla acquisition. MAE is multiplied by 10^{-3}

Metrics	Score	LR	PR	RF	SVR	KR
M11 + M13	120	55.91	45.17	39.27	41.53	**39.13**
M2 + M13	119	59.03	45.28	39.20	41.49	41.11
M4 + M11	118	56.63	45.33	39.57	41.62	39.24
M10 + M11	117	67.19	48.54	39.26	41.77	39.52
M12 + M13	116	55.60	45.31	39.92	41.77	39.26
M1 + M12	115	55.50	45.31	39.86	41.77	39.26
M1 + M14	114	58.94	45.26	39.30	41.48	41.10
M1 + M11	113	55.81	45.17	39.31	41.53	39.39
M2 + M10	112	61.95	49.54	39.33	41.66	39.84
M1 + M2	111	58.95	45.26	39.33	41.50	41.10

Table S33. R^2 results of the prediction models using AX-T1 dataset with 3 Tesla acquisition.

Metrics	Score	LR	PR	RF	SVR	KR
M12 + M13	120	0.6290	0.7502	0.7959	0.7748	**0.8061**
M1 + M12	119	0.6300	0.7502	0.7965	0.7749	0.8061
M11 +M13	118	0.6270	0.7539	0.8009	0.7785	0.8053
M4 + M11	117	0.6196	0.7525	0.7986	0.7784	0.8042
M1 + M11	116	0.6280	0.7539	0.8009	0.7786	0.8038
M6 + M10	115	0.5868	0.7125	0.7948	0.7772	0.8033
M4 + M12	114	0.6218	0.7488	0.7959	0.7744	0.8032
M5 + M10	113	0.5833	0.7132	0.7983	0.7807	0.8020
M10 + M11	112	0.5127	0.7289	0.8009	0.7761	0.8018
M2 + M13	111	0.6117	0.7625	0.8015	0.7799	0.7834

Table S34. MSE results of the prediction models using AX-T1-FLASH-POST dataset with 3 Tesla acquisition. MSE is multiplied by 10^{-4}

Metrics	Score	LR	PR	RF	SVR	KR
M11 + M13	120	24.92	11.63	10.06	8.03	**7.41**
M10 + M11	119	41.82	12.93	10.12	8.52	7.42
M1 + M11	118	24.78	11.62	10.06	7.98	7.44
M4 + M11	117	25.88	11.82	10.30	8.09	7.50
M5 + M13	116	26.21	8.50	9.38	7.51	8.20
M1 + M5	115	26.13	8.50	9.35	7.52	8.18
M13 + M14	114	26.42	8.54	10.04	7.59	9.63
M1 + M2	113	26.31	8.53	10.11	7.59	9.62
M1 + M14	112	26.34	8.55	10.01	7.59	9.62
M5 + M10	111	26.28	12.66	9.43	8.09	7.60

Table S35. *MAE* results of the prediction models using AX-T1-FLASH-POST dataset with 3 Tesla acquisition. MAE is multiplied by 10^{-3}

Metrics	Score	LR	PR	RF	SVR	KR
M11 + M13	120	40.74	26.31	22.42	19.95	**18.90**
M1 + M11	119	40.60	26.29	22.50	19.89	18.95
M10 + M11	118	55.86	29.09	22.52	20.60	18.96
M4 + M11	117	41.61	26.58	22.75	20.05	18.96
M5 + M10	116	41.68	27.37	21.95	20.16	19.10
M2 + M10	115	42.55	28.00	22.49	20.09	19.10
M10 + M14	114	42.61	27.98	22.60	20.10	19.11
M4 + M5	113	43.98	22.81	22.16	19.60	19.39
M1 + M5	112	43.47	22.59	21.88	19.41	19.64
M5 + M13	111	43.54	22.59	21.88	19.41	19.67

Table S36. R^2 results of the prediction models using AX-T1-FLASH-POST dataset with 3 Tesla acquisition.

Metrics	Score	LR	PR	RF	SVR	KR
M11 + M13	120	0.8207	0.9166	0.9278	0.9423	**0.9465**
M10 + M11	119	0.6948	0.9054	0.9275	0.9387	0.9464
M1 + M11	118	0.8217	0.9166	0.9279	0.9427	0.9462
M4 + M11	117	0.8135	0.9152	0.9261	0.9418	0.9458
M5 + M13	116	0.8094	0.9380	0.9330	0.9457	0.9409
M1 + M5	115	0.8100	0.9380	0.9332	0.9457	0.9410
M13 + M14	114	0.8080	0.9378	0.9281	0.9452	0.9310
M1 + M2	113	0.8088	0.9379	0.9275	0.9452	0.9311
M1 + M14	112	0.8086	0.9377	0.9282	0.9452	0.9311
M2 + M13	111	0.8082	0.9379	0.9291	0.9450	0.9310

Table S37. *MSE* results of the prediction models using AX-T1-POST dataset with 3 Tesla acquisition. MSE is multiplied by 10^{-4}

Metrics	Score	LR	PR	RF	SVR	KR
M5 + M10	120	44.78	30.68	22.19	23.16	**19.46**
M10 + M14	119	45.41	31.50	22.30	23.25	19.81
M2 + M10	118	45.34	31.31	22.36	23.27	19.83
M3 + M10	117	46.62	40.16	22.65	24.05	21.16
M10 + M15	116	46.69	40.76	22.67	24.04	21.18
M4 + M5	115	40.05	72.96	22.20	22.88	26.48
M5 + M13	114	39.47	66.46	22.23	22.80	25.81
M1 + M5	113	39.38	66.03	22.25	22.79	25.72
M2 + M4	112	40.12	72.66	22.26	22.95	25.90
M10 + M11	111	56.00	89.27	22.29	24.72	33.75

Table S38. MAE results of the prediction models using AX-T1-POST dataset with 3 Tesla acquisition. MAE is multiplied by 10^{-3}

Metrics	Score	LR	PR	RF	SVR	KR
M5 + M10	120	49.68	38.05	32.31	31.87	**31.43**
M10 + M14	119	50.19	38.26	32.43	31.95	31.59
M2 + M10	118	50.13	38.24	32.42	31.96	31.59
M1 + M5	117	45.96	39.06	32.35	31.61	33.54
M5 + M13	116	46.05	39.11	32.32	31.61	33.55
M4 + M5	115	46.64	39.58	32.32	31.65	33.72
M1 + M14	114	45.93	39.14	32.47	31.67	33.51
M2 + M13	113	46.02	39.20	32.46	31.68	33.53
M1 + M2	112	45.93	39.15	32.44	31.68	33.51
M13 + M14	111	46.02	39.18	32.46	31.68	33.52

Table S39. R^2 results of the prediction models using AX-T1-POST dataset with 3 Tesla acquisition.

Metrics	Score	LR	PR	RF	SVR	KR
M5 + M10	120	0.6598	0.7682	0.8321	0.8241	**0.8527**
M10 + M14	119	0.6550	0.7621	0.8312	0.8234	0.8500
M2 + M10	118	0.6555	0.7635	0.8308	0.8232	0.8499
M3 + M10	117	0.6461	0.6984	0.8287	0.8173	0.8401
M10 + M15	116	0.6456	0.6939	0.8286	0.8174	0.8399
M4 + M5	115	0.6960	0.4573	0.8320	0.8262	0.8002
M5 + M13	114	0.7005	0.5052	0.8318	0.8268	0.8052
M1 + M5	113	0.7012	0.5084	0.8316	0.8269	0.8059
M2 + M4	112	0.6955	0.4595	0.8315	0.8256	0.8045
M10 + M11	111	0.5752	0.3369	0.8313	0.8126	0.7474