Shortening	Task Name
q	Datatype of Embedding (Quantization Technique)
m	Dimensionality of Embedding (Matryoshka size)
l	Inference Layer Number
f32	32-Bit Floating-Point
int	8-Bit Integer
bin	Binary
bits req.	Bits Required to store embedding
CLA-1	Banking77Classification
CLA-2	EmotionClassification
CLA-3	TweetSentimentExtractionClassification
CLA-4	AmazonCounterfactualClassification
CLA-5	MassiveIntentClassification
CLA-6	MassiveScenarioClassification
CLA-7	MTOPDomainClassification
CLA-8	MTOPIntentClassification
CLU-1	ArXivHierarchicalClusteringP2P
CLU-2	ArXivHierarchicalClusteringS2S
CLU-3	BiorxivClusteringP2P.v2
CLU-4	BiorxivClusteringS2S.v2
CLU-5	MedrxivClusteringP2P.v2
CLU-6	MedrxivClusteringS2S.v2
CLU-7	RedditClustering.v2
CLU-8	StackExchangeClustering.v2
CLU-9	StackExchangeClusteringP2P.v2
CLU-10	TwentyNewsgroupsClustering.v2
STS-1	BIOSSES
STS-2	SICK-R
STS-3	STS12
STS-4	STS13
STS-5	STS14
STS-6	STS15
STS-7	STS16
STS-8	STSBenchmark
STS-9	STS17
STS-10	STS22
PCL-1	SprintDuplicateQuestions
PCL-2	TwitterSemEval2015
PCL-3	TwitterURLCorpus
RET-1	ArguAna
RET-2	CQADupstackWebmastersRetrieval
RET-3	NFCorpus
RER-1	AskUbuntuDupQuestions
RER-2	MindSmallReranking
RER-3	StackOverflowDupQuestions
SUM-1	SummEval

Table 2: Shortening and Task Name Mapping

A. Model Selection

Table 3: Top-100 models on the MTEB leaderboard as of 03.08.2024 at 12:00pm. Model size is measured in million parameters. Dimensions refers to the default embedding size of the model.

Rank	Model	Model Size	Memory Usage	Dimensions	Max Tokens	Avg. Score
1	bge-en-icl	7111	26.49	4096	32768	71.67
2	stella_en_1.5B_v5	1543	5.75	8192	131072	71.19
3	SFR-Embedding-2_R	7111	26.49	4096	32768	70.31
4	gte-Qwen2-7B-instruct-Q4_K_M-GGUF					70.24
5	gte-Qwen2-7B-instruct	7613	28.36	3584	131072	70.24
6	stella_en_400M_v5	435	1.62	8192	8192	70.11
7	bge-multilingual-gemma2	9242	34.43	3584	8192	69.88
8	NV-Embed-v1	7851	29.25	4096	32768	69.32
9	voyage-large-2-instruct			1024	16000	68.23
10	Linq-Embed-Mistral	7111	26.49	4096	32768	68.17
11	SFR-Embedding-Mistral	7111	26.49	4096	32768	67.56
12	gte-Qwen1.5-7B-instruct	7099	26.45	4096	32768	67.34
13	gte-Qwen2-1.5B-instruct-Q4_0-GGUF					67.16
14	gte-Qwen2-1.5B-instruct	1776	6.62	1536	131072	67.16
15	voyage-lite-02-instruct	1220	4.54	1024	4000	67.13
16	GritLM-7B	7242	26.98	4096	32768	66.76
17	e5-mistral-7b-instruct	7111	26.49	4096	32768	66.63
18	google-gecko.text-embedding-preview-0409	1200	4.47	768	2048	66.31
19	TDTE					65.96
20	GritLM-8x7B	46703	173.98	4096	32768	65.66
21	gte-large-en-v1.5	434	1.62	1024	8192	65.39
22	LLM2Vec-Meta-Llama-3-supervised	7505	27.96	4096	8192	65.01
23	LLM2Vec-Mistral-supervised	7111	26.49	4096	32768	64.8
24	echo-mistral-7b-instruct-lasttoken	7111	26.49	4096	32768	64.68

Continued on next page

Rank	Model	Model Size	Memory Usage	Dimensions	Max Tokens	Avg. Score
25	mxbai-embed-large-v1	335	1.25	1024	512	64.68
26	UAE-Large-V1	335	1.25	1024	512	64.64
27	text-embedding-3-large			3072	8191	64.59
28	voyage-lite-01-instruct			1024	4000	64.49
29	Cohere-embed-english-v3.0			1024	512	64.47
30	multilingual-e5-large-instruct	560	2.09	1024	514	64.41
31	google-gecko-256.text-embedding-preview-0409	1200	4.47	256	2048	64.37
32	GIST-large-Embedding-v0	335	1.25	1024	512	64.34
33	bge-large-en-v1.5	335	1.25	1024	512	64.23
34	b1ade-embed	335	1.25	1024	512	64.21
35	MUG-B-1.6	335	1.25	1024	512	64.2
36	LLM2Vec-Llama-2-supervised	6607	24.61	4096	4096	64.14
37	gte-base-en-v1.5	137	0.51	768	8192	64.11
38	Cohere-embed-multilingual-v3.0			1024	512	64.01
39	GIST-Embedding-v0	109	0.41	768	512	63.71
40	bge-base-en-v1.5	438	1.63	768	512	63.56
41	privacy_embedding_rag_10k_base_final	109	0.41	768	512	63.55
42	privacy_embedding_rag_10k_base_12_final	109	0.41	768	512	63.55
43	privacy_embedding_rag_10k_base_15_final	109	0.41	768	512	63.55
44	privacy_embedding_rag_10k_base_checkpoint_2	109	0.41	768	512	63.55
45	ember-v1	335	1.25	1024	512	63.54
46	sf_model_e5	335	1.25	1024	512	63.34
47	mxbai-embed-2d-large-v1	335	1.25	1024	512	63.25
48	gte-large	335	1.25	1024	512	63.13
49	NoInstruct-small-Embedding-v0	33	0.12	384	512	63.12
50	GIST-small-Embedding-v0	33	0.12	384	512	62.72
51	stella-base-en-v2	55	0.2	768	512	62.61
52	gte-base	109	0.41	768	512	62.39
53	UniVaR-lambda-80	137	0.51	768	8192	62.39

Continued on next page

Rank	Model	Model Size	Memory Usage	Dimensions	Max Tokens	Avg. Score
54	UniVaR-lambda-20	137	0.51	768	8192	62.39
55	UniVaR-lambda-1	137	0.51	768	8192	62.39
56	nomic-embed-text-v1	137	0.51	768	8192	62.39
57	UniVaR-lambda-5	137	0.51	768	8192	62.39
58	nomic-embed-text-v1.5	137	0.51	768	8192	62.28
59	text-embedding-3-small			1536	8191	62.26
60	e5-large-v2	335	1.25	1024	512	62.25
61	bge-small-en-v1.5	33	0.12	384	512	62.17
62	Cohere-embed-english-light-v3.0					62.01
63	text-embedding-3-large-256			256	8191	62.00
64	nomic-embed-text-v1.5-512	138	0.51	512	8192	61.96
65	LLM2Vec-Sheared-Llama-supervised	1280	4.77	2048	4096	61.85
66	instructor-xl	1241	4.62	768	512	61.79
67	instructor-large	335	1.25	768	512	61.59
68	e5-base-v2	109	0.41	768	512	61.50
69	e5-base-4k	112	0.42	768	4096	61.50
70	multilingual-e5-large	560	2.09	1024	514	61.50
71	e5-large	335	1.25	1024	512	61.42
72	nomic-embed-text-v1-ablated	137	0.51	768	8192	61.36
73	gte-small	33	0.12	384	512	61.36
74	nomic-embed-text-v1.5-256	138	0.51	256	8192	61.04
75	text-embedding-ada-002			1536	8191	60.99
76	udever-bloom-7b1	7069	26.33	4096	2048	60.63
77	e5-base	109	0.41	768	512	60.44
78	jina-embeddings-v2-base-en	137	0.51	768	8192	60.38
79	Titan-text-embeddings-v2					60.37
80	snowflake-arctic-embed-m-long	137	0.51	768	8192	60.09
81	Cohere-embed-multilingual-light-v3.0			384	512	60.08
82	e5-small-v2	33	0.12	384	512	59.93

Continued on next page

Rank	Model	Model Size	Memory Usage	Dimensions	Max Tokens	Avg. Score
83	udever-bloom-3b	3003	11.19	2560	2048	59.86
84	nomic-embed-text-v1-unsupervised	137	0.51	768	8192	59.85
85	snowflake-arctic-embed-l	334	1.24	1024	512	59.84
86	snowflake-arctic-embed-m	109	0.41	768	512	59.79
87	instructor-base	110	0.41	768	512	59.54
88	sentence-t5-xxl	4865	18.12	768	512	59.51
89	multilingual-e5-base	278	1.04	768	514	59.45
90	nomic-embed-text-v1.5-128	138	0.51	128	8192	59.34
91	XLM-3B5-embedding					59.29
92	GIST-all-MiniLM-L6-v2	23	0.08	384	512	59.00
93	gtr-t5-xxl	4865	18.12	768	512	58.97
94	snowflake-arctic-embed-s	33	0.12	384	512	58.94
95	SGPT-5.8B-weightedmean-msmarco-specb-bitfit	5874	21.88	4096	2048	58.93
96	e5-small	33	0.12	384	512	58.89
97	gte-tiny	23	0.08	384	512	58.69
98	gtr-t5-xl	1240	4.62	768	512	58.42
99	udever-bloom-1b1			1536	2048	58.29
100	gtr-t5-large	168	0.63	768	512	58.28

Table 4: Top-100 models on the MTEB leaderboard as of 03.08.2024 at 12:00pm which do not exceed 1 billion parameters. Model size is measured in million parameters.

Rank	Model	Model Size	Is Opensource?	Supports MRL?	Additional Notes
6	**stella_en_400M_v5**	435	y	y	
21	gte-large-en-v1.5	434	y	n	
25	**mxbai-embed-large-v1**	335	y	y	
26	UAE-Large-V1	335	y	n	
30	multilingual-e5-large-instruct	560	y	n	
32	GIST-large-Embedding-v0	335	y	n	
33	bge-large-en-v1.5	335	y	n	
34	b1ade-embed	335	y	n	
35	MUG-B-1.6	335	y	n	
37	gte-base-en-v1.5	137	y	n	
38	Cohere-embed-multilingual-v3.0		n	n	
40	bge-base-en-v1.5	438	y	n	
41	privacy_embedding_rag_10k_base_final	109	y	n	
42	privacy_embedding_rag_10k_base_12_final	109	y	n	
43	privacy_embedding_rag_10k_base_15_final	109	y	n	
44	privacy_embedding_rag_10k_base_checkpoint_2	109	y	n	
45	ember-v1	335	y	n	
46	sf_model_e5	335	y	n	
47	**mxbai-embed-2d-large-v1**	335	y	y	2D-MRL Model
48	gte-large	335	y	n	
49	NoInstruct-small-Embedding-v0	33	y	n	
50	GIST-small-Embedding-v0	33	y	n	
51	stella-base-en-v2	55	y	n	
52	gte-base	109	y	n	
53	UniVaR-lambda-80	137	y	n	
54	UniVaR-lambda-20	137	y	n	

Continued on next page

Rank	Model	Model Size	Is Opensource?	Supports MRL?	Additional Notes
55	UniVaR-lambda-1	137	y	n	
56	nomic-embed-text-v1	137	y	n	
57	UniVaR-lambda-5	137	y	n	
58	**nomic-embed-text-v1.5**	137	y	y	
60	e5-large-v2	335	y	n	
61	bge-small-en-v1.5	33	y	n	
64	nomic-embed-text-v1.5-512	138	y	y	Same model as 58.
67	instructor-large	335	y	n	
68	e5-base-v2	109	y	n	
69	e5-base-4k	112	y	n	
70	multilingual-e5-large	560	y	n	
71	e5-large	335	y	n	
72	nomic-embed-text-v1-ablated	137	y	n	
73	gte-small	33	y	n	
74	nomic-embed-text-v1.5-256	138	y	y	Same model as 58.
77	e5-base	109	y	n	
78	jina-embeddings-v2-base-en	137	y	n	
80	snowflake-arctic-embed-m-long	137	y	n	
82	e5-small-v2	33	y	n	
84	nomic-embed-text-v1-unsupervised	137	y	n	
85	snowflake-arctic-embed-l	334	y	n	
86	snowflake-arctic-embed-m	109	y	n	
87	instructor-base	110	y	n	
89	multilingual-e5-base	278	y	n	
90	nomic-embed-text-v1.5-128	138	y	y	Same model as 58.
92	GIST-all-MiniLM-L6-v2	23	y	n	
94	snowflake-arctic-embed-s	33	y	n	
96	e5-small	33	y	n	
97	gte-tiny	23	y	n	

Continued on next page

Rank	Model	Model Size	Is Opensource?	Supports MRL?	Additional Notes
100	gtr-t5-large	168	y	n	

B. Additional Figures from Literature

B.1 MRL Figures

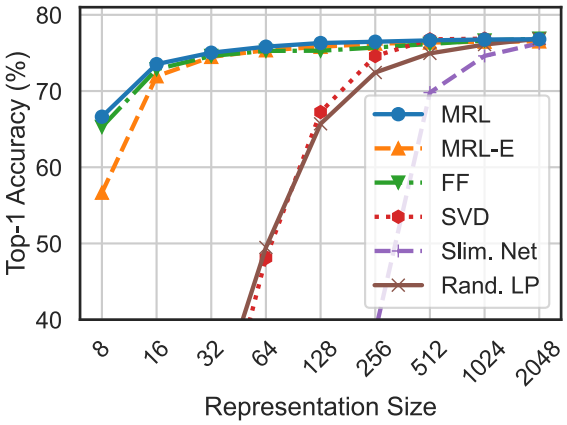


Figure 1: ImageNet-1K linear classification accuracy of ResNet50 models. MRL is as accurate as the independently trained FF models for every representation size. Figure and caption excerpted from the original paper [KBR+22].

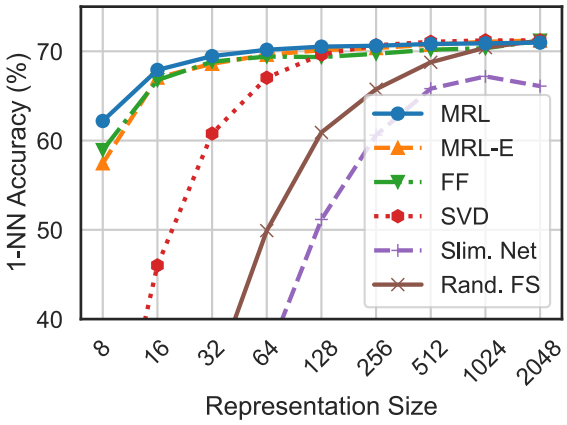


Figure 2: ImageNet-1K 1-NN accuracy of ResNet50 models measuring the representation quality for downstream task. MRL outperforms all the baselines across all representation sizes. Figure and caption excerpted from the original paper [KBR+22].

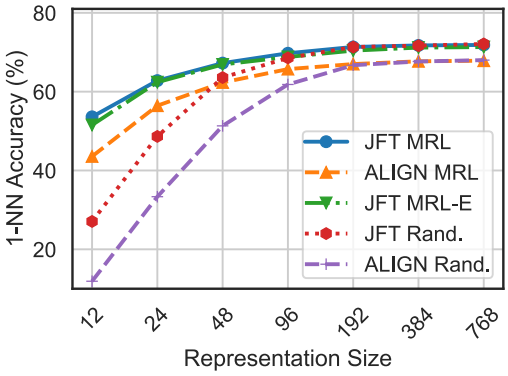


Figure 3: ImageNet-1K 1-NN accuracy for ViT-B/16 models trained on JFT-300M & as part of ALIGN. MRL scales seamlessly to web-scale with minimal training overhead. Figure and caption excerpted from the original paper [KBR+22].

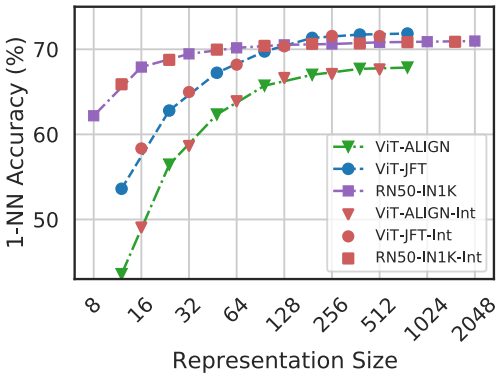


Figure 4: Despite optimizing MRL only for $O(\log(d))$ dimensions for ResNet50 and ViT-B/16 models; the accuracy in the intermediate dimensions shows interpolating behavior. Figure and caption excerpted from the original paper [KBR+22].

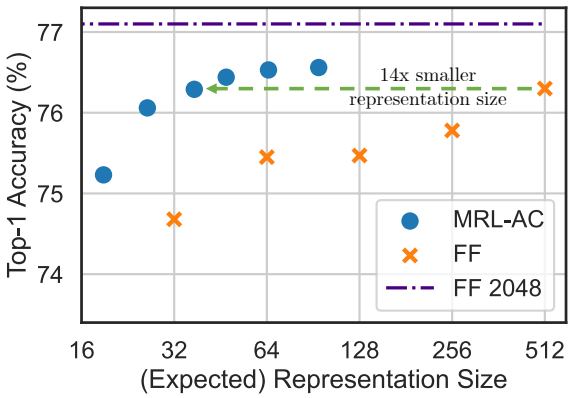


Figure 5: Adaptive classification on MRL ResNet50 using cascades results in 14× smaller representation size for the same level of accuracy on ImageNet-1K (∼ 37 vs 512 dims for 76.3%). Figure and caption excerpted from the original paper [KBR+22].

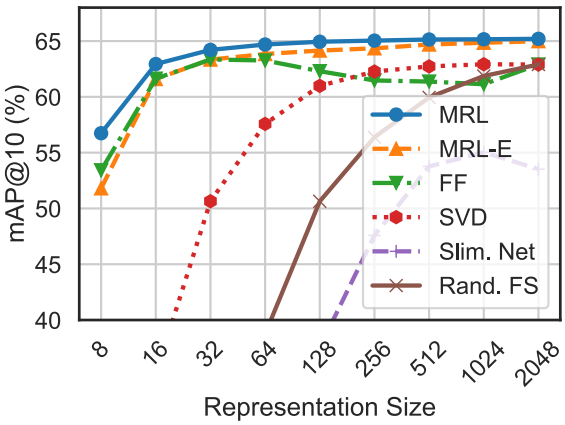
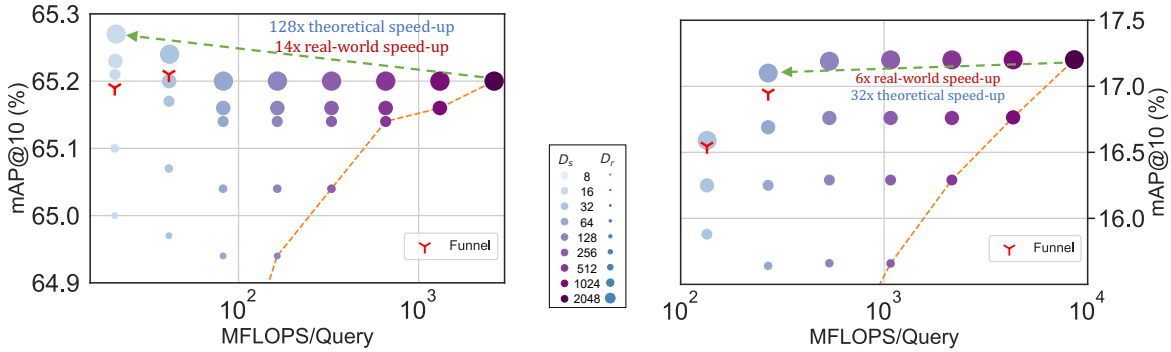


Figure 6: mAP@10 for Image Retrieval on ImageNet-1K with ResNet50. MRL consistently produces better retrieval performance over the baselines across all the representation sizes. Figure and caption excerpted from the original paper [KBR+22].



(a) ImageNet-1K

(b) ImageNet-4K

Figure 7: The trade-off between mAP@10 vs MFLOPs/Query for Adaptive Retrieval (AR) on ImageNet-1K (left) and ImageNet-4K (right). Every combination of D_s & D_r falls above the Pareto line (orange dots) of single-shot retrieval with a fixed representation size while having configurations that are as accurate while being up to 14× faster in real-world deployment. Funnel retrieval is almost as accurate as the baseline while alleviating some of the parameter choices of Adaptive Retrieval. Figure and caption excerpted from the original paper [KBR+22].

B.2 2DMSE Figures

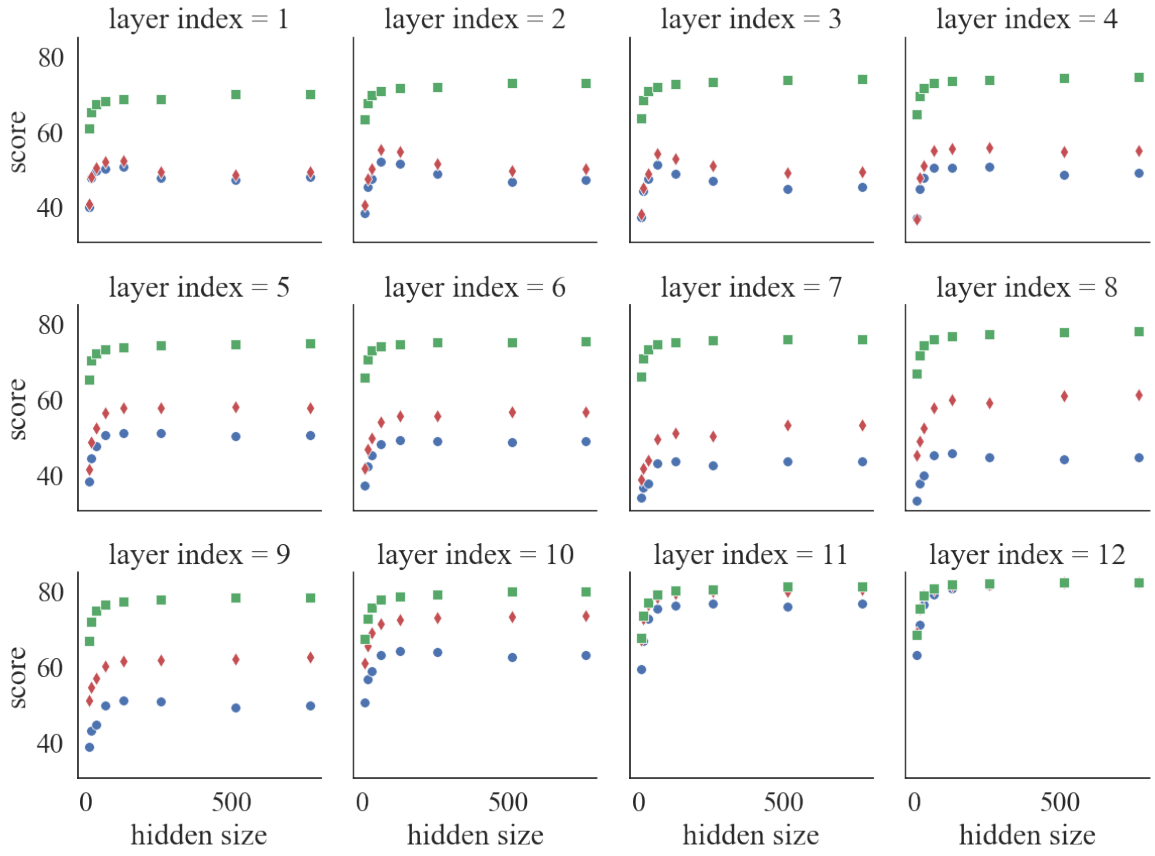
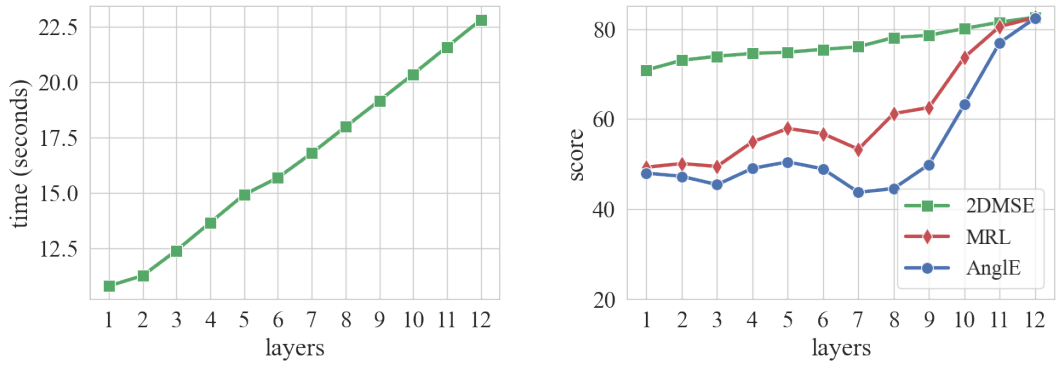


Figure 8: Results of the STS benchmark with a cascade of hidden sizes: $8 \rightarrow 16 \rightarrow 32 \rightarrow 64 \rightarrow 128 \rightarrow 256 \rightarrow 512 \rightarrow 768$ from BERT_{base}. The score represents the average Spearman's correlation. BERT_{base} serves as the backbone for all models. The blue • indicates the results of sentence embeddings from AnglE without any scalable sentence embedding learning. The red ♦ represents the results of matryoshka sentence embeddings. The green ■ denotes the results of our proposed 2D Matryoshka Sentence Embeddings (2DMSE). The layer index $= i$ denotes the i-th attention layer. Figure and caption excerpted from the original paper [LLL+24].



(a) Inference time *vs* number of layers. **(b)** Score on STS *vs* number of layers.

Figure 9: Subfigure (a) illustrates the time taken to use embeddings from different layers to encode the entire STS benchmarks. Subfigure (b) displays the average Spearman's correlation scores of different layers. Both (a) and (b) use an embedding size of 768 and the standard STS benchmark dataset. Figure and caption excerpted from the original paper [LLL+24].

Model	STS12	STS13	STS14	STS15	STS16	STS-B	SICK-R	Avg.
GloVe [RG19]	52.86	66.75	62.15	72.77	66.87	68.03	65.65	65.01
USE [RG19]	64.49	67.80	64.61	76.83	73.18	74.92	76.69	71.22
SBERT [RG19]	70.97	76.53	73.19	79.09	74.30	77.03	72.91	74.89
SimCSE [GYC21]	75.30	84.67	80.19	85.40	80.82	84.25	80.39	81.57
AnglE [LL23]	75.09	85.56	80.66	86.44	**82.47**	85.16	**81.23**	82.37
MRL ($d = 768$) $\star$	**75.72**	**86.79**	81.89	**86.91**	81.74	85.50	79.44	82.57
2DMSE ($n = 12$, $d = 768$)	75.00	86.69	**82.30**	86.50	82.09	**85.79**	80.18	**82.65**

Table 5: Full-capacity sentence embedding performance on the standard STS benchmark. Results $\star$ denote our implementation. BERT_{base} serves as the backbone for all models. Figure and caption excerpted from the original paper [LLL+24].

Model	Avg. Spearman's Correlation
$n = 12$, $d = 768$	
2DMSE	**82.65**
w/o alignment $\mathcal{L}_{align}$	82.57 (−0.08)
w/o last layer $\mathcal{L}_N^D$	81.31 (−1.34)
$n = 8$, $d = 512$	
2DMSE	**78.02**
w/o alignment $\mathcal{L}_{align}$	77.94 (−0.08)
w/o last layer $\mathcal{L}_N^D$	76.52 (−1.50)
$n = 6$, $d = 384$	
2DMSE	**75.21**
w/o alignment $\mathcal{L}_{align}$	75.08 (−0.13)
w/o last layer $\mathcal{L}_N^D$	74.98 (−0.23)
$n = 4$, $d = 256$	
2DMSE	**73.93**
w/o alignment $\mathcal{L}_{align}$	73.69 (−0.24)
w/o last layer $\mathcal{L}_N^D$	73.00 (−0.93)

Table 6: Ablation study results of 2DMSE on the standard STS benchmark using BERT_{base}. n denotes the number of Transformer layers, and d stands for the embedding dimensions. Figure and caption excerpted from the original paper [LLL+24].

C. mxbai-embed-large-v1

This section contains additional figures and tables for the MBAI-1D model.

q	m	CLA 1	CLA 2	CLA 3	CLA 4	CLA 5	CLA 6	CLA 7	CLA 8	CLU 1	CLU 2	CLU 3	CLU 4	CLU 5	CLU 6	CLU 7	CLU 8	CLU 9	CLU 10	STS 1	STS 2	STS 3	STS 4	STS 5	STS 6	STS 7	STS 8	STS 9	STS 10	PCL 1	PCL 2	PCL 3	RET 1	RET 2	RET 3	RER 1	RER 2	RER 3	SUM 1
f32	1024	61.98	18.26	27.28	10.67	42.54	26.21	17.41	68.60	14.53	9.32	163.71	18.00	129.11	15.91	233.31	223.57	185.62	11.57	2.31	56.65	24.57	9.96	26.52	21.28	9.19	9.94	1.42	30.30	42.98	55.13	236.84	469.87	741.35	294.39	32.99	294.05	313.21	39.10
f32	512	54.38	17.24	26.87	10.95	37.55	15.32	16.68	56.04	10.06	4.88	161.58	17.82	126.80	15.73	231.72	219.14	177.20	9.98	2.26	56.34	24.60	9.81	26.50	21.35	9.14	9.94	1.41	30.64	39.05	54.40	236.42	458.81	730.16	293.33	33.08	287.08	314.06	39.10
f32	256	50.33	16.98	26.18	10.67	25.08	14.30	15.81	50.18	7.71	4.43	160.39	15.10	124.23	12.48	228.31	215.48	172.08	10.01	2.32	56.33	24.49	9.87	26.41	21.29	9.20	9.91	1.41	30.44	39.09	54.32	236.47	458.58	730.34	292.64	33.15	281.41	314.05	39.04
f32	128	38.79	16.90	26.37	10.77	23.86	13.86	16.04	37.63	6.87	2.61	159.46	15.33	123.31	11.77	227.32	212.13	169.66	9.41	2.23	55.77	24.78	9.84	26.24	21.34	9.25	9.89	1.45	30.33	38.56	54.33	235.67	458.56	730.39	293.15	33.27	275.89	313.79	39.06
f32	64	38.04	16.85	26.45	10.84	23.34	13.55	15.75	36.54	6.60	2.22	159.61	14.24	122.98	12.26	227.95	211.36	166.29	8.33	2.23	55.39	24.82	9.85	26.41	21.28	9.18	9.91	1.41	30.62	36.93	54.37	235.64	465.25	741.75	298.34	33.83	283.23	333.10	40.91
f32	32	37.44	17.07	26.19	10.68	22.87	13.33	15.28	35.39	6.47	2.33	158.95	14.10	123.30	11.69	227.99	211.15	166.12	8.86	2.22	55.65	24.82	9.92	26.31	21.24	9.22	9.96	1.41	30.35	36.96	53.89	237.25	468.68	742.06	298.14	34.09	284.72	331.88	40.97
f32	16	36.47	16.68	25.54	10.63	22.20	13.33	15.16	33.95	6.35	1.94	158.90	13.97	122.90	11.65	226.98	210.39	166.11	8.58	2.26	55.63	24.93	9.94	26.21	21.16	9.27	9.93	1.46	30.26	37.01	54.20	235.43	469.49	741.94	297.75	33.83	280.40	331.17	40.96
f32	8	36.19	16.58	25.45	10.55	21.97	13.43	15.37	33.54	5.73	1.85	158.89	14.00	122.02	10.65	225.98	211.73	166.00	7.93	2.22	55.43	24.88	9.83	26.32	21.33	9.19	9.97	1.41	30.76	36.92	53.76	236.34	468.88	741.17	298.19	33.89	277.67	331.95	40.83
int	1024	64.05	17.85	27.01	10.85	45.47	26.17	16.74	70.43	12.55	8.88	164.43	19.88	130.29	16.84	232.87	223.47	185.83	13.62	2.29	57.22	24.80	9.92	26.72	21.31	9.18	9.97	1.43	30.67	46.07	55.10	238.55	413.14	653.41	264.14	29.59	274.76	289.77	35.82
int	512	55.05	17.54	26.62	10.77	37.80	14.85	16.72	57.25	10.64	5.07	161.29	17.72	127.16	15.50	231.59	218.32	175.31	10.30	2.28	56.58	24.60	9.90	26.53	21.24	9.21	9.93	1.41	30.48	39.80	54.40	236.66	412.53	652.47	263.96	29.73	267.62	289.14	35.77
int	256	50.65	16.86	26.48	11.04	25.21	14.40	16.07	50.75	8.91	4.31	159.81	15.23	123.87	12.27	228.02	212.87	168.82	9.20	2.31	56.20	24.73	9.91	26.43	21.23	9.20	9.92	1.46	30.43	39.39	54.37	236.57	412.79	653.14	264.33	29.59	261.74	289.11	35.71
int	128	38.96	17.24	26.51	10.80	24.15	13.57	15.60	38.22	7.36	3.32	159.80	14.62	123.46	11.93	228.84	212.04	166.97	8.64	2.23	55.51	24.84	9.90	26.21	21.25	9.25	9.96	1.43	30.32	38.60	53.97	236.37	412.67	653.30	264.55	29.70	260.12	288.84	35.68
int	64	37.73	16.86	26.14	10.96	23.32	14.03	16.00	36.03	6.55	2.39	159.27	14.18	122.94	11.28	226.83	211.26	165.12	8.37	2.25	55.59	24.77	9.87	26.22	21.29	9.25	9.93	1.43	30.34	37.31	54.10	235.77	413.02	652.97	264.21	29.64	260.84	289.24	35.62
int	32	37.78	17.01	26.64	11.02	23.01	13.47	15.72	36.00	6.51	1.92	159.27	14.10	122.65	11.16	227.40	210.62	165.07	8.78	2.24	55.33	24.82	9.90	26.20	21.28	9.27	9.92	1.41	30.28	37.78	54.26	235.66	412.87	653.31	264.72	29.61	261.13	289.14	35.81
int	16	37.03	17.03	25.83	10.76	22.97	13.44	15.61	35.13	6.28	2.17	158.77	14.15	122.51	11.01	226.20	211.01	164.93	8.08	2.28	55.31	24.80	9.83	26.18	21.25	9.21	9.91	1.41	30.21	36.72	53.93	236.52	412.53	653.00	264.36	29.56	256.26	288.88	35.62
int	8	36.87	16.54	25.53	10.68	22.73	13.90	16.12	35.01	6.97	1.67	158.65	13.80	122.57	10.79	227.20	209.99	165.20	8.49	2.23	55.68	24.86	9.83	26.33	21.29	9.20	9.94	1.41	30.63	37.60	54.12	235.59	412.78	653.69	264.65	29.59	255.88	288.63	35.72
bin	1024	38.57	17.11	26.07	10.70	24.04	13.83	15.47	37.95	8.78	2.92	159.61	14.70	123.54	12.20	228.88	212.11	166.53	8.80	2.23	55.75	24.82	9.91	26.35	21.14	9.19	9.94	1.42	30.47	38.91	54.33	236.16	412.63	653.17	264.23	29.61	258.72	289.21	35.66
bin	512	37.86	16.88	26.57	10.89	23.29	13.47	15.69	36.45	6.44	2.17	159.91	14.36	123.19	11.34	228.08	211.15	166.16	9.17	2.22	55.46	24.83	9.90	26.40	21.21	9.20	9.96	1.41	30.41	38.23	54.27	236.07	412.73	653.40	264.47	29.60	258.85	288.85	35.64
bin	256	37.18	17.02	26.41	10.74	22.81	13.34	15.40	35.71	7.07	2.09	159.19	14.05	122.83	11.18	227.53	211.13	164.80	8.19	2.22	55.38	24.77	9.86	26.19	21.22	9.24	9.94	1.41	30.31	37.93	54.27	235.63	412.62	653.38	264.56	29.52	258.77	288.83	35.71
bin	128	37.28	16.52	25.95	10.65	22.67	13.32	15.49	35.42	7.55	1.95	158.97	14.01	122.96	11.03	226.70	212.02	164.93	8.13	2.22	55.43	24.79	9.90	26.20	21.29	9.26	9.95	1.41	30.35	37.33	54.21	235.64	412.70	653.61	264.47	29.56	259.46	289.31	35.81
bin	64	36.95	16.61	25.71	10.51	22.62	13.35	15.36	34.76	5.93	1.68	158.74	13.86	122.79	10.91	227.30	210.44	166.02	8.02	2.26	55.33	24.79	9.88	26.23	21.34	9.27	9.91	1.42	30.21	37.71	54.13	235.65	412.59	653.39	264.24	29.65	254.81	289.31	35.77
bin	32	37.14	16.63	25.77	10.56	22.69	12.87	15.04	34.77	5.59	1.77	158.63	13.52	122.54	10.84	225.97	210.59	164.45	7.87	2.25	55.53	24.90	9.87	26.22	21.22	9.24	9.93	1.43	30.21	36.65	53.84	236.22	412.37	652.75	264.47	29.59	253.85	288.50	35.79
bin	16	36.97	16.53	25.56	10.48	22.63	12.81	15.00	34.94	5.91	1.22	158.25	13.49	121.98	10.72	226.34	210.00	166.40	7.78	2.26	55.31	24.90	9.92	26.25	21.29	9.22	9.90	1.46	30.43	36.70	54.17	234.98	412.63	653.82	264.45	29.50	251.74	288.74	35.82
bin	8	36.55	16.22	25.41	10.59	21.99	13.02	15.39	34.65	5.42	1.14	158.86	13.76	122.02	10.35	225.76	211.10	164.72	7.79	2.22	55.30	24.85	9.84	26.28	21.24	9.18	9.96	1.42	30.54	36.30	53.78	235.65	412.13	653.18	264.22	29.55	251.86	288.65	35.03

Table 7: Absolute evaluation time for mxbai-embed-large-v1 on all tasks. Table 2 serves as a legend.

q	m	CLA 1	CLA 2	CLA 3	CLA 4	CLA 5	CLA 6	CLA 7	CLA 8	CLU 1	CLU 2	CLU 3	CLU 4	CLU 5	CLU 6	CLU 7	CLU 8	CLU 9	CLU 10	STS 1	STS 2	STS 3	STS 4	STS 5	STS 6	STS 7	STS 8	STS 9	STS 10	PCL 1	PCL 2	PCL 3	RET 1	RET 2	RET 3	RER 1	RER 2	RER 3	SUM 1
f32	1024	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
f32	512	0.877	0.944	0.985	1.026	0.883	0.585	0.958	0.817	0.692	0.523	0.987	0.990	0.982	0.989	0.993	0.980	0.955	0.863	0.978	0.995	1.001	0.984	0.999	1.003	0.995	1.000	0.997	1.011	0.909	0.987	0.998	0.977	0.985	0.996	1.003	0.976	1.003	1.000
f32	256	0.812	0.930	0.960	1.000	0.590	0.545	0.908	0.732	0.530	0.475	0.980	0.839	0.962	0.785	0.979	0.964	0.927	0.866	1.003	0.994	0.997	0.991	0.996	1.000	1.002	0.997	0.994	1.005	0.910	0.985	0.998	0.976	0.985	0.994	1.005	0.957	1.003	0.999
f32	128	0.626	0.925	0.967	1.009	0.561	0.529	0.921	0.549	0.473	0.280	0.974	0.852	0.955	0.740	0.974	0.949	0.914	0.813	0.965	0.984	1.008	0.987	0.990	1.003	1.007	0.995	1.026	1.001	0.897	0.985	0.995	0.976	0.985	0.996	1.008	0.938	1.002	0.999
f32	64	0.614	0.923	0.970	1.016	0.549	0.517	0.905	0.533	0.455	0.238	0.975	0.791	0.953	0.771	0.977	0.945	0.896	0.721	0.965	0.978	1.010	0.988	0.996	1.000	0.999	0.997	0.995	1.010	0.859	0.986	0.995	0.990	1.000	1.013	1.025	0.963	1.063	1.046
f32	32	0.604	0.934	0.960	1.001	0.537	0.508	0.878	0.516	0.445	0.250	0.971	0.783	0.955	0.735	0.977	0.944	0.895	0.766	0.961	0.982	1.010	0.996	0.992	0.998	1.003	1.002	0.999	1.002	0.860	0.978	1.002	0.998	1.001	1.013	1.033	0.968	1.060	1.048
f32	16	0.588	0.913	0.936	0.997	0.522	0.509	0.870	0.495	0.437	0.209	0.971	0.776	0.952	0.733	0.973	0.941	0.895	0.742	0.978	0.982	1.015	0.998	0.988	0.994	1.008	0.999	1.034	0.999	0.861	0.983	0.994	0.999	1.001	1.011	1.026	0.954	1.057	1.048
f32	8	0.584	0.908	0.933	0.989	0.516	0.512	0.883	0.489	0.394	0.198	0.971	0.778	0.945	0.669	0.969	0.947	0.894	0.686	0.962	0.978	1.012	0.987	0.993	1.002	1.000	1.003	0.994	1.015	0.859	0.975	0.998	0.998	1.000	1.013	1.027	0.944	1.060	1.044
int	1024	1.033	0.978	0.990	1.017	1.069	0.998	0.961	1.027	0.864	0.953	1.004	1.104	1.009	1.058	0.998	1.000	1.001	1.177	0.988	1.010	1.009	0.996	1.008	1.002	0.999	1.003	1.007	1.012	1.072	1.000	1.007	0.879	0.881	0.897	0.897	0.934	0.925	0.916
int	512	0.888	0.960	0.976	1.010	0.889	0.567	0.960	0.835	0.732	0.544	0.985	0.985	0.985	0.975	0.993	0.977	0.945	0.891	0.987	0.999	1.001	0.993	1.000	0.998	1.002	0.999	0.998	1.006	0.926	0.987	0.999	0.878	0.880	0.897	0.901	0.910	0.923	0.915
int	256	0.817	0.923	0.971	1.034	0.593	0.549	0.923	0.740	0.614	0.462	0.976	0.846	0.960	0.771	0.977	0.952	0.909	0.795	0.998	0.992	1.006	0.995	0.997	0.998	1.002	0.998	1.028	1.004	0.917	0.986	0.999	0.878	0.881	0.898	0.897	0.890	0.923	0.913
int	128	0.629	0.944	0.972	1.013	0.568	0.518	0.896	0.557	0.506	0.357	0.976	0.812	0.956	0.750	0.981	0.948	0.899	0.747	0.964	0.980	1.011	0.994	0.988	0.998	1.006	1.002	1.013	1.001	0.898	0.979	0.998	0.878	0.881	0.899	0.900	0.885	0.922	0.913
int	64	0.609	0.923	0.958	1.027	0.548	0.535	0.919	0.525	0.451	0.257	0.973	0.788	0.952	0.709	0.972	0.945	0.890	0.724	0.972	0.981	1.008	0.990	0.989	1.000	1.007	0.999	1.010	1.001	0.868	0.981	0.996	0.879	0.881	0.897	0.898	0.887	0.923	0.911
int	32	0.610	0.931	0.977	1.033	0.541	0.514	0.903	0.525	0.448	0.206	0.973	0.783	0.950	0.701	0.975	0.942	0.889	0.759	0.968	0.977	1.010	0.994	0.988	1.000	1.008	0.998	0.999	0.999	0.879	0.984	0.995	0.879	0.881	0.899	0.897	0.888	0.923	0.916
int	16	0.598	0.933	0.947	1.008	0.540	0.513	0.896	0.512	0.432	0.233	0.970	0.786	0.949	0.692	0.970	0.944	0.889	0.699	0.984	0.976	1.009	0.987	0.987	0.999	1.002	0.997	0.996	0.997	0.854	0.978	0.999	0.878	0.881	0.898	0.896	0.872	0.922	0.911
int	8	0.595	0.906	0.936	1.001	0.534	0.530	0.926	0.510	0.480	0.179	0.969	0.767	0.949	0.678	0.974	0.939	0.890	0.734	0.965	0.983	1.012	0.986	0.993	1.001	1.001	1.000	0.998	1.011	0.875	0.982	0.995	0.878	0.882	0.899	0.897	0.870	0.921	0.914
bin	1024	0.622	0.937	0.956	1.003	0.565	0.527	0.888	0.553	0.604	0.314	0.975	0.817	0.957	0.767	0.981	0.949	0.897	0.761	0.965	0.984	1.010	0.995	0.994	0.993	1.000	1.000	1.004	1.006	0.905	0.985	0.997	0.878	0.881	0.897	0.898	0.880	0.923	0.912
bin	512	0.611	0.924	0.974	1.020	0.547	0.514	0.901	0.531	0.443	0.232	0.977	0.798	0.954	0.713	0.978	0.944	0.895	0.793	0.959	0.979	1.010	0.993	0.996	0.997	1.001	1.002	0.998	1.004	0.890	0.984	0.997	0.878	0.881	0.898	0.897	0.880	0.922	0.912
bin	256	0.600	0.932	0.968	1.007	0.536	0.509	0.884	0.521	0.486	0.224	0.972	0.780	0.951	0.703	0.975	0.944	0.888	0.708	0.958	0.978	1.008	0.990	0.987	0.997	1.006	1.000	0.997	1.000	0.883	0.984	0.995	0.878	0.881	0.899	0.895	0.880	0.922	0.913
bin	128	0.602	0.905	0.951	0.998	0.533	0.508	0.890	0.516	0.520	0.209	0.971	0.778	0.952	0.694	0.972	0.948	0.888	0.703	0.962	0.979	1.009	0.994	0.988	1.000	1.008	1.000	0.998	1.002	0.869	0.983	0.995	0.878	0.882	0.898	0.896	0.882	0.924	0.916
bin	64	0.596	0.910	0.943	0.985	0.532	0.509	0.882	0.507	0.408	0.180	0.970	0.770	0.951	0.686	0.974	0.941	0.894	0.694	0.975	0.977	1.009	0.992	0.989	1.003	1.009	0.997	1.000	0.997	0.877	0.982	0.995	0.878	0.881	0.898	0.899	0.867	0.924	0.915
bin	32	0.599	0.910	0.945	0.990	0.533	0.491	0.864	0.507	0.385	0.190	0.969	0.751	0.949	0.682	0.969	0.942	0.886	0.680	0.973	0.980	1.014	0.990	0.989	0.997	1.006	0.999	1.013	0.997	0.853	0.977	0.997	0.878	0.880	0.898	0.897	0.863	0.921	0.915
bin	16	0.597	0.905	0.937	0.982	0.532	0.489	0.861	0.509	0.406	0.131	0.967	0.749	0.945	0.674	0.970	0.939	0.896	0.673	0.976	0.976	1.013	0.996	0.990	1.000	1.004	0.996	1.029	1.004	0.854	0.983	0.992	0.878	0.882	0.898	0.894	0.856	0.922	0.916
bin	8	0.590	0.888	0.931	0.993	0.517	0.496	0.884	0.505	0.373	0.122	0.970	0.765	0.945	0.650	0.968	0.944	0.887	0.674	0.962	0.976	1.011	0.987	0.991	0.998	0.999	1.002	1.002	1.008	0.845	0.975	0.995	0.877	0.881	0.897	0.896	0.857	0.922	0.896

Table 8: Relative evaluation time for mxbai-embed-large-v1 on all tasks. Table 2 serves as a legend.

q	m	Total Time	Average All Tasks	Average classification	Average clustering	Average sts	Average pairclass	Average retrieval	Average rerank	Average summ
f32	1024	3989.64	104.99	34.12	100.46	19.21	111.65	501.87	213.42	39.10
f32	512	3887.41	102.30	29.38	97.49	19.20	109.95	494.10	211.41	39.10
f32	256	3830.50	100.80	26.19	95.02	19.17	109.96	493.85	209.53	39.04
f32	128	3785.90	99.63	23.03	93.79	19.11	109.52	494.03	207.65	39.06
f32	64	3827.66	100.73	22.67	93.18	19.11	108.98	501.78	216.72	40.91
f32	32	3828.93	100.76	22.28	93.10	19.11	109.37	502.96	216.89	40.97
f32	16	3814.97	100.39	21.75	92.78	19.11	108.88	503.06	215.13	40.96
f32	8	3808.78	100.23	21.63	92.48	19.13	109.01	502.75	214.50	40.83
int	1024	3781.10	99.50	34.82	100.87	19.35	113.24	443.57	198.04	35.82
int	512	3683.75	96.94	29.58	97.29	19.22	110.28	442.99	195.50	35.77
int	256	3623.37	95.35	26.43	94.33	19.18	110.11	443.42	193.48	35.71
int	128	3586.75	94.39	23.13	93.70	19.09	109.65	443.51	192.89	35.68
int	64	3572.91	94.02	22.63	92.82	19.09	109.06	443.40	193.24	35.62
int	32	3573.05	94.03	22.58	92.75	19.07	109.23	443.63	193.29	35.81
int	16	3560.70	93.70	22.23	92.51	19.04	109.06	443.30	191.57	35.62
int	8	3562.39	93.75	22.17	92.53	19.14	109.11	443.71	191.37	35.72
bin	1024	3585.65	94.36	22.97	93.81	19.12	109.80	443.34	192.51	35.66
bin	512	3576.19	94.11	22.64	93.20	19.10	109.52	443.53	192.43	35.64
bin	256	3568.42	93.91	22.33	92.81	19.05	109.28	443.52	192.37	35.71
bin	128	3568.44	93.91	22.16	92.82	19.08	109.06	443.59	192.78	35.81
bin	64	3559.44	93.67	21.98	92.57	19.06	109.16	443.41	191.26	35.77
bin	32	3552.10	93.48	21.93	92.18	19.08	108.91	443.20	190.65	35.79
bin	16	3550.49	93.43	21.86	92.21	19.09	108.62	443.63	189.99	35.82
bin	8	3545.92	93.31	21.73	92.09	19.08	108.58	443.18	190.02	35.03

Table 9: Evaluation time for mxbai-embed-large-v1, averaged per category. Table 2 serves as a legend.

q	m	Average Relative classification	Average Relative clustering	Average Relative sts	Average Relative pairclass	Average Relative retrieval	Average Relative rerank	Average Relative summ	Average Relative all
f32	1024	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
f32	512	0.884	0.895	0.996	0.965	0.986	0.994	1.000	0.943
f32	256	0.809	0.831	0.998	0.964	0.985	0.988	0.999	0.910
f32	128	0.761	0.792	0.997	0.959	0.986	0.983	0.999	0.888
f32	64	0.753	0.772	0.994	0.947	1.001	1.017	1.046	0.885
f32	32	0.742	0.772	0.994	0.946	1.004	1.020	1.048	0.883
f32	16	0.729	0.763	1.000	0.946	1.004	1.012	1.048	0.879
f32	8	0.727	0.745	0.995	0.944	1.004	1.010	1.044	0.872
int	1024	1.009	1.017	1.004	1.026	0.886	0.919	0.916	0.992
int	512	0.885	0.901	0.998	0.971	0.885	0.911	0.915	0.929
int	256	0.819	0.826	1.002	0.967	0.886	0.903	0.913	0.895
int	128	0.762	0.793	0.996	0.958	0.886	0.902	0.913	0.872
int	64	0.756	0.766	0.996	0.948	0.886	0.903	0.911	0.863
int	32	0.754	0.763	0.994	0.953	0.886	0.903	0.916	0.862
int	16	0.743	0.756	0.994	0.944	0.886	0.897	0.911	0.856
int	8	0.742	0.756	0.995	0.950	0.886	0.896	0.914	0.857
bin	1024	0.756	0.802	0.995	0.963	0.886	0.900	0.912	0.873
bin	512	0.753	0.773	0.994	0.957	0.886	0.900	0.912	0.864
bin	256	0.745	0.763	0.992	0.954	0.886	0.899	0.913	0.859
bin	128	0.738	0.764	0.994	0.949	0.886	0.901	0.916	0.858
bin	64	0.733	0.747	0.995	0.951	0.886	0.896	0.915	0.853
bin	32	0.730	0.740	0.996	0.942	0.885	0.894	0.915	0.850
bin	16	0.727	0.735	0.999	0.943	0.886	0.891	0.916	0.848
bin	8	0.726	0.730	0.994	0.938	0.885	0.891	0.896	0.844

Table 10: Relative evaluation time for mxbai-embed-large-v1, averaged per category. Table 2 serves as a legend.

q	m	req. bits	CLA 1	CLA 2	CLA 3	CLA 4	CLA 5	CLA 6	CLA 7	CLA 8	CLU 1	CLU 2	CLU 3	CLU 4	CLU 5	CLU 6	CLU 7	CLU 8	CLU 9	CLU 10	STS 1	STS 2	STS 3	STS 4	STS 5	STS 6	STS 7	STS 8	STS 9	STS 10	PCL 1	PCL 2	PCL 3	RET 1	RET 2	RET 3	RER 1	RER 2	RER 3	SUM 1
f32	1024	32768	0.878	0.509	0.597	0.750	0.765	0.799	0.940	0.768	0.601	0.603	0.419	0.400	0.367	0.352	0.561	0.553	0.406	0.508	0.861	0.828	0.791	0.898	0.852	0.893	0.868	0.893	0.892	0.690	0.968	0.785	0.862	0.666	0.403	0.377	0.652	0.325	0.552	0.327
f32	512	16384	0.875	0.500	0.588	0.725	0.759	0.792	0.932	0.758	0.609	0.591	0.424	0.395	0.372	0.352	0.539	0.545	0.404	0.524	0.856	0.826	0.788	0.899	0.851	0.892	0.865	0.891	0.885	0.695	0.968	0.784	0.860	0.661	0.396	0.370	0.636	0.324	0.549	0.316
f32	256	8192	0.872	0.483	0.578	0.708	0.743	0.779	0.923	0.741	0.599	0.587	0.410	0.380	0.363	0.343	0.512	0.526	0.405	0.480	0.853	0.823	0.789	0.894	0.848	0.886	0.859	0.889	0.883	0.698	0.965	0.777	0.856	0.632	0.363	0.347	0.640	0.314	0.545	0.308
f32	128	4096	0.862	0.460	0.565	0.672	0.713	0.745	0.905	0.700	0.583	0.582	0.395	0.365	0.353	0.327	0.481	0.493	0.401	0.451	0.852	0.815	0.777	0.885	0.837	0.879	0.844	0.880	0.868	0.697	0.960	0.767	0.851	0.589	0.321	0.300	0.638	0.303	0.536	0.301
f32	64	2048	0.834	0.411	0.520	0.661	0.664	0.681	0.861	0.631	0.579	0.569	0.358	0.320	0.340	0.315	0.367	0.423	0.393	0.373	0.815	0.805	0.765	0.865	0.822	0.865	0.829	0.863	0.824	0.686	0.944	0.746	0.836	0.491	0.262	0.233	0.616	0.281	0.516	0.302
f32	32	1024	0.774	0.374	0.498	0.628	0.576	0.591	0.780	0.502	0.571	0.553	0.312	0.279	0.322	0.298	0.268	0.347	0.391	0.302	0.779	0.787	0.744	0.838	0.792	0.835	0.797	0.828	0.793	0.658	0.915	0.708	0.812	0.326	0.180	0.146	0.598	0.265	0.486	0.285
f32	16	512	0.632	0.332	0.479	0.593	0.431	0.455	0.628	0.344	0.526	0.528	0.253	0.215	0.290	0.270	0.184	0.271	0.376	0.219	0.768	0.751	0.687	0.776	0.728	0.798	0.747	0.787	0.784	0.662	0.823	0.638	0.767	0.151	0.071	0.072	0.557	0.267	0.421	0.278
f32	8	256	0.396	0.313	0.453	0.588	0.289	0.346	0.480	0.211	0.509	0.511	0.190	0.162	0.245	0.228	0.135	0.224	0.370	0.157	0.661	0.663	0.614	0.672	0.628	0.700	0.689	0.705	0.684	0.647	0.538	0.570	0.702	0.043	0.013	0.032	0.517	0.252	0.356	0.265
int	1024	8192	0.870	0.492	0.579	0.648	0.734	0.774	0.935	0.713	0.608	0.593	0.424	0.394	0.370	0.350	0.558	0.549	0.404	0.526	0.856	0.829	0.766	0.897	0.843	0.890	0.861	0.889	0.891	0.691	0.970	0.783	0.863	0.661	0.406	0.373	0.640	0.319	0.550	0.321
int	512	4096	0.867	0.481	0.569	0.631	0.726	0.759	0.926	0.687	0.597	0.585	0.422	0.389	0.369	0.351	0.543	0.540	0.404	0.518	0.852	0.827	0.763	0.895	0.841	0.887	0.858	0.887	0.888	0.688	0.969	0.781	0.862	0.657	0.395	0.361	0.633	0.317	0.546	0.313
int	256	2048	0.859	0.476	0.556	0.631	0.706	0.741	0.911	0.655	0.597	0.582	0.408	0.382	0.362	0.341	0.521	0.523	0.402	0.478	0.860	0.823	0.758	0.891	0.839	0.882	0.852	0.884	0.881	0.693	0.967	0.774	0.858	0.629	0.371	0.338	0.634	0.312	0.542	0.301
int	128	1024	0.841	0.441	0.533	0.569	0.668	0.708	0.887	0.612	0.575	0.572	0.395	0.367	0.352	0.330	0.480	0.490	0.403	0.446	0.851	0.816	0.746	0.882	0.832	0.875	0.843	0.875	0.874	0.697	0.963	0.764	0.852	0.572	0.323	0.301	0.632	0.308	0.533	0.292
int	64	512	0.793	0.378	0.479	0.530	0.604	0.624	0.814	0.509	0.583	0.563	0.342	0.321	0.336	0.315	0.366	0.422	0.391	0.369	0.807	0.807	0.728	0.865	0.811	0.860	0.824	0.863	0.834	0.679	0.946	0.746	0.838	0.471	0.265	0.232	0.612	0.291	0.506	0.295
int	32	256	0.683	0.330	0.451	0.512	0.472	0.506	0.685	0.340	0.574	0.558	0.302	0.272	0.316	0.301	0.259	0.345	0.392	0.293	0.763	0.792	0.690	0.833	0.781	0.834	0.789	0.823	0.802	0.646	0.919	0.708	0.812	0.310	0.168	0.144	0.583	0.277	0.474	0.286
int	16	128	0.459	0.280	0.470	0.550	0.270	0.309	0.478	0.187	0.520	0.520	0.242	0.212	0.289	0.265	0.179	0.270	0.375	0.207	0.697	0.755	0.646	0.782	0.713	0.779	0.732	0.773	0.764	0.638	0.830	0.627	0.767	0.153	0.057	0.066	0.536	0.266	0.413	0.263
int	8	64	0.329	0.271	0.438	0.572	0.214	0.271	0.364	0.167	0.510	0.518	0.179	0.157	0.242	0.229	0.134	0.225	0.370	0.153	0.638	0.685	0.573	0.649	0.592	0.669	0.610	0.710	0.640	0.630	0.573	0.569	0.701	0.041	0.012	0.029	0.490	0.252	0.346	0.255
bin	1024	1024	0.764	0.365	0.482	0.599	0.601	0.622	0.800	0.524	0.551	0.540	0.318	0.283	0.315	0.295	0.367	0.404	0.358	0.350	0.714	0.788	0.735	0.839	0.795	0.833	0.820	0.849	0.846	0.662	0.936	0.728	0.833	0.395	0.182	0.156	0.592	0.283	0.469	0.311
bin	512	512	0.634	0.317	0.443	0.559	0.472	0.500	0.648	0.358	0.517	0.487	0.243	0.210	0.286	0.267	0.240	0.314	0.353	0.236	0.657	0.760	0.708	0.792	0.758	0.788	0.777	0.802	0.797	0.635	0.889	0.684	0.809	0.232	0.104	0.081	0.557	0.268	0.420	0.293
bin	256	256	0.446	0.263	0.411	0.532	0.310	0.365	0.495	0.220	0.494	0.507	0.189	0.170	0.260	0.246	0.151	0.252	0.358	0.184	0.569	0.706	0.654	0.714	0.681	0.710	0.704	0.739	0.751	0.589	0.796	0.608	0.760	0.101	0.039	0.048	0.541	0.261	0.358	0.282
bin	128	128	0.271	0.265	0.427	0.585	0.190	0.224	0.340	0.136	0.492	0.495	0.153	0.140	0.233	0.219	0.120	0.221	0.363	0.146	0.370	0.621	0.545	0.600	0.567	0.592	0.607	0.626	0.608	0.532	0.565	0.521	0.697	0.040	0.015	0.026	0.507	0.261	0.293	0.288
bin	64	64	0.196	0.251	0.406	0.560	0.126	0.186	0.274	0.070	0.491	0.484	0.142	0.123	0.227	0.213	0.107	0.204	0.360	0.127	0.167	0.526	0.435	0.462	0.436	0.473	0.477	0.493	0.485	0.435	0.313	0.433	0.611	0.020	0.014	0.023	0.469	0.247	0.257	0.314
bin	32	32	0.103	0.194	0.385	0.584	0.072	0.147	0.174	0.025	0.484	0.488	0.136	0.118	0.222	0.210	0.101	0.203	0.363	0.120	-0.049	0.439	0.386	0.308	0.334	0.371	0.370	0.390	0.428	0.284	0.193	0.371	0.534	0.011	0.006	0.016	0.446	0.244	0.239	0.281
bin	16	16	0.047	0.181	0.346	0.591	0.041	0.090	0.124	0.009	0.500	0.479	0.132	0.112	0.227	0.205	0.097	0.201	0.365	0.119	0.094	0.363	0.315	0.254	0.270	0.348	0.326	0.316	0.327	0.228	0.133	0.334	0.479	0.010	0.003	0.020	0.416	0.237	0.203	0.262
bin	8	8	0.030	0.191	0.328	0.528	0.034	0.091	0.087	0.006	0.498	0.502	0.118	0.107	0.217	0.205	0.101	0.200	0.344	0.119	-0.015	0.204	0.223	0.122	0.171	0.224	0.173	0.182	0.161	0.223	0.070	0.328	0.426	0.000	0.000	0.002	0.294	0.103	0.052	0.195

Table 11: Absolute performance for mxbai-embed-large-v1 on all tasks. Table 2 serves as a legend.

q	m	req. bits	CLA 1	CLA 2	CLA 3	CLA 4	CLA 5	CLA 6	CLA 7	CLA 8	CLU 1	CLU 2	CLU 3	CLU 4	CLU 5	CLU 6	CLU 7	CLU 8	CLU 9	CLU 10	STS 1	STS 2	STS 3	STS 4	STS 5	STS 6	STS 7	STS 8	STS 9	STS 10	PCL 1	PCL 2	PCL 3	RET 1	RET 2	RET 3	RER 1	RER 2	RER 3	SUM 1
f32	1024	32768	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
f32	512	16384	0.997	0.984	0.985	0.966	0.992	0.991	0.992	0.986	1.012	0.981	1.012	0.986	1.014	1.000	0.960	0.987	0.995	1.031	0.995	0.997	0.996	1.001	0.999	0.998	0.997	0.998	0.992	1.007	0.999	0.998	0.998	0.993	0.983	0.981	0.977	0.995	0.995	0.968
f32	256	8192	0.993	0.950	0.969	0.943	0.971	0.975	0.982	0.965	0.997	0.973	0.980	0.951	0.990	0.974	0.912	0.953	0.997	0.944	0.991	0.994	0.998	0.996	0.995	0.992	0.990	0.996	0.990	1.012	0.997	0.989	0.992	0.950	0.901	0.919	0.982	0.965	0.987	0.943
f32	128	4096	0.982	0.905	0.947	0.896	0.932	0.932	0.963	0.911	0.970	0.966	0.944	0.913	0.964	0.931	0.858	0.892	0.988	0.886	0.991	0.985	0.982	0.986	0.983	0.984	0.972	0.986	0.973	1.009	0.992	0.976	0.987	0.885	0.798	0.797	0.979	0.931	0.971	0.919
f32	64	2048	0.950	0.808	0.871	0.881	0.868	0.852	0.916	0.821	0.963	0.943	0.855	0.798	0.929	0.895	0.653	0.765	0.967	0.733	0.947	0.973	0.967	0.963	0.965	0.968	0.955	0.967	0.924	0.993	0.975	0.950	0.969	0.738	0.651	0.618	0.945	0.862	0.935	0.924
f32	32	1024	0.882	0.735	0.835	0.838	0.752	0.739	0.830	0.654	0.950	0.917	0.746	0.696	0.879	0.848	0.477	0.628	0.963	0.595	0.906	0.951	0.940	0.933	0.930	0.935	0.919	0.927	0.889	0.953	0.945	0.901	0.942	0.489	0.449	0.388	0.918	0.814	0.881	0.871
f32	16	512	0.720	0.652	0.802	0.790	0.564	0.570	0.669	0.448	0.875	0.876	0.605	0.538	0.790	0.767	0.328	0.490	0.925	0.431	0.892	0.907	0.869	0.865	0.855	0.894	0.861	0.881	0.879	0.959	0.850	0.812	0.890	0.227	0.177	0.191	0.855	0.820	0.762	0.850
f32	8	256	0.450	0.616	0.758	0.783	0.377	0.433	0.511	0.275	0.847	0.848	0.455	0.405	0.668	0.648	0.240	0.405	0.911	0.310	0.768	0.801	0.777	0.748	0.737	0.784	0.794	0.789	0.766	0.937	0.556	0.726	0.814	0.065	0.032	0.084	0.793	0.775	0.645	0.809
int	1024	8192	0.991	0.967	0.970	0.864	0.959	0.969	0.996	0.928	1.012	0.984	1.013	0.985	1.009	0.996	0.994	0.994	0.994	1.036	0.994	1.001	0.969	0.999	0.990	0.996	0.992	0.996	0.998	1.001	1.002	0.997	1.001	0.993	1.007	0.988	0.982	0.981	0.995	0.982
int	512	4096	0.987	0.946	0.953	0.842	0.949	0.950	0.985	0.894	0.994	0.970	1.007	0.973	1.006	0.997	0.968	0.977	0.993	1.020	0.990	0.999	0.964	0.997	0.987	0.993	0.989	0.993	0.995	0.996	1.001	0.995	0.999	0.987	0.981	0.958	0.971	0.974	0.989	0.958
int	256	2048	0.978	0.936	0.931	0.841	0.922	0.927	0.969	0.853	0.993	0.965	0.974	0.954	0.989	0.968	0.928	0.947	0.990	0.940	0.999	0.995	0.959	0.993	0.985	0.987	0.982	0.990	0.988	1.003	0.999	0.985	0.995	0.945	0.921	0.897	0.973	0.959	0.982	0.921
int	128	1024	0.958	0.867	0.893	0.758	0.872	0.886	0.944	0.796	0.956	0.949	0.944	0.917	0.961	0.939	0.855	0.887	0.993	0.877	0.989	0.986	0.943	0.983	0.976	0.980	0.971	0.979	0.980	1.010	0.995	0.972	0.989	0.859	0.801	0.798	0.970	0.947	0.965	0.893
int	64	512	0.903	0.742	0.803	0.707	0.789	0.780	0.866	0.663	0.970	0.934	0.816	0.803	0.916	0.895	0.652	0.764	0.963	0.727	0.938	0.974	0.920	0.964	0.951	0.962	0.950	0.966	0.934	0.983	0.977	0.950	0.972	0.708	0.657	0.616	0.939	0.894	0.916	0.904
int	32	256	0.778	0.649	0.756	0.683	0.617	0.633	0.730	0.443	0.955	0.926	0.720	0.680	0.862	0.857	0.461	0.625	0.965	0.577	0.886	0.956	0.873	0.927	0.916	0.933	0.910	0.922	0.899	0.936	0.950	0.901	0.942	0.465	0.418	0.382	0.895	0.853	0.859	0.875
int	16	128	0.522	0.550	0.788	0.733	0.352	0.387	0.509	0.243	0.865	0.863	0.579	0.530	0.788	0.752	0.319	0.489	0.924	0.407	0.810	0.912	0.818	0.871	0.836	0.872	0.843	0.866	0.857	0.925	0.858	0.798	0.889	0.229	0.140	0.175	0.823	0.818	0.747	0.805
int	8	64	0.375	0.532	0.734	0.762	0.280	0.339	0.387	0.217	0.848	0.859	0.429	0.393	0.661	0.651	0.238	0.406	0.910	0.301	0.742	0.828	0.724	0.723	0.695	0.749	0.703	0.795	0.718	0.912	0.592	0.725	0.813	0.062	0.029	0.076	0.752	0.774	0.627	0.780
bin	1024	1024	0.870	0.718	0.808	0.798	0.785	0.779	0.851	0.682	0.916	0.895	0.760	0.707	0.859	0.838	0.654	0.731	0.881	0.689	0.830	0.953	0.929	0.934	0.933	0.932	0.945	0.950	0.948	0.959	0.967	0.926	0.966	0.594	0.453	0.414	0.909	0.871	0.849	0.952
bin	512	512	0.722	0.623	0.742	0.745	0.617	0.625	0.689	0.467	0.860	0.809	0.582	0.525	0.779	0.758	0.428	0.568	0.869	0.464	0.763	0.918	0.895	0.882	0.889	0.882	0.896	0.898	0.893	0.920	0.919	0.871	0.938	0.349	0.258	0.214	0.855	0.824	0.761	0.897
bin	256	256	0.507	0.516	0.688	0.709	0.405	0.457	0.527	0.286	0.822	0.841	0.452	0.426	0.710	0.699	0.269	0.457	0.882	0.362	0.661	0.853	0.828	0.795	0.799	0.794	0.811	0.828	0.843	0.853	0.823	0.773	0.882	0.151	0.096	0.126	0.831	0.801	0.649	0.863
bin	128	128	0.309	0.521	0.716	0.780	0.248	0.281	0.362	0.177	0.818	0.821	0.365	0.349	0.635	0.623	0.215	0.399	0.893	0.286	0.430	0.750	0.690	0.668	0.665	0.662	0.699	0.701	0.681	0.770	0.584	0.663	0.808	0.060	0.037	0.069	0.777	0.802	0.531	0.882
bin	64	64	0.223	0.492	0.681	0.747	0.165	0.233	0.291	0.092	0.818	0.802	0.339	0.307	0.620	0.606	0.190	0.370	0.886	0.249	0.194	0.635	0.550	0.515	0.512	0.529	0.550	0.552	0.544	0.631	0.323	0.551	0.708	0.030	0.036	0.061	0.719	0.758	0.466	0.960
bin	32	32	0.117	0.381	0.644	0.778	0.095	0.183	0.185	0.033	0.805	0.810	0.324	0.295	0.606	0.598	0.180	0.367	0.894	0.237	-0.056	0.530	0.488	0.343	0.392	0.416	0.426	0.437	0.480	0.411	0.199	0.472	0.620	0.017	0.015	0.043	0.684	0.750	0.433	0.861
bin	16	16	0.054	0.356	0.579	0.787	0.054	0.113	0.132	0.011	0.832	0.795	0.316	0.280	0.618	0.583	0.172	0.363	0.898	0.233	0.109	0.439	0.398	0.283	0.317	0.390	0.376	0.354	0.366	0.331	0.138	0.425	0.555	0.016	0.007	0.053	0.638	0.730	0.368	0.800
bin	8	8	0.034	0.376	0.549	0.704	0.044	0.114	0.092	0.008	0.829	0.833	0.282	0.267	0.593	0.583	0.180	0.362	0.847	0.234	-0.018	0.246	0.281	0.136	0.201	0.251	0.199	0.204	0.180	0.323	0.072	0.417	0.495	0.000	0.000	0.005	0.451	0.318	0.093	0.597

Table 12: Relative performance for mxbai-embed-large-v1 on all tasks. Table 2 serves as a legend.

q	m	req. bits	Average	Average clustering	Average sts	Average pairclass	Average retrieval	Average rerank	Average summ	Average all
f32	1024	32768	0.751	0.477	0.847	0.872	0.482	0.510	0.327	0.662
f32	512	16384	0.741	0.475	0.845	0.870	0.476	0.503	0.316	0.658
f32	256	8192	0.728	0.461	0.842	0.866	0.447	0.500	0.308	0.647
f32	128	4096	0.703	0.443	0.834	0.859	0.404	0.492	0.301	0.630
f32	64	2048	0.658	0.404	0.814	0.842	0.329	0.471	0.302	0.596
f32	32	1024	0.590	0.364	0.785	0.811	0.217	0.450	0.285	0.551
f32	16	512	0.487	0.313	0.749	0.743	0.098	0.415	0.278	0.488
f32	8	256	0.384	0.273	0.666	0.604	0.029	0.375	0.265	0.415
int	1024	8192	0.718	0.478	0.841	0.872	0.480	0.503	0.321	0.653
int	512	4096	0.706	0.472	0.839	0.871	0.471	0.498	0.313	0.647
int	256	2048	0.692	0.460	0.836	0.866	0.446	0.496	0.301	0.637
int	128	1024	0.657	0.441	0.829	0.860	0.399	0.491	0.292	0.618
int	64	512	0.591	0.401	0.808	0.843	0.323	0.469	0.295	0.579
int	32	256	0.497	0.361	0.775	0.813	0.207	0.445	0.286	0.527
int	16	128	0.375	0.308	0.728	0.741	0.092	0.405	0.263	0.456
int	8	64	0.328	0.272	0.640	0.614	0.027	0.363	0.255	0.395
bin	1024	1024	0.595	0.378	0.788	0.832	0.245	0.448	0.311	0.561
bin	512	512	0.491	0.315	0.748	0.794	0.139	0.415	0.293	0.497
bin	256	256	0.380	0.281	0.682	0.722	0.062	0.387	0.282	0.433
bin	128	128	0.305	0.258	0.567	0.594	0.027	0.354	0.288	0.366
bin	64	64	0.259	0.248	0.439	0.452	0.019	0.324	0.314	0.306
bin	32	32	0.210	0.245	0.326	0.366	0.011	0.310	0.281	0.256
bin	16	16	0.179	0.244	0.284	0.315	0.011	0.285	0.262	0.232
bin	8	8	0.162	0.241	0.167	0.275	0.001	0.149	0.195	0.180

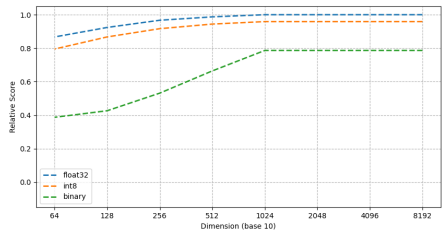
Table 13: Performance for mxbai-embed-large-v1, averaged per category. Table 2 serves as a legend.

q	m	req. bits	Average Relative classification	Average Relative clustering	Average Relative sts	Average Relative pairclass	Average Relative retrieval	Average Relative rerank	Average Relative summ	Average Relative all
f32	1024	32768	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
f32	512	16384	0.987	0.998	0.998	0.998	0.986	0.989	0.968	0.993
f32	256	8192	0.968	0.967	0.995	0.993	0.923	0.978	0.943	0.974
f32	128	4096	0.933	0.931	0.985	0.985	0.827	0.960	0.919	0.944
f32	64	2048	0.871	0.850	0.962	0.965	0.669	0.914	0.924	0.886
f32	32	1024	0.783	0.770	0.928	0.929	0.442	0.871	0.871	0.812
f32	16	512	0.652	0.662	0.886	0.851	0.199	0.812	0.850	0.714
f32	8	256	0.525	0.574	0.790	0.699	0.060	0.738	0.809	0.609
int	1024	8192	0.955	1.002	0.994	1.000	0.996	0.986	0.982	0.988
int	512	4096	0.938	0.991	0.991	0.998	0.975	0.978	0.958	0.977
int	256	2048	0.920	0.965	0.988	0.993	0.921	0.972	0.921	0.960
int	128	1024	0.872	0.928	0.980	0.985	0.820	0.960	0.893	0.927
int	64	512	0.782	0.844	0.954	0.966	0.660	0.916	0.904	0.862
int	32	256	0.661	0.763	0.916	0.931	0.422	0.869	0.875	0.779
int	16	128	0.510	0.652	0.861	0.848	0.182	0.796	0.805	0.671
int	8	64	0.453	0.570	0.759	0.710	0.056	0.718	0.780	0.583
bin	1024	1024	0.786	0.793	0.931	0.953	0.487	0.876	0.952	0.827
bin	512	512	0.654	0.664	0.884	0.909	0.274	0.814	0.897	0.726
bin	256	256	0.512	0.592	0.806	0.826	0.125	0.760	0.863	0.634
bin	128	128	0.424	0.540	0.672	0.685	0.056	0.704	0.882	0.545
bin	64	64	0.365	0.519	0.521	0.527	0.042	0.648	0.960	0.472
bin	32	32	0.302	0.512	0.387	0.430	0.025	0.623	0.861	0.408
bin	16	16	0.261	0.509	0.336	0.373	0.025	0.579	0.800	0.376
bin	8	8	0.240	0.501	0.200	0.328	0.002	0.287	0.597	0.299

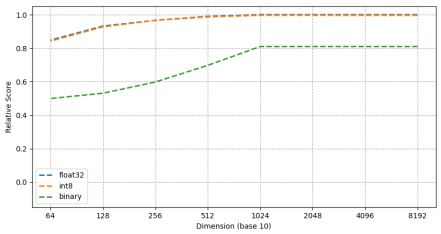
Table 14: Relative performance for mxbai-embed-large-v1, averaged per category. Table 2 serves as a legend.

D. stella_en_400M_v5

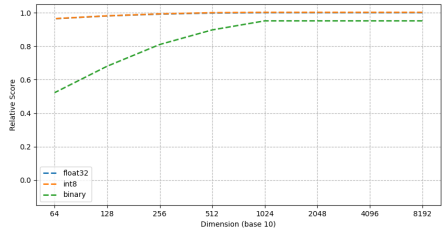
This section contains additional figures and tables for the Stella model.



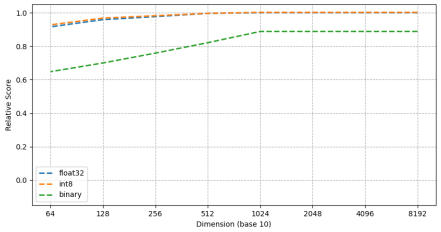
(a) Classification



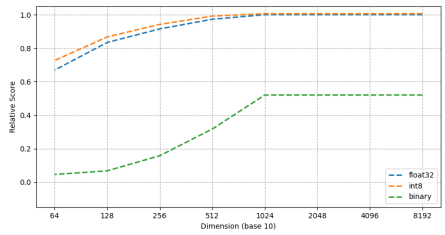
(b) Clustering



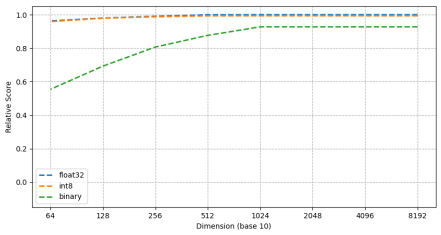
(c) Pair Classification



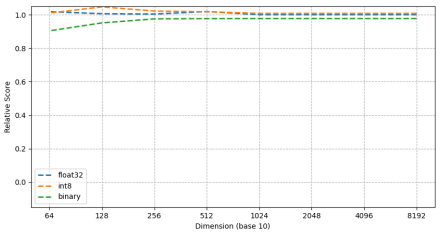
(d) Re-Ranking



(e) Retrieval

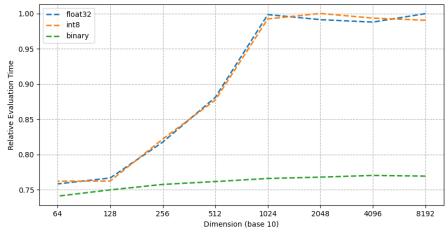


(f) Semantic Textual Similarity

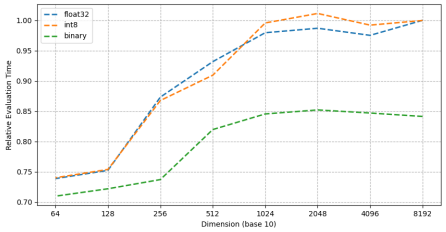


(g) Summarization

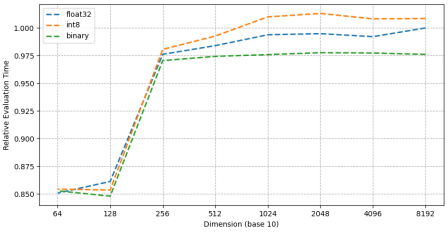
Figure 10: Relative performance of the STELLA model for each task category in the MTEB. The x-axis of each subfigure represents the embedding size while the y-axis represents the relative performance. For each task the reference point is the performance of the float32 embeddings at the full embedding size. Blue: float32, Orange: int8, Green: binary.



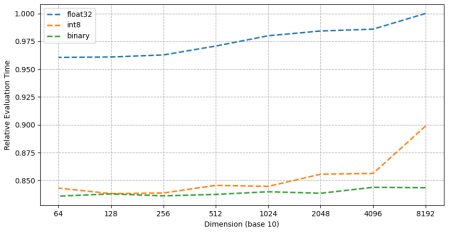
(a) Classification



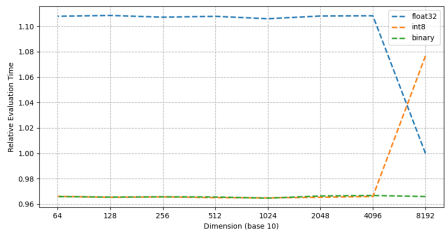
(b) Clustering



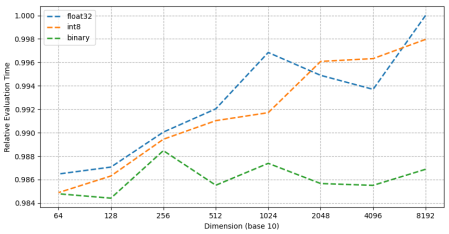
(c) Pair Classification



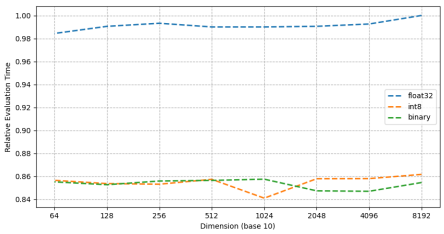
(d) Re-Ranking



(e) Retrieval

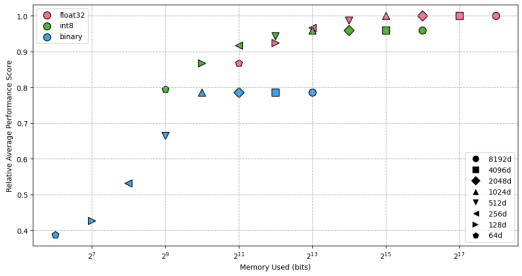


(f) Semantic Textual Similarity

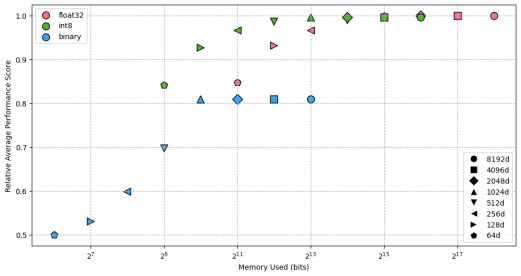


(g) Summarization

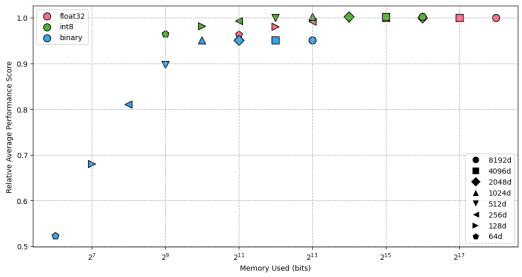
Figure 11: Relative evaluation time of the STELLA model for each task category in the MTEB. The x-axis of each subfigure represents the embedding size while the y-axis represents the relative evaluation time. For each task the reference point is the evaluation time of the float32 embeddings at the full embedding size. Blue: float32, Orange: int8, Green: binary.



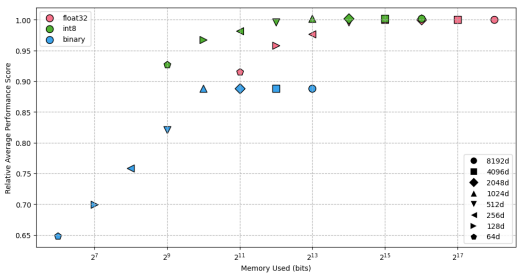
(a) Classification



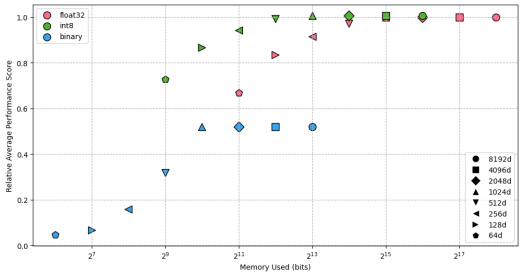
(b) Clustering



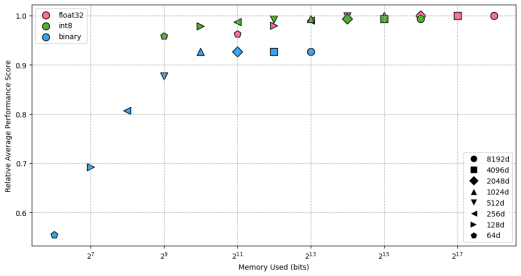
(c) Pair Classification



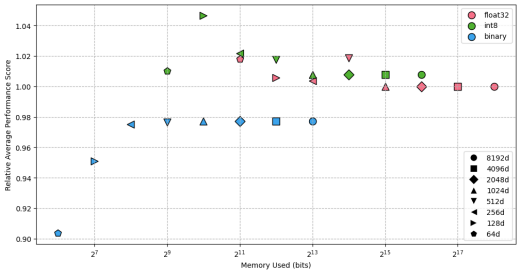
(d) Re-Ranking



(e) Retrieval



(f) Semantic Textual Similarity



(g) Summarization

Figure 12: Relative accuracy compute trade-off of the STELLA model, averaged over all selected MTEB tasks within each category. The x-axis represents memory consumption (log scale) and the y-axis represents relative performance (averaged over tasks within the category). Reference point: float32 embeddings at full size.

q	m	CLA 1	CLA 2	CLA 3	CLA 4	CLA 5	CLA 6	CLA 7	CLA 8	CLU 1	CLU 2	CLU 3	CLU 4	CLU 5	CLU 6	CLU 7	CLU 8	CLU 9	CLU 10	STS 1	STS 2	STS 3	STS 4	STS 5	STS 6	STS 7	STS 8	STS 9	STS 10	PCL 1	PCL 2	PCL 3	RET 1	RET 2	RET 3	RER 1	RER 2	RER 3	SUM 1
f32	8192	68.87	19.61	26.83	10.00	45.49	26.83	19.20	73.21	13.70	9.45	203.77	19.37	163.82	16.57	178.64	171.79	219.06	11.83	2.13	70.07	27.63	11.22	29.00	24.27	10.62	11.36	1.79	38.50	49.42	72.46	296.81	529.52	731.93	312.82	35.43	339.23	350.92	52.36
f32	4096	66.67	19.92	26.79	9.69	43.97	26.94	18.93	72.99	12.40	7.54	203.48	19.04	166.01	16.48	188.83	175.55	217.73	11.67	2.17	70.09	27.56	11.27	29.12	24.01	10.51	11.23	1.71	38.07	48.92	71.51	296.74	586.85	816.29	344.50	34.79	331.49	350.35	51.97
f32	2048	66.89	19.83	26.77	9.72	44.14	26.98	19.45	72.56	11.78	7.55	203.81	19.47	167.52	17.52	189.60	176.49	221.25	12.14	2.19	70.13	27.57	11.25	29.09	23.94	10.49	11.19	1.73	38.06	49.41	71.57	295.93	587.52	816.11	344.02	34.84	329.05	350.70	51.87
f32	1024	68.45	19.89	26.79	9.76	44.95	27.02	19.12	74.36	11.91	7.60	203.35	19.43	167.14	16.88	189.22	175.62	219.14	11.83	2.21	70.14	27.59	11.26	28.97	23.93	10.54	11.29	1.72	38.35	49.38	71.41	295.88	586.12	814.61	343.47	34.84	324.32	351.03	51.84
f32	512	60.00	19.01	26.68	9.85	38.83	16.10	18.30	60.24	10.46	6.57	203.08	18.28	165.17	15.47	187.93	173.07	213.95	11.13	2.17	70.03	27.43	11.24	28.88	23.78	10.44	11.30	1.72	38.22	48.11	71.23	295.48	587.22	816.29	343.89	34.94	313.19	351.92	51.84
f32	256	55.69	18.79	26.42	9.82	26.74	15.12	17.54	54.37	8.74	3.76	201.91	17.88	163.87	14.98	185.89	170.20	210.63	10.48	2.15	69.65	27.44	11.18	29.01	23.97	10.49	11.27	1.69	38.28	47.05	71.17	295.17	587.46	815.04	343.64	34.86	306.45	351.22	52.01
f32	128	44.21	18.53	26.42	9.76	25.42	14.73	17.45	41.76	6.67	2.66	183.28	14.80	149.70	12.37	163.87	149.24	189.31	9.24	2.11	69.20	27.56	11.15	28.84	23.94	10.55	11.30	1.69	38.10	42.30	61.98	258.96	587.22	816.54	344.42	34.95	303.29	351.63	51.86
f32	64	43.37	18.27	26.11	9.96	24.67	14.68	17.21	40.37	7.08	2.16	182.62	14.61	149.90	12.73	161.90	147.39	187.57	8.13	2.07	69.03	27.59	11.08	28.97	24.13	10.53	11.27	1.70	38.21	40.74	62.04	258.66	587.93	816.07	343.61	34.96	304.09	350.32	51.54
int	8192	70.14	19.04	26.74	9.94	46.23	26.53	17.42	75.61	13.40	8.94	204.93	19.17	165.54	16.27	187.74	173.88	214.92	12.32	2.18	71.14	27.57	11.32	29.17	24.00	10.51	11.26	1.73	38.14	50.77	72.22	297.34	566.43	794.73	336.03	34.69	290.25	302.42	45.12
int	4096	68.68	19.26	26.80	9.81	46.28	26.84	17.99	75.77	13.29	8.49	203.59	19.11	165.99	16.21	188.49	173.50	214.11	12.22	2.20	70.88	27.55	11.29	29.08	24.05	10.49	11.26	1.69	38.38	50.59	72.32	297.75	511.30	710.45	300.87	30.28	289.15	302.42	44.93
int	2048	71.36	19.59	26.90	9.70	46.41	26.83	17.97	76.04	13.61	9.02	204.04	19.94	166.15	17.24	188.31	173.71	216.49	12.15	2.18	70.69	27.57	11.29	29.05	24.03	10.53	11.28	1.71	38.23	51.43	72.38	296.75	510.33	710.13	301.00	30.13	289.56	302.80	44.92
int	1024	69.98	19.43	26.40	9.70	45.75	26.85	18.13	75.31	13.28	8.65	203.18	19.42	166.12	16.42	188.59	173.95	215.05	12.03	2.16	70.38	27.50	11.19	29.00	24.00	10.53	11.24	1.69	38.18	51.02	72.23	297.11	509.71	710.16	300.89	30.12	286.58	294.46	44.04
int	512	60.75	18.79	26.31	9.88	39.17	16.07	17.61	60.99	9.13	5.81	202.90	18.37	164.81	15.12	187.49	171.82	210.78	11.10	2.16	70.04	27.41	11.07	28.94	23.99	10.46	11.24	1.73	37.98	48.94	71.60	296.73	511.02	709.68	300.51	30.17	279.57	302.15	44.89
int	256	56.08	18.49	26.25	10.12	27.36	15.32	17.49	54.61	7.45	4.53	201.90	17.63	163.53	14.41	185.39	168.99	208.35	10.79	2.13	69.72	27.53	11.28	29.08	23.88	10.48	11.21	1.69	38.13	47.78	70.98	295.48	511.58	710.03	300.58	30.21	272.72	301.61	44.67
int	128	44.23	18.34	25.96	9.81	25.36	14.72	17.23	41.71	7.77	2.75	182.84	15.72	148.83	12.08	162.21	147.50	188.06	8.39	2.09	69.43	27.50	11.10	29.01	24.07	10.55	11.23	1.68	38.17	41.35	61.81	258.48	511.47	709.65	300.47	30.12	272.48	302.15	44.70
int	64	43.45	18.27	26.19	10.02	24.85	14.92	17.35	40.37	7.28	2.22	183.14	14.62	148.45	11.62	162.38	148.71	187.64	8.79	2.08	69.08	27.46	11.12	28.79	24.06	10.53	11.18	1.71	38.02	41.09	62.25	258.94	511.55	709.91	301.06	30.17	277.02	302.24	44.85
bin	8192	45.49	18.35	26.00	9.95	25.19	15.10	17.38	41.96	7.70	2.80	201.38	17.29	163.27	13.93	185.42	168.54	207.13	10.32	2.10	69.35	27.63	11.12	28.83	24.06	10.53	11.16	1.71	38.06	47.11	71.06	295.18	511.19	710.28	300.98	30.36	276.14	301.55	44.75
bin	4096	44.41	18.38	26.04	10.13	25.26	15.15	17.39	41.84	8.02	2.81	201.88	17.36	163.02	14.16	185.78	169.54	207.45	10.37	2.07	69.31	27.50	11.13	28.90	23.98	10.45	11.16	1.72	38.12	47.03	71.20	296.21	511.67	710.78	301.21	30.22	277.29	302.15	44.35
bin	2048	44.61	18.35	26.10	9.94	25.24	14.88	17.54	41.85	7.98	3.14	201.45	17.48	163.01	14.43	185.82	168.44	207.54	10.43	2.08	69.51	27.45	11.10	28.90	23.97	10.43	11.23	1.71	38.26	47.51	70.81	295.20	511.99	709.70	301.15	30.16	276.48	297.98	44.37
bin	1024	44.16	18.27	26.06	9.91	25.34	15.13	17.28	41.88	8.18	2.80	201.62	17.29	163.39	14.07	184.98	168.17	207.37	10.31	2.09	69.34	27.48	11.10	28.90	23.93	10.45	11.20	1.74	38.28	47.13	71.01	295.08	510.44	709.11	300.70	30.14	274.27	301.86	44.90
bin	512	43.21	18.48	26.36	9.87	24.77	14.59	17.57	40.36	6.06	2.10	201.96	17.26	162.69	13.74	184.97	168.38	207.11	10.25	2.09	69.13	27.54	11.11	28.94	23.93	10.45	11.17	1.71	38.18	46.94	71.16	294.22	511.18	710.02	300.74	30.21	271.81	301.24	44.85
bin	256	42.97	18.39	26.10	9.93	24.50	14.56	17.54	39.50	5.72	1.99	201.02	17.06	149.02	11.40	161.15	146.93	186.74	7.90	2.14	69.00	27.46	11.12	28.90	24.04	10.48	11.22	1.71	38.24	46.57	70.88	294.14	511.52	709.92	300.70	30.11	270.58	302.13	44.82
bin	128	42.50	17.96	25.56	10.09	24.14	14.45	17.24	39.36	6.66	1.97	182.34	14.49	148.03	11.23	161.86	146.45	185.74	8.20	2.08	69.03	27.42	11.16	28.86	24.02	10.49	11.17	1.69	38.33	40.40	61.98	258.54	511.12	709.85	300.77	30.17	271.70	302.19	44.65
bin	64	42.46	18.13	25.69	9.43	24.00	14.05	17.42	38.70	5.98	1.76	181.73	14.21	147.65	11.17	160.92	147.39	187.23	7.81	2.09	69.32	27.49	11.12	28.54	23.91	10.56	11.26	1.69	38.13	41.13	61.88	258.88	511.73	709.66	300.87	30.12	270.03	302.34	44.78

Table 15: Absolute evaluation time for stella_en_400M_v5 on all tasks. Table 2 serves as a legend.

q	m	CLA 1	CLA 2	CLA 3	CLA 4	CLA 5	CLA 6	CLA 7	CLA 8	CLU 1	CLU 2	CLU 3	CLU 4	CLU 5	CLU 6	CLU 7	CLU 8	CLU 9	CLU 10	STS 1	STS 2	STS 3	STS 4	STS 5	STS 6	STS 7	STS 8	STS 9	STS 10	PCL 1	PCL 2	PCL 3	RET 1	RET 2	RET 3	RER 1	RER 2	RER 3	SUM 1
f32	8192	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
f32	4096	0.968	1.015	0.998	0.969	0.967	1.004	0.986	0.997	0.904	0.798	0.999	0.983	1.013	0.995	1.057	1.022	0.994	0.987	1.020	1.000	0.997	1.004	1.004	0.989	0.990	0.988	0.955	0.989	0.990	0.987	1.000	1.108	1.115	1.101	0.982	0.977	0.998	0.993
f32	2048	0.971	1.011	0.998	0.972	0.970	1.006	1.013	0.991	0.860	0.799	1.000	1.005	1.023	1.057	1.061	1.027	1.010	1.027	1.027	1.001	0.998	1.003	1.003	0.986	0.987	0.985	0.970	0.989	1.000	0.988	0.997	1.109	1.115	1.100	0.983	0.970	0.999	0.991
f32	1024	0.994	1.014	0.999	0.976	0.988	1.007	0.996	1.016	0.869	0.804	0.998	1.003	1.020	1.018	1.059	1.022	1.000	1.000	1.037	1.001	0.998	1.003	0.999	0.986	0.993	0.994	0.962	0.996	0.999	0.985	0.997	1.107	1.113	1.098	0.984	0.956	1.000	0.990
f32	512	0.871	0.969	0.995	0.985	0.854	0.600	0.953	0.823	0.763	0.695	0.997	0.944	1.008	0.933	1.052	1.007	0.977	0.941	1.017	0.999	0.993	1.001	0.996	0.980	0.983	0.994	0.965	0.993	0.974	0.983	0.996	1.109	1.115	1.099	0.986	0.923	1.003	0.990
f32	256	0.809	0.958	0.985	0.982	0.588	0.564	0.914	0.743	0.638	0.398	0.991	0.923	1.000	0.904	1.041	0.991	0.962	0.886	1.008	0.994	0.993	0.996	1.001	0.988	0.987	0.992	0.949	0.994	0.952	0.982	0.995	1.109	1.114	1.099	0.984	0.903	1.001	0.993
f32	128	0.642	0.945	0.985	0.976	0.559	0.549	0.909	0.570	0.487	0.281	0.899	0.764	0.914	0.747	0.917	0.869	0.864	0.781	0.989	0.988	0.997	0.994	0.995	0.986	0.993	0.994	0.946	0.990	0.856	0.855	0.873	1.109	1.116	1.101	0.987	0.894	1.002	0.991
f32	64	0.630	0.931	0.973	0.996	0.542	0.547	0.896	0.551	0.517	0.228	0.896	0.754	0.915	0.768	0.906	0.858	0.856	0.687	0.972	0.985	0.998	0.988	0.999	0.994	0.991	0.992	0.953	0.993	0.824	0.856	0.872	1.110	1.115	1.098	0.987	0.896	0.998	0.984
int	8192	1.018	0.971	0.997	0.994	1.016	0.989	0.907	1.033	0.978	0.946	1.006	0.990	1.010	0.982	1.051	1.012	0.981	1.041	1.021	1.015	0.998	1.008	1.006	0.989	0.989	0.991	0.971	0.991	1.027	0.997	1.002	1.070	1.086	1.074	0.979	0.856	0.862	0.862
int	4096	0.997	0.982	0.999	0.982	1.017	1.000	0.937	1.035	0.970	0.898	0.999	0.986	1.013	0.978	1.055	1.010	0.977	1.033	1.033	1.012	0.997	1.006	1.003	0.991	0.987	0.991	0.947	0.997	1.024	0.998	1.003	0.966	0.971	0.962	0.855	0.852	0.862	0.858
int	2048	1.036	0.999	1.003	0.971	1.020	1.000	0.936	1.039	0.993	0.954	1.001	1.029	1.014	1.040	1.054	1.011	0.988	1.028	1.024	1.009	0.998	1.006	1.002	0.990	0.991	0.992	0.957	0.993	1.041	0.999	1.000	0.964	0.970	0.962	0.850	0.854	0.863	0.858
int	1024	1.016	0.991	0.984	0.970	1.006	1.001	0.944	1.029	0.969	0.915	0.997	1.003	1.014	0.991	1.056	1.013	0.982	1.017	1.014	1.004	0.995	0.997	1.000	0.989	0.991	0.989	0.946	0.992	1.032	0.997	1.001	0.963	0.970	0.962	0.850	0.845	0.839	0.841
int	512	0.882	0.958	0.981	0.988	0.861	0.599	0.917	0.833	0.666	0.615	0.996	0.948	1.006	0.912	1.050	1.000	0.962	0.939	1.014	1.000	0.992	0.986	0.998	0.988	0.985	0.989	0.972	0.987	0.990	0.988	1.000	0.965	0.970	0.961	0.852	0.824	0.861	0.857
int	256	0.814	0.943	0.978	1.012	0.602	0.571	0.911	0.746	0.544	0.479	0.991	0.910	0.998	0.870	1.038	0.984	0.951	0.912	1.000	0.995	0.996	1.005	1.003	0.984	0.987	0.987	0.948	0.991	0.967	0.980	0.996	0.966	0.970	0.961	0.853	0.804	0.860	0.853
int	128	0.642	0.935	0.968	0.981	0.557	0.548	0.897	0.570	0.567	0.291	0.897	0.812	0.908	0.729	0.908	0.859	0.859	0.709	0.982	0.991	0.995	0.989	1.000	0.992	0.993	0.989	0.941	0.992	0.837	0.853	0.871	0.966	0.970	0.961	0.850	0.803	0.861	0.854
int	64	0.631	0.931	0.976	1.002	0.546	0.556	0.904	0.551	0.531	0.235	0.899	0.755	0.906	0.702	0.909	0.866	0.857	0.743	0.975	0.986	0.994	0.991	0.993	0.991	0.991	0.984	0.957	0.988	0.831	0.859	0.872	0.966	0.970	0.962	0.851	0.817	0.861	0.857
bin	8192	0.660	0.935	0.969	0.995	0.554	0.563	0.905	0.573	0.562	0.296	0.988	0.892	0.997	0.841	1.038	0.981	0.946	0.872	0.983	0.990	1.000	0.991	0.994	0.991	0.991	0.982	0.958	0.989	0.953	0.981	0.995	0.965	0.970	0.962	0.857	0.814	0.859	0.855
bin	4096	0.645	0.937	0.971	1.013	0.555	0.565	0.906	0.572	0.586	0.297	0.991	0.896	0.995	0.855	1.040	0.987	0.947	0.877	0.972	0.989	0.995	0.992	0.997	0.988	0.983	0.982	0.966	0.990	0.952	0.983	0.998	0.966	0.971	0.963	0.853	0.817	0.861	0.847
bin	2048	0.648	0.935	0.973	0.994	0.555	0.554	0.913	0.572	0.582	0.332	0.989	0.902	0.995	0.871	1.040	0.981	0.947	0.881	0.977	0.992	0.993	0.989	0.997	0.987	0.982	0.988	0.957	0.994	0.961	0.977	0.995	0.967	0.970	0.963	0.851	0.815	0.849	0.847
bin	1024	0.641	0.932	0.972	0.991	0.557	0.564	0.900	0.572	0.597	0.297	0.989	0.892	0.997	0.849	1.036	0.979	0.947	0.871	0.978	0.990	0.995	0.989	0.997	0.986	0.984	0.986	0.975	0.994	0.954	0.980	0.994	0.964	0.969	0.961	0.851	0.808	0.860	0.858
bin	512	0.627	0.942	0.982	0.987	0.544	0.544	0.915	0.551	0.442	0.222	0.991	0.891	0.993	0.829	1.036	0.980	0.946	0.867	0.979	0.987	0.997	0.990	0.998	0.986	0.984	0.983	0.960	0.992	0.950	0.982	0.991	0.965	0.970	0.961	0.853	0.801	0.858	0.857
bin	256	0.624	0.938	0.973	0.993	0.539	0.542	0.913	0.540	0.418	0.210	0.987	0.881	0.910	0.688	0.902	0.855	0.853	0.668	1.003	0.985	0.994	0.991	0.997	0.990	0.986	0.988	0.958	0.994	0.942	0.978	0.991	0.966	0.970	0.961	0.850	0.798	0.861	0.856
bin	128	0.617	0.915	0.953	1.010	0.531	0.538	0.898	0.538	0.486	0.209	0.895	0.748	0.904	0.678	0.906	0.853	0.848	0.693	0.976	0.985	0.992	0.994	0.995	0.989	0.987	0.983	0.946	0.996	0.818	0.855	0.871	0.965	0.970	0.962	0.852	0.801	0.861	0.853
bin	64	0.617	0.924	0.958	0.943	0.527	0.523	0.907	0.529	0.436	0.186	0.892	0.733	0.901	0.674	0.901	0.858	0.855	0.660	0.981	0.989	0.995	0.991	0.984	0.985	0.994	0.991	0.947	0.991	0.832	0.854	0.872	0.966	0.970	0.962	0.850	0.796	0.862	0.855

Table 16: Relative evaluation time for stella_en_400M_v5 on all tasks. Table 2 serves as a legend.

q	m	Total Time	Average All Tasks	Average classification	Average clustering	Average sts	Average pairclass	Average retrieval	Average rerank	Average summ
f32	8192	4295.55	113.04	36.26	100.80	22.66	139.56	524.76	241.86	52.36
f32	4096	4463.78	117.47	35.74	101.87	22.57	139.06	582.55	238.88	51.97
f32	2048	4470.14	117.64	35.79	102.71	22.56	138.97	582.55	238.20	51.87
f32	1024	4461.36	117.40	36.29	102.21	22.60	138.89	581.40	236.73	51.84
f32	512	4393.43	115.62	31.13	100.51	22.52	138.27	582.46	233.35	51.84
f32	256	4342.03	114.26	28.06	98.83	22.51	137.80	582.05	230.84	52.01
f32	128	4156.98	109.39	24.78	88.11	22.44	121.08	582.73	229.96	51.86
f32	64	4143.28	109.03	24.33	87.41	22.46	120.48	582.54	229.79	51.54
int	8192	4325.80	113.84	36.46	101.71	22.70	140.11	565.73	209.12	45.12
int	4096	4143.34	109.04	36.43	101.50	22.69	140.22	507.54	207.28	44.93
int	2048	4151.41	109.25	36.85	102.07	22.65	140.19	507.15	207.49	44.92
int	1024	4130.42	108.70	36.44	101.67	22.59	140.12	506.92	203.72	44.04
int	512	4067.18	107.03	31.19	99.73	22.50	139.09	507.07	203.96	44.89
int	256	4019.45	105.78	28.21	98.30	22.51	138.08	507.40	201.51	44.67
int	128	3831.03	100.82	24.67	87.61	22.48	120.55	507.20	201.58	44.70
int	64	3833.36	100.88	24.43	87.48	22.40	120.76	507.51	203.14	44.85
bin	8192	3990.36	105.01	24.93	97.78	22.45	137.78	507.48	202.69	44.75
bin	4096	3995.47	105.14	24.83	98.04	22.44	138.15	507.88	203.22	44.35
bin	2048	3988.21	104.95	24.81	97.97	22.46	137.84	507.61	201.54	44.37
bin	1024	3985.40	104.88	24.76	97.82	22.45	137.74	506.75	202.09	44.90
bin	512	3976.34	104.64	24.40	97.45	22.43	137.44	507.31	201.09	44.85
bin	256	3888.11	102.32	24.19	88.89	22.43	137.20	507.38	200.94	44.82
bin	128	3813.89	100.37	23.91	86.70	22.42	120.31	507.25	201.36	44.65
bin	64	3811.24	100.30	23.73	86.58	22.41	120.63	507.42	200.83	44.78

Table 17: Evaluation time for stella_en_400M_v5, averaged per category. Table 2 serves as a legend.

q	m	Average Relative classification	Average Relative clustering	Average Relative sts	Average Relative pairclass	Average Relative retrieval	Average Relative rerank	Average Relative summ	Average Relative all
f32	8192	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
f32	4096	0.988	0.975	0.994	0.992	1.108	0.986	0.993	0.996
f32	2048	0.992	0.987	0.995	0.995	1.108	0.984	0.991	1.000
f32	1024	0.999	0.980	0.997	0.994	1.106	0.980	0.990	1.000
f32	512	0.881	0.932	0.992	0.984	1.108	0.971	0.990	0.960
f32	256	0.818	0.873	0.990	0.976	1.107	0.963	0.993	0.929
f32	128	0.767	0.752	0.987	0.861	1.109	0.961	0.991	0.877
f32	64	0.758	0.739	0.987	0.851	1.108	0.961	0.984	0.870
int	8192	0.991	1.000	0.998	1.009	1.077	0.899	0.862	0.993
int	4096	0.994	0.992	0.996	1.008	0.966	0.856	0.858	0.979
int	2048	1.000	1.011	0.996	1.013	0.965	0.856	0.858	0.985
int	1024	0.993	0.996	0.992	1.010	0.965	0.845	0.841	0.977
int	512	0.877	0.909	0.991	0.993	0.965	0.846	0.857	0.929
int	256	0.822	0.868	0.989	0.981	0.966	0.839	0.853	0.904
int	128	0.762	0.754	0.986	0.854	0.965	0.838	0.854	0.851
int	64	0.762	0.740	0.985	0.854	0.966	0.843	0.857	0.847
bin	8192	0.769	0.841	0.987	0.976	0.966	0.844	0.855	0.885
bin	4096	0.770	0.847	0.986	0.977	0.967	0.844	0.847	0.887
bin	2048	0.768	0.852	0.986	0.978	0.966	0.839	0.847	0.887
bin	1024	0.766	0.845	0.987	0.976	0.965	0.840	0.858	0.886
bin	512	0.762	0.820	0.986	0.974	0.966	0.838	0.857	0.877
bin	256	0.758	0.737	0.989	0.971	0.966	0.836	0.856	0.855
bin	128	0.750	0.722	0.984	0.848	0.966	0.838	0.853	0.839
bin	64	0.741	0.710	0.985	0.853	0.966	0.836	0.855	0.834

Table 18: Relative evaluation time for stella_en_400M_v5, averaged per category. Table 2 serves as a legend.

q	m	req. bits	CLA 1	CLA 2	CLA 3	CLA 4	CLA 5	CLA 6	CLA 7	CLA 8	CLU 1	CLU 2	CLU 3	CLU 4	CLU 5	CLU 6	CLU 7	CLU 8	CLU 9	CLU 10	STS 1	STS 2	STS 3	STS 4	STS 5	STS 6	STS 7	STS 8	STS 9	STS 10	PCL 1	PCL 2	PCL 3	RET 1	RET 2	RET 3	RER 1	RER 2	RER 3	SUM 1
f32	8192	262144	0.876	0.565	0.607	0.742	0.796	0.835	0.965	0.837	0.628	0.614	0.438	0.411	0.395	0.381	0.590	0.589	0.430	0.521	0.868	0.804	0.758	0.843	0.807	0.872	0.850	0.861	0.901	0.698	0.939	0.767	0.871	0.564	0.454	0.412	0.621	0.324	0.509	0.306
f32	4096	131072	0.876	0.565	0.607	0.742	0.796	0.835	0.965	0.837	0.628	0.614	0.438	0.411	0.395	0.381	0.590	0.589	0.430	0.521	0.868	0.804	0.758	0.843	0.807	0.872	0.850	0.861	0.901	0.698	0.939	0.767	0.871	0.564	0.454	0.412	0.621	0.324	0.509	0.306
f32	2048	65536	0.876	0.565	0.607	0.742	0.796	0.835	0.965	0.837	0.628	0.614	0.438	0.411	0.395	0.381	0.590	0.589	0.430	0.521	0.868	0.804	0.758	0.843	0.807	0.872	0.850	0.861	0.901	0.698	0.939	0.767	0.871	0.564	0.454	0.412	0.621	0.324	0.509	0.306
f32	1024	32768	0.876	0.565	0.607	0.742	0.796	0.835	0.965	0.837	0.628	0.614	0.438	0.411	0.395	0.381	0.590	0.589	0.430	0.521	0.868	0.804	0.758	0.843	0.807	0.872	0.850	0.861	0.901	0.698	0.939	0.767	0.871	0.564	0.454	0.412	0.621	0.324	0.509	0.306
f32	512	16384	0.875	0.546	0.594	0.729	0.792	0.828	0.962	0.827	0.625	0.614	0.434	0.406	0.389	0.380	0.570	0.580	0.436	0.512	0.876	0.802	0.754	0.845	0.806	0.869	0.848	0.859	0.899	0.700	0.935	0.766	0.870	0.565	0.433	0.397	0.621	0.322	0.507	0.312
f32	256	8192	0.869	0.521	0.574	0.713	0.779	0.818	0.956	0.809	0.611	0.588	0.417	0.397	0.384	0.375	0.543	0.569	0.433	0.504	0.859	0.797	0.744	0.835	0.801	0.864	0.842	0.852	0.895	0.695	0.928	0.760	0.867	0.543	0.410	0.363	0.617	0.311	0.498	0.307
f32	128	4096	0.856	0.475	0.539	0.672	0.750	0.791	0.937	0.770	0.620	0.599	0.403	0.383	0.380	0.366	0.490	0.524	0.427	0.456	0.836	0.790	0.739	0.828	0.791	0.847	0.841	0.848	0.882	0.693	0.918	0.749	0.861	0.513	0.377	0.314	0.601	0.309	0.485	0.308
f32	64	2048	0.832	0.438	0.504	0.632	0.701	0.737	0.897	0.702	0.601	0.582	0.360	0.337	0.363	0.349	0.394	0.445	0.411	0.376	0.835	0.777	0.726	0.810	0.772	0.836	0.823	0.826	0.860	0.688	0.900	0.734	0.851	0.447	0.297	0.231	0.589	0.283	0.471	0.311
int	8192	65536	0.867	0.552	0.592	0.643	0.765	0.808	0.965	0.782	0.613	0.611	0.430	0.413	0.392	0.376	0.588	0.588	0.436	0.532	0.845	0.802	0.740	0.854	0.811	0.872	0.837	0.855	0.903	0.690	0.943	0.768	0.872	0.581	0.450	0.411	0.619	0.325	0.513	0.308
int	4096	32768	0.867	0.552	0.592	0.643	0.765	0.808	0.965	0.782	0.613	0.611	0.430	0.413	0.392	0.376	0.588	0.588	0.436	0.532	0.845	0.802	0.740	0.854	0.811	0.872	0.837	0.855	0.903	0.690	0.943	0.768	0.872	0.581	0.450	0.411	0.619	0.325	0.513	0.308
int	2048	16384	0.867	0.552	0.592	0.643	0.765	0.808	0.965	0.782	0.613	0.611	0.430	0.413	0.392	0.376	0.588	0.588	0.436	0.532	0.845	0.802	0.740	0.854	0.811	0.872	0.837	0.855	0.903	0.690	0.943	0.768	0.872	0.581	0.450	0.411	0.619	0.325	0.513	0.308
int	1024	8192	0.867	0.552	0.592	0.643	0.765	0.808	0.965	0.782	0.613	0.611	0.430	0.413	0.392	0.376	0.588	0.588	0.436	0.532	0.845	0.802	0.740	0.854	0.811	0.872	0.837	0.855	0.903	0.690	0.943	0.768	0.872	0.581	0.450	0.411	0.619	0.325	0.513	0.308
int	512	4096	0.864	0.532	0.574	0.639	0.758	0.800	0.962	0.763	0.618	0.604	0.425	0.405	0.392	0.380	0.574	0.581	0.438	0.511	0.849	0.800	0.740	0.855	0.808	0.868	0.835	0.852	0.902	0.696	0.940	0.766	0.871	0.583	0.435	0.405	0.611	0.323	0.512	0.311
int	256	2048	0.857	0.494	0.554	0.613	0.742	0.791	0.953	0.732	0.615	0.595	0.414	0.398	0.382	0.375	0.546	0.566	0.432	0.502	0.844	0.797	0.733	0.848	0.800	0.864	0.831	0.849	0.898	0.695	0.930	0.760	0.869	0.568	0.418	0.371	0.606	0.317	0.505	0.313
int	128	1024	0.835	0.424	0.513	0.626	0.702	0.750	0.922	0.677	0.613	0.594	0.404	0.384	0.375	0.368	0.496	0.521	0.421	0.445	0.838	0.792	0.718	0.839	0.794	0.857	0.828	0.844	0.891	0.690	0.918	0.749	0.863	0.539	0.372	0.341	0.604	0.314	0.490	0.320
int	64	512	0.799	0.375	0.472	0.605	0.636	0.680	0.855	0.579	0.582	0.570	0.364	0.336	0.359	0.346	0.392	0.448	0.411	0.372	0.813	0.779	0.710	0.821	0.776	0.840	0.807	0.817	0.863	0.690	0.901	0.733	0.852	0.463	0.299	0.289	0.586	0.295	0.474	0.309
bin	8192	8192	0.775	0.350	0.461	0.604	0.631	0.666	0.880	0.596	0.580	0.564	0.350	0.320	0.344	0.332	0.386	0.399	0.380	0.377	0.737	0.763	0.685	0.796	0.748	0.817	0.811	0.809	0.832	0.659	0.901	0.713	0.841	0.369	0.207	0.186	0.563	0.292	0.436	0.299
bin	4096	4096	0.775	0.350	0.461	0.604	0.631	0.666	0.880	0.596	0.580	0.564	0.350	0.320	0.344	0.332	0.386	0.399	0.380	0.377	0.737	0.763	0.685	0.796	0.748	0.817	0.811	0.809	0.832	0.659	0.901	0.713	0.841	0.369	0.207	0.186	0.563	0.292	0.436	0.299
bin	2048	2048	0.775	0.350	0.461	0.604	0.631	0.666	0.880	0.596	0.580	0.564	0.350	0.320	0.344	0.332	0.386	0.399	0.380	0.377	0.737	0.763	0.685	0.796	0.748	0.817	0.811	0.809	0.832	0.659	0.901	0.713	0.841	0.369	0.207	0.186	0.563	0.292	0.436	0.299
bin	1024	1024	0.775	0.350	0.461	0.604	0.631	0.666	0.880	0.596	0.580	0.564	0.350	0.320	0.344	0.332	0.386	0.399	0.380	0.377	0.737	0.763	0.685	0.796	0.748	0.817	0.811	0.809	0.832	0.659	0.901	0.713	0.841	0.369	0.207	0.186	0.563	0.292	0.436	0.299
bin	512	512	0.658	0.285	0.413	0.574	0.507	0.543	0.750	0.450	0.558	0.548	0.281	0.250	0.312	0.295	0.255	0.304	0.377	0.290	0.696	0.730	0.650	0.749	0.700	0.753	0.759	0.765	0.797	0.638	0.843	0.658	0.816	0.254	0.116	0.101	0.540	0.269	0.389	0.299
bin	256	256	0.470	0.253	0.402	0.547	0.341	0.393	0.586	0.303	0.524	0.528	0.212	0.187	0.289	0.265	0.164	0.256	0.364	0.188	0.672	0.675	0.579	0.699	0.632	0.704	0.700	0.690	0.697	0.609	0.724	0.592	0.774	0.127	0.043	0.064	0.516	0.256	0.334	0.298
bin	128	128	0.266	0.251	0.418	0.542	0.208	0.252	0.417	0.209	0.513	0.506	0.155	0.138	0.249	0.239	0.121	0.228	0.364	0.150	0.439	0.580	0.489	0.614	0.538	0.626	0.618	0.612	0.646	0.551	0.520	0.516	0.710	0.050	0.022	0.027	0.480	0.247	0.287	0.291
bin	64	64	0.218	0.256	0.412	0.530	0.159	0.237	0.345	0.136	0.506	0.500	0.118	0.106	0.244	0.234	0.109	0.216	0.352	0.127	0.367	0.440	0.395	0.447	0.409	0.531	0.504	0.483	0.487	0.496	0.285	0.430	0.613	0.035	0.008	0.024	0.455	0.235	0.247	0.276

Table 19: Absolute performance for stella_en_400M_v5 on all tasks. Table 2 serves as a legend.

q	m	req. bits	CLA 1	CLA 2	CLA 3	CLA 4	CLA 5	CLA 6	CLA 7	CLA 8	CLU 1	CLU 2	CLU 3	CLU 4	CLU 5	CLU 6	CLU 7	CLU 8	CLU 9	CLU 10	STS 1	STS 2	STS 3	STS 4	STS 5	STS 6	STS 7	STS 8	STS 9	STS 10	PCL 1	PCL 2	PCL 3	RET 1	RET 2	RET 3	RER 1	RER 2	RER 3	SUM 1
f32	8192	262144	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
f32	4096	131072	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
f32	2048	65536	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
f32	1024	32768	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
f32	512	16384	0.999	0.967	0.978	0.983	0.995	0.991	0.996	0.987	0.995	1.000	0.990	0.987	0.983	0.998	0.966	0.985	1.014	0.983	1.010	0.998	0.995	1.002	1.000	0.997	0.997	0.998	0.998	1.002	0.996	0.999	0.999	1.001	0.955	0.963	0.999	0.993	0.996	1.019
f32	256	8192	0.992	0.923	0.945	0.961	0.979	0.979	0.990	0.966	0.973	0.958	0.953	0.964	0.973	0.983	0.920	0.967	1.006	0.969	0.989	0.992	0.982	0.990	0.992	0.992	0.990	0.990	0.994	0.996	0.988	0.991	0.995	0.963	0.903	0.879	0.994	0.958	0.978	1.004
f32	128	4096	0.977	0.840	0.888	0.906	0.943	0.947	0.970	0.919	0.987	0.975	0.920	0.929	0.960	0.961	0.831	0.889	0.993	0.876	0.963	0.984	0.974	0.981	0.981	0.972	0.989	0.985	0.979	0.993	0.977	0.977	0.988	0.909	0.832	0.762	0.967	0.953	0.955	1.006
f32	64	2048	0.950	0.775	0.831	0.852	0.880	0.882	0.929	0.838	0.956	0.948	0.821	0.819	0.918	0.917	0.667	0.756	0.957	0.722	0.963	0.966	0.958	0.961	0.957	0.959	0.968	0.960	0.955	0.985	0.959	0.956	0.977	0.791	0.655	0.561	0.948	0.873	0.926	1.018
int	8192	65536	0.989	0.977	0.975	0.866	0.961	0.968	1.000	0.934	0.976	0.994	0.982	1.003	0.991	0.985	0.996	0.998	1.012	1.022	0.973	0.998	0.976	1.012	1.005	1.000	0.985	0.994	1.002	0.988	1.004	1.001	1.001	1.030	0.991	0.997	0.997	1.000	1.009	1.008
int	4096	32768	0.989	0.977	0.975	0.866	0.961	0.968	1.000	0.934	0.976	0.994	0.982	1.003	0.991	0.985	0.996	0.998	1.012	1.022	0.973	0.998	0.976	1.012	1.005	1.000	0.985	0.994	1.002	0.988	1.004	1.001	1.001	1.030	0.991	0.997	0.997	1.000	1.009	1.008
int	2048	16384	0.989	0.977	0.975	0.866	0.961	0.968	1.000	0.934	0.976	0.994	0.982	1.003	0.991	0.985	0.996	0.998	1.012	1.022	0.973	0.998	0.976	1.012	1.005	1.000	0.985	0.994	1.002	0.988	1.004	1.001	1.001	1.030	0.991	0.997	0.997	1.000	1.009	1.008
int	1024	8192	0.989	0.977	0.975	0.866	0.961	0.968	1.000	0.934	0.976	0.994	0.982	1.003	0.991	0.985	0.996	0.998	1.012	1.022	0.973	0.998	0.976	1.012	1.005	1.000	0.985	0.994	1.002	0.988	1.004	1.001	1.001	1.030	0.991	0.997	0.997	1.000	1.009	1.008
int	512	4096	0.987	0.941	0.945	0.861	0.952	0.958	0.996	0.911	0.983	0.983	0.970	0.983	0.991	0.997	0.973	0.986	1.017	0.982	0.979	0.996	0.976	1.014	1.001	0.996	0.982	0.990	1.002	0.997	1.001	0.999	1.000	1.034	0.960	0.982	0.984	0.997	1.007	1.018
int	256	2048	0.979	0.874	0.912	0.826	0.933	0.948	0.987	0.874	0.979	0.969	0.946	0.967	0.967	0.983	0.926	0.961	1.004	0.964	0.972	0.992	0.967	1.006	0.991	0.992	0.977	0.986	0.997	0.996	0.991	0.991	0.997	1.006	0.921	0.899	0.976	0.976	0.993	1.022
int	128	1024	0.954	0.751	0.846	0.843	0.882	0.898	0.956	0.808	0.976	0.966	0.922	0.932	0.950	0.967	0.840	0.885	0.979	0.855	0.966	0.985	0.947	0.995	0.984	0.983	0.973	0.980	0.989	0.988	0.977	0.977	0.990	0.955	0.820	0.827	0.972	0.967	0.964	1.046
int	64	512	0.912	0.665	0.777	0.815	0.799	0.815	0.886	0.691	0.927	0.929	0.832	0.817	0.909	0.907	0.665	0.761	0.956	0.716	0.936	0.969	0.936	0.974	0.962	0.964	0.949	0.949	0.959	0.988	0.960	0.956	0.978	0.820	0.659	0.700	0.943	0.908	0.931	1.010
bin	8192	8192	0.885	0.619	0.760	0.814	0.793	0.798	0.912	0.712	0.924	0.918	0.798	0.778	0.870	0.870	0.655	0.678	0.884	0.724	0.850	0.949	0.904	0.944	0.927	0.938	0.954	0.940	0.924	0.944	0.959	0.929	0.965	0.654	0.457	0.450	0.906	0.900	0.858	0.977
bin	4096	4096	0.885	0.619	0.760	0.814	0.793	0.798	0.912	0.712	0.924	0.918	0.798	0.778	0.870	0.870	0.655	0.678	0.884	0.724	0.850	0.949	0.904	0.944	0.927	0.938	0.954	0.940	0.924	0.944	0.959	0.929	0.965	0.654	0.457	0.450	0.906	0.900	0.858	0.977
bin	2048	2048	0.885	0.619	0.760	0.814	0.793	0.798	0.912	0.712	0.924	0.918	0.798	0.778	0.870	0.870	0.655	0.678	0.884	0.724	0.850	0.949	0.904	0.944	0.927	0.938	0.954	0.940	0.924	0.944	0.959	0.929	0.965	0.654	0.457	0.450	0.906	0.900	0.858	0.977
bin	1024	1024	0.885	0.619	0.760	0.814	0.793	0.798	0.912	0.712	0.924	0.918	0.798	0.778	0.870	0.870	0.655	0.678	0.884	0.724	0.850	0.949	0.904	0.944	0.927	0.938	0.954	0.940	0.924	0.944	0.959	0.929	0.965	0.654	0.457	0.450	0.906	0.900	0.858	0.977
bin	512	512	0.751	0.505	0.681	0.774	0.638	0.651	0.776	0.538	0.888	0.893	0.641	0.607	0.789	0.775	0.432	0.516	0.876	0.558	0.802	0.908	0.857	0.888	0.868	0.864	0.892	0.888	0.884	0.914	0.898	0.858	0.937	0.450	0.256	0.245	0.870	0.829	0.764	0.977
bin	256	256	0.537	0.448	0.662	0.738	0.429	0.470	0.607	0.362	0.834	0.859	0.484	0.456	0.732	0.696	0.277	0.434	0.847	0.362	0.774	0.840	0.763	0.829	0.784	0.808	0.823	0.801	0.774	0.873	0.770	0.772	0.888	0.225	0.094	0.155	0.832	0.789	0.656	0.975
bin	128	128	0.303	0.445	0.689	0.730	0.261	0.302	0.432	0.250	0.816	0.824	0.355	0.334	0.629	0.627	0.204	0.387	0.846	0.288	0.505	0.721	0.646	0.728	0.667	0.718	0.727	0.711	0.717	0.789	0.554	0.673	0.815	0.089	0.048	0.066	0.774	0.761	0.565	0.951
bin	64	64	0.249	0.453	0.679	0.715	0.200	0.284	0.357	0.163	0.806	0.814	0.270	0.257	0.618	0.615	0.185	0.367	0.819	0.244	0.422	0.548	0.521	0.529	0.507	0.610	0.593	0.561	0.541	0.711	0.304	0.560	0.704	0.062	0.018	0.058	0.732	0.725	0.487	0.904

Table 20: Relative performance for stella_en_400M_v5 on all tasks. Table 2 serves as a legend.

q	m	req. bits	Average classification	Average clustering	Average sts	Average pairclass	Average retrieval	Average rerank	Average summ	Average all
f32	8192	262144	0.778	0.500	0.826	0.859	0.477	0.485	0.306	0.664
f32	4096	131072	0.778	0.500	0.826	0.859	0.477	0.485	0.306	0.664
f32	2048	65536	0.778	0.500	0.826	0.859	0.477	0.485	0.306	0.664
f32	1024	32768	0.778	0.500	0.826	0.859	0.477	0.485	0.306	0.664
f32	512	16384	0.769	0.495	0.826	0.857	0.465	0.483	0.312	0.660
f32	256	8192	0.755	0.482	0.818	0.852	0.439	0.475	0.307	0.649
f32	128	4096	0.724	0.465	0.809	0.843	0.401	0.465	0.308	0.631
f32	64	2048	0.680	0.422	0.795	0.828	0.325	0.448	0.311	0.598
int	8192	65536	0.747	0.498	0.821	0.861	0.481	0.486	0.308	0.657
int	4096	32768	0.747	0.498	0.821	0.861	0.481	0.486	0.308	0.657
int	2048	16384	0.747	0.498	0.821	0.861	0.481	0.486	0.308	0.657
int	1024	8192	0.747	0.498	0.821	0.861	0.481	0.486	0.308	0.657
int	512	4096	0.736	0.493	0.821	0.859	0.474	0.482	0.311	0.652
int	256	2048	0.717	0.482	0.816	0.853	0.452	0.476	0.313	0.641
int	128	1024	0.681	0.462	0.809	0.843	0.417	0.469	0.320	0.623
int	64	512	0.625	0.418	0.792	0.829	0.350	0.451	0.309	0.587
bin	8192	8192	0.620	0.403	0.766	0.818	0.254	0.430	0.299	0.565
bin	4096	4096	0.620	0.403	0.766	0.818	0.254	0.430	0.299	0.565
bin	2048	2048	0.620	0.403	0.766	0.818	0.254	0.430	0.299	0.565
bin	1024	1024	0.620	0.403	0.766	0.818	0.254	0.430	0.299	0.565
bin	512	512	0.523	0.347	0.724	0.772	0.157	0.399	0.299	0.505
bin	256	256	0.412	0.298	0.666	0.696	0.078	0.369	0.298	0.438
bin	128	128	0.320	0.266	0.571	0.582	0.033	0.338	0.291	0.371
bin	64	64	0.287	0.251	0.456	0.443	0.022	0.312	0.276	0.315

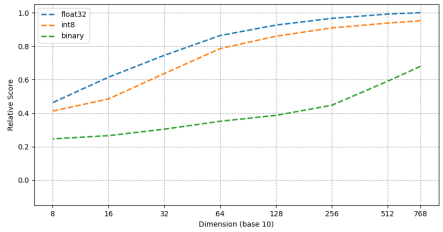
Table 21: Performance for stella_en_400M_v5, averaged per category. Table 2 serves as a legend.

q	m	req. bits	Average Relative classification	Average Relative clustering	Average Relative sts	Average Relative pairclass	Average Relative retrieval	Average Relative rerank	Average Relative summ	Average Relative all
f32	8192	262144	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
f32	4096	131072	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
f32	2048	65536	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
f32	1024	32768	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
f32	512	16384	0.987	0.990	1.000	0.998	0.973	0.996	1.019	0.992
f32	256	8192	0.967	0.966	0.991	0.992	0.915	0.977	1.004	0.973
f32	128	4096	0.924	0.932	0.980	0.981	0.834	0.958	1.006	0.943
f32	64	2048	0.867	0.848	0.963	0.964	0.669	0.916	1.018	0.887
int	8192	65536	0.959	0.996	0.993	1.002	1.006	1.002	1.008	0.990
int	4096	32768	0.959	0.996	0.993	1.002	1.006	1.002	1.008	0.990
int	2048	16384	0.959	0.996	0.993	1.002	1.006	1.002	1.008	0.990
int	1024	8192	0.959	0.996	0.993	1.002	1.006	1.002	1.008	0.990
int	512	4096	0.944	0.987	0.993	1.000	0.992	0.996	1.018	0.982
int	256	2048	0.916	0.967	0.988	0.993	0.942	0.982	1.022	0.964
int	128	1024	0.867	0.927	0.979	0.981	0.867	0.968	1.046	0.934
int	64	512	0.795	0.842	0.959	0.965	0.727	0.927	1.010	0.875
bin	8192	8192	0.786	0.810	0.927	0.951	0.520	0.888	0.977	0.835
bin	4096	4096	0.786	0.810	0.927	0.951	0.520	0.888	0.977	0.835
bin	2048	2048	0.786	0.810	0.927	0.951	0.520	0.888	0.977	0.835
bin	1024	1024	0.786	0.810	0.927	0.951	0.520	0.888	0.977	0.835
bin	512	512	0.664	0.698	0.877	0.897	0.317	0.821	0.977	0.741
bin	256	256	0.532	0.598	0.807	0.810	0.158	0.759	0.975	0.644
bin	128	128	0.426	0.531	0.693	0.681	0.068	0.700	0.951	0.551
bin	64	64	0.387	0.499	0.554	0.523	0.046	0.648	0.904	0.479

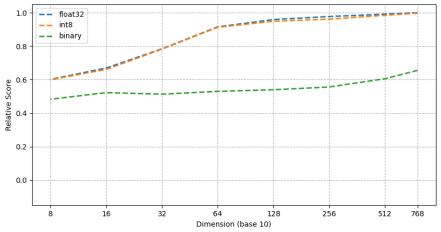
Table 22: Relative performance for stella_en_400M_v5, averaged per category. Table 2 serves as a legend.

E. nomic-embed-text-v1.5

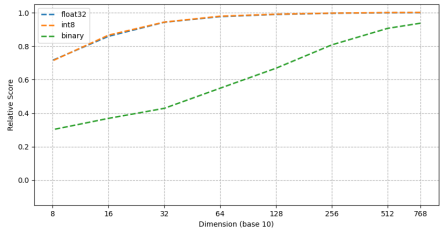
This section contains additional figures and tables for the NOMIC model.



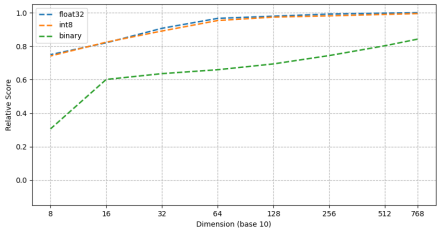
(a) Classification



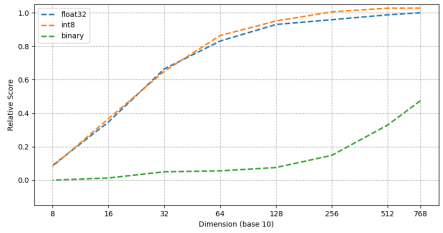
(b) Clustering



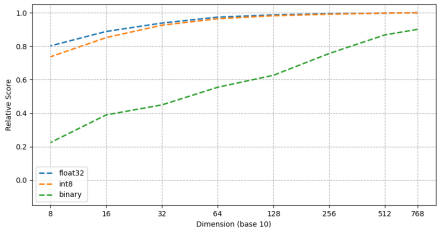
(c) Pair Classification



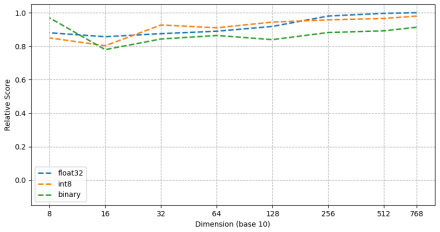
(d) Re-Ranking



(e) Retrieval

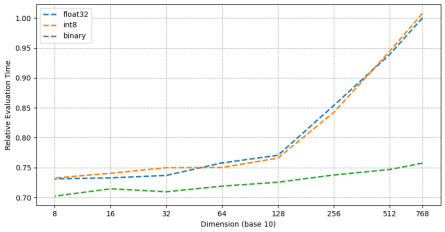


(f) Semantic Textual Similarity

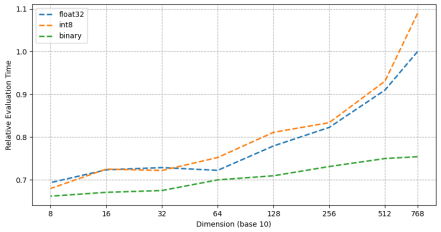


(g) Summarization

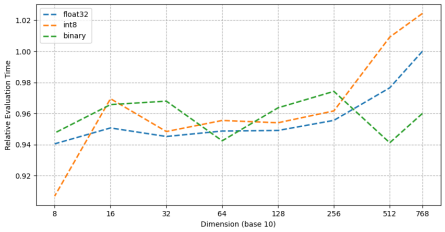
Figure 13: Relative performance of the NOMIC model for each task category in the MTEB. The x-axis of each subfigure represents the embedding size while the y-axis represents the relative performance. For each task the reference point is the performance of the float32 embeddings at the full embedding size. Blue: float32, Orange: int8, Green: binary.



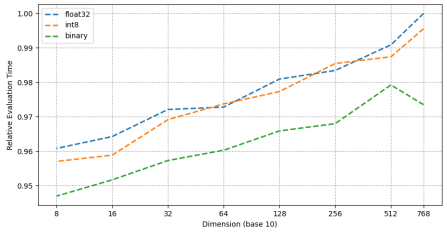
(a) Classification



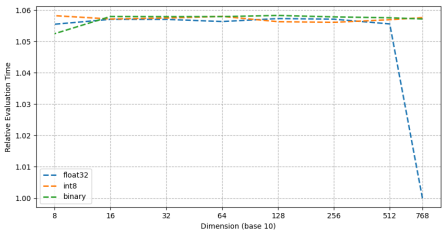
(b) Clustering



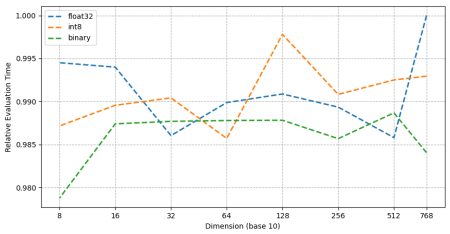
(c) Pair Classification



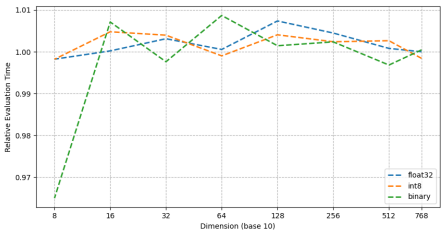
(d) Re-Ranking



(e) Retrieval

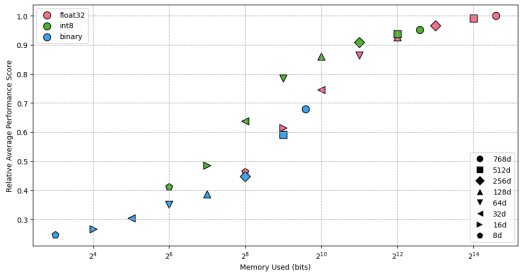


(f) Semantic Textual Similarity

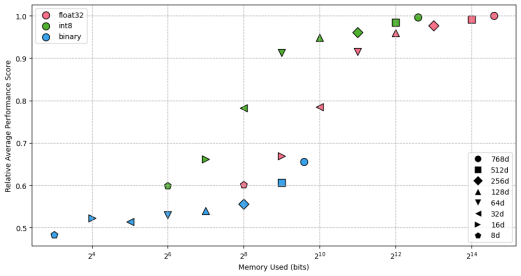


(g) Summarization

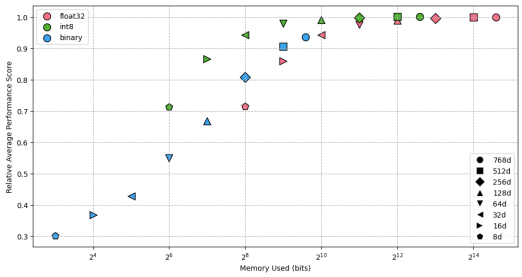
Figure 14: Relative evaluation time of the NOMIC model for each task category in the MTEB. The x-axis of each subfigure represents the embedding size while the y-axis represents the relative evaluation time. For each task the reference point is the evaluation time of the float32 embeddings at the full embedding size. Blue: float32, Orange: int8, Green: binary.



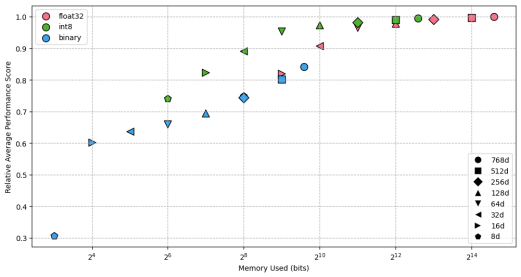
(a) Classification



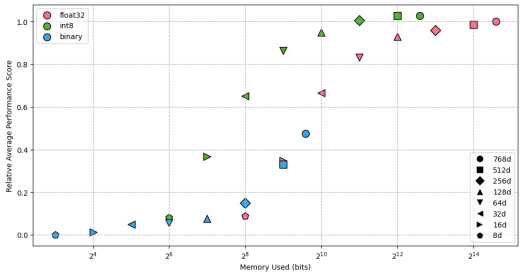
(b) Clustering



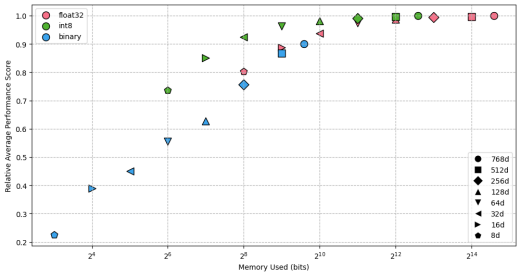
(c) Pair Classification



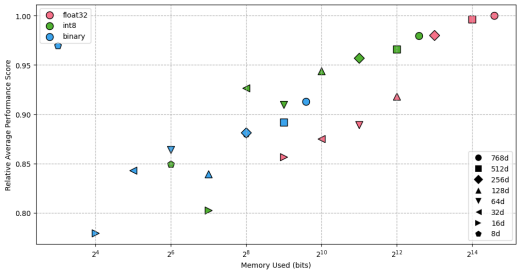
(d) Re-Ranking



(e) Retrieval



(f) Semantic Textual Similarity



(g) Summarization

Figure 15: Relative accuracy compute trade-off of the NOMIC model, averaged over all selected MTEB tasks within each category. The x-axis represents memory consumption (log scale) and the y-axis represents relative performance (averaged over tasks within the category). Reference point: float32 embeddings at full size.

q	m	CLA 1	CLA 2	CLA 3	CLA 4	CLA 5	CLA 6	CLA 7	CLA 8	CLU 1	CLU 2	CLU 3	CLU 4	CLU 5	CLU 6	CLU 7	CLU 8	CLU 9	CLU 10	STS 1	STS 2	STS 3	STS 4	STS 5	STS 6	STS 7	STS 8	STS 9	STS 10	PCL 1	PCL 2	PCL 3	RET 1	RET 2	RET 3	RER 1	RER 2	RER 3	SUM 1
f32	768	38.06	9.66	12.20	4.93	29.61	9.07	8.47	48.01	8.54	6.08	90.87	10.75	NaN	10.95	110.43	108.35	135.25	6.59	1.08	25.43	11.54	4.51	12.03	9.71	4.22	4.59	0.73	NaN	20.74	25.66	109.91	212.30	NaN	NaN	14.33	191.40	136.15	17.58
f32	512	35.98	8.59	13.02	5.16	26.42	7.74	8.16	41.07	7.98	4.71	91.55	8.89	NaN	9.24	108.48	105.97	130.38	5.78	1.08	25.34	11.44	4.50	11.99	9.61	4.14	4.54	0.68	NaN	19.77	25.26	109.05	224.11	NaN	NaN	14.21	187.05	136.67	17.59
f32	256	31.52	8.90	13.38	5.09	14.17	7.73	7.80	33.62	5.69	3.11	89.92	8.99	NaN	7.22	106.85	100.95	125.70	6.00	1.11	25.30	11.51	4.57	11.99	9.65	4.19	4.48	0.67	NaN	18.27	25.66	108.40	224.43	NaN	NaN	14.12	184.30	136.44	17.66
f32	128	21.18	8.48	13.04	5.13	13.04	7.88	7.48	20.54	4.80	3.93	90.19	7.35	NaN	7.06	106.46	101.35	121.23	4.51	1.09	25.46	11.45	4.57	11.96	9.64	4.16	4.49	0.69	NaN	17.88	25.54	108.84	224.48	NaN	NaN	14.11	183.27	136.19	17.71
f32	64	20.09	8.66	13.24	5.09	12.26	7.55	7.48	18.74	4.41	1.95	89.52	7.39	NaN	6.15	106.15	98.89	121.16	4.33	1.09	25.38	11.47	4.55	12.03	9.75	4.17	4.50	0.68	NaN	17.91	25.32	109.45	224.27	NaN	NaN	14.07	179.29	136.08	17.59
f32	32	20.01	8.11	12.67	5.09	11.55	6.65	7.97	18.91	4.83	1.96	89.11	7.86	NaN	5.97	105.86	98.68	121.33	4.25	1.10	25.11	11.34	4.55	11.99	9.73	4.17	4.60	0.65	NaN	17.87	25.31	108.56	224.42	NaN	NaN	14.07	178.99	136.01	17.63
f32	16	19.58	8.22	12.49	5.08	11.84	7.18	7.38	18.27	4.00	2.03	89.79	6.92	NaN	6.36	105.77	100.81	119.32	4.77	1.13	25.44	11.49	4.58	11.97	9.62	4.20	4.48	0.68	NaN	18.42	25.11	108.34	224.43	NaN	NaN	14.15	173.60	135.90	17.58
f32	8	19.28	8.22	12.56	5.01	11.76	7.27	7.40	17.91	3.58	1.80	89.06	6.64	NaN	5.96	105.34	98.63	119.15	4.20	1.13	25.40	11.47	4.57	11.95	9.70	4.21	4.49	0.68	NaN	17.88	25.01	108.25	224.09	NaN	NaN	14.08	172.49	135.92	17.55
int	768	40.46	8.68	13.12	5.22	30.40	8.36	8.13	50.74	10.19	7.95	93.44	12.31	NaN	11.15	111.96	112.86	134.58	6.96	1.09	25.62	11.56	4.56	12.16	9.75	4.21	4.61	0.65	NaN	22.19	25.63	110.39	224.54	NaN	NaN	14.16	190.04	136.93	17.55
int	512	36.54	8.26	12.77	5.52	26.53	7.93	8.00	41.24	9.14	4.70	91.31	9.06	NaN	9.56	108.33	103.99	126.98	6.13	1.14	25.78	11.48	4.56	12.08	9.64	4.23	4.49	0.65	NaN	21.46	25.75	108.76	224.40	NaN	NaN	14.11	186.44	136.60	17.62
int	256	31.76	8.39	13.12	5.16	13.28	7.31	8.08	33.83	6.22	3.35	90.02	8.92	NaN	7.23	107.58	101.45	122.34	6.11	1.10	25.40	11.44	4.53	12.00	9.67	4.17	4.54	0.69	NaN	18.58	25.71	108.50	224.22	NaN	NaN	14.16	184.97	136.38	17.62
int	128	22.14	8.15	12.72	5.52	12.97	6.83	7.76	20.71	6.57	2.81	89.72	7.63	NaN	7.69	107.33	101.50	120.26	5.73	1.14	25.41	11.55	4.60	11.95	9.71	4.22	4.50	0.68	NaN	18.26	25.64	108.01	224.26	NaN	NaN	14.05	181.65	136.47	17.65
int	64	20.58	8.23	12.76	5.27	11.89	6.78	8.02	19.05	5.98	2.11	89.48	7.94	NaN	6.10	106.26	98.85	121.88	4.39	1.10	25.18	11.38	4.52	12.06	9.72	4.19	4.60	0.64	NaN	18.59	25.29	108.26	224.62	NaN	NaN	14.14	178.82	136.13	17.56
int	32	19.85	8.18	12.69	5.61	11.76	6.65	7.89	18.78	4.94	1.68	89.20	7.77	NaN	5.80	105.68	98.20	118.95	4.37	1.07	25.44	11.53	4.52	12.05	9.73	4.14	4.52	0.70	NaN	18.05	25.31	108.65	224.51	NaN	NaN	14.06	177.39	136.11	17.65
int	16	19.74	8.12	12.72	5.17	11.65	7.36	7.53	18.17	4.54	2.25	90.45	7.40	NaN	6.06	106.81	98.11	119.29	4.16	1.08	25.52	11.39	4.55	11.94	9.70	4.29	4.53	0.66	NaN	19.53	25.23	108.10	224.45	NaN	NaN	14.02	172.07	136.04	17.66
int	8	19.77	7.96	12.53	5.00	11.33	7.49	7.53	18.19	3.89	1.80	89.11	6.74	NaN	5.37	101.70	96.58	116.52	3.90	1.07	25.22	11.50	4.49	11.94	9.69	4.15	4.60	0.68	NaN	16.83	23.81	107.86	224.67	NaN	NaN	14.09	170.32	135.85	17.55
bin	768	21.01	8.05	12.70	5.34	12.77	7.41	7.51	19.87	4.74	2.48	89.77	8.07	NaN	6.23	106.35	99.63	119.75	4.93	1.11	25.40	11.42	4.53	11.97	9.67	4.25	4.48	0.63	NaN	18.98	25.26	107.78	224.45	NaN	NaN	14.12	179.07	136.10	17.59
bin	512	20.05	8.34	13.02	5.13	11.90	7.39	7.41	18.50	4.25	2.58	90.12	7.19	NaN	6.79	105.56	99.43	119.13	5.21	1.14	25.38	11.54	4.59	11.91	9.65	4.21	4.47	0.64	NaN	17.83	25.38	107.12	224.53	NaN	NaN	14.15	181.70	136.28	17.52
bin	256	20.23	8.08	12.88	5.09	11.42	7.20	7.40	18.75	4.10	2.88	89.82	6.98	NaN	6.46	105.83	99.68	119.25	4.21	1.09	25.53	11.42	4.53	11.96	9.70	4.19	4.57	0.64	NaN	19.44	25.87	107.41	224.59	NaN	NaN	13.99	177.92	135.87	17.62
bin	128	20.05	7.88	12.33	5.05	11.24	7.14	7.37	18.68	4.21	1.84	89.18	6.97	NaN	6.12	105.53	99.55	118.58	4.27	1.11	25.58	11.53	4.53	11.99	9.67	4.25	4.52	0.64	NaN	18.77	25.86	107.53	224.69	NaN	NaN	14.11	174.65	136.20	17.60
bin	64	19.66	7.80	12.08	4.96	11.21	6.65	7.93	18.36	4.00	1.64	89.15	7.32	NaN	5.60	105.45	97.84	118.35	4.30	1.09	25.29	11.55	4.50	12.00	9.71	4.17	4.57	0.66	NaN	17.90	24.96	108.98	224.61	NaN	NaN	14.04	172.75	135.94	17.73
bin	32	19.83	7.81	12.17	5.03	11.13	6.72	7.06	18.14	3.57	1.27	88.92	6.57	NaN	5.61	105.92	99.53	118.24	3.90	1.09	25.49	11.43	4.53	12.04	9.73	4.27	4.51	0.64	NaN	19.52	25.17	107.92	224.60	NaN	NaN	14.16	169.32	136.00	17.54
bin	16	20.07	7.87	12.40	4.98	11.40	6.96	6.95	18.05	3.32	1.46	89.00	6.58	NaN	5.58	105.93	97.83	117.85	3.77	1.10	25.57	11.41	4.56	12.03	9.72	4.26	4.47	0.64	NaN	19.24	25.18	108.62	224.62	NaN	NaN	14.09	167.04	136.02	17.70
bin	8	19.15	7.64	12.53	5.01	11.16	6.46	6.98	17.56	3.71	1.01	88.69	6.70	NaN	5.04	104.66	97.85	117.51	3.79	1.08	25.02	11.40	4.50	12.01	9.67	4.17	4.51	0.64	NaN	18.44	25.00	107.66	223.45	NaN	NaN	14.08	164.87	135.74	16.96

Table 23: Absolute evaluation time for nomic-embed-text-v1.5 on all tasks. Table 2 serves as a legend.

q	m	CLA 1	CLA 2	CLA 3	CLA 4	CLA 5	CLA 6	CLA 7	CLA 8	CLU 1	CLU 2	CLU 3	CLU 4	CLU 5	CLU 6	CLU 7	CLU 8	CLU 9	CLU 10	STS 1	STS 2	STS 3	STS 4	STS 5	STS 6	STS 7	STS 8	STS 9	STS 10	PCL 1	PCL 2	PCL 3	RET 1	RET 2	RET 3	RER 1	RER 2	RER 3	SUM 1
f32	768	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	nan	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	nan	1.000	1.000	1.000	1.000	nan	nan	1.000	1.000	1.000	1.000
f32	512	0.945	0.890	1.067	1.047	0.892	0.853	0.963	0.856	0.934	0.774	1.008	0.827	nan	0.843	0.982	0.978	0.964	0.877	0.999	0.997	0.992	1.000	0.997	0.990	0.979	0.988	0.931	nan	0.953	0.984	0.992	1.056	nan	nan	0.992	0.977	1.004	1.001
f32	256	0.828	0.921	1.097	1.033	0.479	0.852	0.921	0.700	0.666	0.512	0.990	0.837	nan	0.659	0.968	0.932	0.929	0.911	1.023	0.995	0.998	1.014	0.997	0.994	0.991	0.975	0.917	nan	0.881	1.000	0.986	1.057	nan	nan	0.985	0.963	1.002	1.004
f32	128	0.556	0.878	1.069	1.041	0.441	0.870	0.882	0.428	0.562	0.647	0.993	0.684	nan	0.645	0.964	0.935	0.896	0.685	1.010	1.001	0.992	1.015	0.994	0.993	0.984	0.978	0.951	nan	0.862	0.995	0.990	1.057	nan	nan	0.985	0.958	1.000	1.007
f32	64	0.528	0.897	1.086	1.032	0.414	0.833	0.883	0.390	0.516	0.321	0.985	0.688	nan	0.561	0.961	0.913	0.896	0.658	1.004	0.998	0.994	1.010	1.000	1.003	0.988	0.980	0.932	nan	0.864	0.987	0.996	1.056	nan	nan	0.982	0.937	1.000	1.001
f32	32	0.526	0.840	1.039	1.033	0.390	0.734	0.940	0.394	0.566	0.323	0.981	0.731	nan	0.545	0.959	0.911	0.897	0.645	1.019	0.988	0.983	1.010	0.996	1.001	0.989	1.002	0.886	nan	0.862	0.986	0.988	1.057	nan	nan	0.982	0.935	0.999	1.003
f32	16	0.515	0.851	1.024	1.030	0.400	0.792	0.870	0.381	0.468	0.335	0.988	0.644	nan	0.581	0.958	0.930	0.882	0.725	1.047	1.000	0.996	1.016	0.994	0.990	0.996	0.976	0.931	nan	0.888	0.978	0.986	1.057	nan	nan	0.988	0.907	0.998	1.000
f32	8	0.507	0.851	1.030	1.017	0.397	0.802	0.874	0.373	0.419	0.296	0.980	0.618	nan	0.544	0.954	0.910	0.881	0.637	1.050	0.999	0.994	1.014	0.993	0.998	0.996	0.977	0.929	nan	0.862	0.975	0.985	1.056	nan	nan	0.983	0.901	0.998	0.998
int	768	1.063	0.898	1.075	1.059	1.027	0.923	0.959	1.057	1.193	1.309	1.028	1.145	nan	1.018	1.014	1.042	0.995	1.057	1.009	1.008	1.002	1.012	1.010	1.004	0.997	1.004	0.892	nan	1.070	0.999	1.004	1.058	nan	nan	0.988	0.993	1.006	0.998
int	512	0.960	0.855	1.047	1.121	0.896	0.875	0.944	0.859	1.070	0.774	1.005	0.843	nan	0.873	0.981	0.960	0.939	0.931	1.050	1.014	0.995	1.012	1.004	0.993	1.001	0.978	0.887	nan	1.035	1.003	0.990	1.057	nan	nan	0.985	0.974	1.003	1.003
int	256	0.835	0.868	1.076	1.047	0.449	0.807	0.954	0.705	0.729	0.552	0.991	0.830	nan	0.660	0.974	0.936	0.905	0.927	1.015	0.999	0.992	1.004	0.997	0.996	0.987	0.988	0.940	nan	0.896	1.002	0.987	1.056	nan	nan	0.988	0.966	1.002	1.002
int	128	0.582	0.844	1.043	1.121	0.438	0.753	0.916	0.431	0.769	0.462	0.987	0.710	nan	0.702	0.972	0.937	0.889	0.870	1.056	1.000	1.001	1.020	0.993	0.999	1.000	0.979	0.932	nan	0.880	0.999	0.983	1.056	nan	nan	0.981	0.949	1.002	1.004
int	64	0.541	0.852	1.046	1.070	0.402	0.748	0.946	0.397	0.700	0.346	0.985	0.739	nan	0.557	0.962	0.912	0.901	0.667	1.014	0.991	0.986	1.004	1.003	1.001	0.992	1.002	0.879	nan	0.896	0.985	0.985	1.058	nan	nan	0.987	0.934	1.000	0.999
int	32	0.521	0.846	1.041	1.137	0.397	0.734	0.930	0.391	0.578	0.277	0.982	0.723	nan	0.530	0.957	0.906	0.879	0.664	0.988	1.000	1.000	1.002	1.002	1.002	0.981	0.984	0.954	nan	0.870	0.986	0.989	1.058	nan	nan	0.981	0.927	1.000	1.004
int	16	0.519	0.841	1.043	1.050	0.394	0.812	0.888	0.378	0.532	0.370	0.995	0.688	nan	0.553	0.967	0.905	0.882	0.631	0.999	1.004	0.987	1.010	0.993	0.999	1.017	0.987	0.910	nan	0.942	0.983	0.984	1.057	nan	nan	0.978	0.899	0.999	1.005
int	8	0.519	0.824	1.027	1.015	0.383	0.826	0.888	0.379	0.456	0.296	0.981	0.627	nan	0.490	0.921	0.891	0.862	0.593	0.992	0.992	0.997	0.996	0.992	0.998	0.982	1.001	0.934	nan	0.811	0.928	0.981	1.058	nan	nan	0.983	0.890	0.998	0.998
bin	768	0.552	0.834	1.042	1.083	0.431	0.818	0.886	0.414	0.554	0.409	0.988	0.750	nan	0.569	0.963	0.919	0.885	0.748	1.023	0.999	0.990	1.004	0.995	0.996	1.006	0.975	0.869	nan	0.915	0.984	0.981	1.057	nan	nan	0.985	0.936	1.000	1.000
bin	512	0.527	0.863	1.067	1.040	0.402	0.816	0.875	0.385	0.498	0.424	0.992	0.669	nan	0.620	0.956	0.918	0.881	0.791	1.052	0.998	1.000	1.019	0.990	0.994	0.996	0.974	0.875	nan	0.860	0.989	0.975	1.058	nan	nan	0.987	0.949	1.001	0.997
bin	256	0.532	0.837	1.056	1.032	0.386	0.795	0.873	0.391	0.480	0.473	0.988	0.649	nan	0.590	0.958	0.920	0.882	0.638	1.009	1.004	0.990	1.005	0.994	0.999	0.993	0.995	0.884	nan	0.937	1.008	0.977	1.058	nan	nan	0.977	0.930	0.998	1.002
bin	128	0.527	0.815	1.011	1.025	0.380	0.788	0.870	0.389	0.493	0.302	0.981	0.649	nan	0.559	0.956	0.919	0.877	0.649	1.024	1.006	0.999	1.006	0.997	0.996	1.006	0.985	0.871	nan	0.905	1.008	0.978	1.058	nan	nan	0.985	0.912	1.000	1.001
bin	64	0.517	0.808	0.991	1.007	0.379	0.733	0.935	0.383	0.469	0.270	0.981	0.681	nan	0.511	0.955	0.903	0.875	0.653	1.005	0.995	1.001	0.999	0.997	1.000	0.986	0.996	0.912	nan	0.863	0.973	0.992	1.058	nan	nan	0.980	0.903	0.999	1.009
bin	32	0.521	0.808	0.998	1.021	0.376	0.742	0.834	0.378	0.418	0.209	0.979	0.611	nan	0.512	0.959	0.919	0.874	0.593	1.009	1.003	0.991	1.006	1.001	1.002	1.012	0.983	0.884	nan	0.941	0.981	0.982	1.058	nan	nan	0.988	0.885	0.999	0.998
bin	16	0.527	0.814	1.016	1.010	0.385	0.767	0.820	0.376	0.389	0.240	0.979	0.612	nan	0.510	0.959	0.903	0.871	0.572	1.019	1.006	0.989	1.012	1.000	1.001	1.010	0.973	0.878	nan	0.928	0.981	0.988	1.058	nan	nan	0.983	0.873	0.999	1.007
bin	8	0.503	0.791	1.028	1.018	0.377	0.713	0.823	0.366	0.434	0.166	0.976	0.624	nan	0.460	0.948	0.903	0.869	0.576	1.001	0.984	0.988	0.999	0.998	0.996	0.987	0.983	0.872	nan	0.889	0.974	0.980	1.052	nan	nan	0.982	0.861	0.997	0.965

Table 24: Relative evaluation time for nomic-embed-text-v1.5 on all tasks. Table 2 serves as a legend.

q	m	Total Time	Average All Tasks	Average classification	Average clustering	Average sts	Average pairclass	Average retrieval	Average rerank	Average summ
f32	768	1449.71	42.64	20.00	54.20	8.20	52.10	212.30	113.96	17.58
f32	512	1426.14	41.95	18.27	52.55	8.15	51.36	224.11	112.64	17.59
f32	256	1379.38	40.57	15.28	50.49	8.16	50.78	224.43	111.62	17.66
f32	128	1345.21	39.57	12.10	49.66	8.17	50.75	224.48	111.19	17.71
f32	64	1330.67	39.14	11.64	48.88	8.18	50.90	224.27	109.81	17.59
f32	32	1326.94	39.03	11.37	48.87	8.14	50.58	224.42	109.69	17.63
f32	16	1320.92	38.85	11.25	48.86	8.18	50.62	224.43	107.88	17.58
f32	8	1312.62	38.61	11.18	48.26	8.18	50.38	224.09	107.50	17.55
int	768	1482.13	43.59	20.64	55.71	8.24	52.74	224.54	113.71	17.55
int	512	1425.17	41.92	18.35	52.13	8.23	51.99	224.40	112.39	17.62
int	256	1377.82	40.52	15.12	50.36	8.17	50.93	224.22	111.84	17.62
int	128	1345.79	39.58	12.10	49.92	8.19	50.64	224.26	110.72	17.65
int	64	1332.37	39.19	11.57	49.22	8.16	50.71	224.62	109.70	17.56
int	32	1323.42	38.92	11.43	48.51	8.19	50.67	224.51	109.18	17.65
int	16	1320.31	38.83	11.31	48.79	8.19	50.95	224.45	107.38	17.66
int	8	1299.73	38.23	11.22	47.29	8.15	49.50	224.67	106.75	17.55
bin	768	1333.40	39.22	11.83	49.10	8.16	50.67	224.45	109.76	17.59
bin	512	1330.04	39.12	11.47	48.92	8.17	50.11	224.53	110.71	17.52
bin	256	1326.59	39.02	11.38	48.80	8.18	50.91	224.59	109.26	17.62
bin	128	1319.24	38.80	11.22	48.47	8.20	50.72	224.69	108.32	17.60
bin	64	1312.76	38.61	11.08	48.18	8.17	50.62	224.61	107.58	17.73
bin	32	1309.42	38.51	10.99	48.17	8.19	50.87	224.60	106.49	17.54
bin	16	1306.26	38.42	11.08	47.92	8.20	51.01	224.62	105.72	17.70
bin	8	1294.65	38.08	10.81	47.66	8.11	50.36	223.45	104.90	16.96

Table 25: Evaluation time for nomic-embed-text-v1.5, averaged per category. Table 2 serves as a legend.

q	m	Average Relative classification	Average Relative clustering	Average Relative sts	Average Relative pairclass	Average Relative retrieval	Average Relative rerank	Average Relative summ	Average Relative all
f32	768	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
f32	512	0.939	0.910	0.986	0.977	1.056	0.991	1.001	0.957
f32	256	0.854	0.823	0.989	0.956	1.057	0.983	1.004	0.912
f32	128	0.771	0.779	0.991	0.949	1.057	0.981	1.007	0.881
f32	64	0.758	0.722	0.990	0.949	1.056	0.973	1.001	0.862
f32	32	0.737	0.729	0.986	0.945	1.057	0.972	1.003	0.857
f32	16	0.733	0.723	0.994	0.951	1.057	0.964	1.000	0.857
f32	8	0.731	0.693	0.995	0.941	1.056	0.961	0.998	0.847
int	768	1.008	1.089	0.993	1.024	1.058	0.996	0.998	1.027
int	512	0.945	0.931	0.993	1.009	1.057	0.987	1.003	0.968
int	256	0.842	0.834	0.991	0.962	1.056	0.986	1.002	0.914
int	128	0.766	0.811	0.998	0.954	1.056	0.977	1.004	0.890
int	64	0.750	0.752	0.986	0.956	1.058	0.974	0.999	0.867
int	32	0.750	0.722	0.990	0.948	1.058	0.969	1.004	0.860
int	16	0.741	0.725	0.990	0.970	1.057	0.959	1.005	0.859
int	8	0.733	0.680	0.987	0.907	1.058	0.957	0.998	0.839
bin	768	0.757	0.754	0.984	0.960	1.057	0.974	1.000	0.869
bin	512	0.747	0.750	0.989	0.941	1.058	0.979	0.997	0.866
bin	256	0.738	0.731	0.986	0.974	1.058	0.968	1.002	0.860
bin	128	0.726	0.709	0.988	0.964	1.058	0.966	1.001	0.851
bin	64	0.719	0.700	0.988	0.943	1.058	0.960	1.009	0.845
bin	32	0.710	0.675	0.988	0.968	1.058	0.957	0.998	0.837
bin	16	0.715	0.671	0.987	0.966	1.058	0.952	1.007	0.837
bin	8	0.702	0.662	0.979	0.948	1.052	0.947	0.965	0.826

Table 26: Relative evaluation time for nomic-embed-text-v1.5, averaged per category. Table 2 serves as a legend.

q	m	req. bits	CLA 1	CLA 2	CLA 3	CLA 4	CLA 5	CLA 6	CLA 7	CLA 8	CLU 1	CLU 2	CLU 3	CLU 4	CLU 5	CLU 6	CLU 7	CLU 8	CLU 9	CLU 10	STS 1	STS 2	STS 3	STS 4	STS 5	STS 6	STS 7	STS 8	STS 9	STS 10	PCL 1	PCL 2	PCL 3	RET 1	RET 2	RET 3	RER 1	RER 2	RER 3	SUM 1
f32	768	24576	0.848	0.488	0.577	0.734	0.720	0.763	0.928	0.735	0.585	0.531	0.413	0.329	NaN	0.327	0.484	0.492	0.394	0.439	0.862	0.785	0.745	0.856	0.804	0.872	0.836	0.843	0.881	NaN	0.956	0.736	0.860	0.536	NaN	NaN	0.617	0.310	0.504	0.325
f32	512	16384	0.848	0.485	0.573	0.721	0.714	0.758	0.923	0.725	0.588	0.520	0.399	0.328	NaN	0.319	0.484	0.498	0.394	0.437	0.856	0.785	0.743	0.854	0.803	0.871	0.834	0.840	0.878	NaN	0.956	0.736	0.859	0.529	NaN	NaN	0.614	0.309	0.504	0.324
f32	256	8192	0.843	0.458	0.554	0.710	0.698	0.741	0.908	0.699	0.573	0.518	0.396	0.314	NaN	0.321	0.465	0.482	0.392	0.445	0.847	0.785	0.745	0.856	0.802	0.868	0.830	0.837	0.870	NaN	0.953	0.734	0.856	0.514	NaN	NaN	0.614	0.306	0.500	0.319
f32	128	4096	0.835	0.428	0.538	0.670	0.664	0.715	0.881	0.657	0.570	0.522	0.383	0.298	NaN	0.319	0.455	0.482	0.387	0.424	0.835	0.783	0.740	0.849	0.795	0.860	0.825	0.832	0.867	NaN	0.947	0.727	0.852	0.498	NaN	NaN	0.609	0.303	0.491	0.298
f32	64	2048	0.810	0.394	0.504	0.636	0.611	0.666	0.835	0.578	0.568	0.518	0.364	0.273	NaN	0.308	0.412	0.460	0.386	0.387	0.799	0.781	0.737	0.831	0.783	0.847	0.818	0.824	0.863	NaN	0.938	0.713	0.843	0.445	NaN	NaN	0.612	0.297	0.479	0.289
f32	32	1024	0.736	0.339	0.474	0.599	0.494	0.547	0.712	0.436	0.543	0.513	0.308	0.219	NaN	0.282	0.278	0.364	0.380	0.272	0.762	0.767	0.717	0.787	0.748	0.811	0.785	0.793	0.845	NaN	0.904	0.682	0.823	0.356	NaN	NaN	0.584	0.278	0.442	0.284
f32	16	512	0.586	0.277	0.456	0.584	0.354	0.406	0.578	0.314	0.532	0.484	0.238	0.164	NaN	0.255	0.175	0.284	0.374	0.203	0.653	0.737	0.708	0.760	0.711	0.760	0.741	0.762	0.801	NaN	0.777	0.628	0.783	0.186	NaN	NaN	0.541	0.251	0.391	0.278
f32	8	256	0.385	0.274	0.436	0.509	0.191	0.260	0.395	0.153	0.505	0.481	0.190	0.138	NaN	0.234	0.127	0.243	0.366	0.161	0.507	0.680	0.677	0.679	0.651	0.699	0.683	0.702	0.705	NaN	0.552	0.543	0.716	0.047	NaN	NaN	0.501	0.244	0.329	0.286
int	768	6144	0.838	0.463	0.563	0.640	0.691	0.731	0.923	0.674	0.582	0.526	0.403	0.335	NaN	0.328	0.482	0.494	0.392	0.439	0.863	0.782	0.746	0.856	0.801	0.871	0.828	0.843	0.893	NaN	0.960	0.735	0.861	0.551	NaN	NaN	0.613	0.307	0.504	0.318
int	512	4096	0.836	0.455	0.557	0.616	0.683	0.725	0.916	0.657	0.575	0.519	0.397	0.321	NaN	0.321	0.483	0.488	0.395	0.436	0.852	0.781	0.747	0.855	0.801	0.871	0.826	0.841	0.891	NaN	0.959	0.735	0.860	0.550	NaN	NaN	0.612	0.305	0.501	0.314
int	256	2048	0.829	0.428	0.539	0.596	0.668	0.709	0.899	0.623	0.563	0.508	0.394	0.312	NaN	0.316	0.452	0.478	0.394	0.423	0.838	0.780	0.743	0.855	0.795	0.865	0.822	0.837	0.881	NaN	0.956	0.733	0.857	0.539	NaN	NaN	0.606	0.304	0.495	0.311
int	128	1024	0.810	0.391	0.517	0.564	0.625	0.675	0.861	0.567	0.560	0.518	0.380	0.295	NaN	0.315	0.448	0.473	0.392	0.416	0.818	0.777	0.733	0.853	0.786	0.858	0.815	0.830	0.879	NaN	0.952	0.726	0.852	0.509	NaN	NaN	0.607	0.304	0.483	0.307
int	64	512	0.763	0.347	0.480	0.574	0.552	0.621	0.795	0.458	0.561	0.527	0.358	0.269	NaN	0.307	0.414	0.455	0.385	0.388	0.782	0.773	0.726	0.828	0.769	0.846	0.801	0.817	0.869	NaN	0.944	0.714	0.843	0.463	NaN	NaN	0.600	0.300	0.465	0.296
int	32	256	0.634	0.272	0.442	0.499	0.412	0.496	0.640	0.317	0.550	0.516	0.304	0.215	NaN	0.281	0.275	0.362	0.379	0.270	0.776	0.753	0.703	0.785	0.723	0.806	0.778	0.781	0.817	NaN	0.910	0.681	0.820	0.348	NaN	NaN	0.569	0.277	0.432	0.301
int	16	128	0.397	0.239	0.443	0.496	0.222	0.302	0.481	0.190	0.519	0.485	0.227	0.154	NaN	0.256	0.175	0.284	0.375	0.202	0.670	0.706	0.666	0.719	0.677	0.740	0.731	0.719	0.735	NaN	0.798	0.627	0.782	0.197	NaN	NaN	0.533	0.264	0.383	0.261
int	8	64	0.290	0.256	0.426	0.503	0.153	0.233	0.302	0.121	0.500	0.479	0.182	0.133	NaN	0.237	0.129	0.242	0.368	0.167	0.533	0.638	0.590	0.632	0.603	0.674	0.632	0.600	0.598	NaN	0.549	0.540	0.714	0.044	NaN	NaN	0.497	0.244	0.319	0.276
bin	768	768	0.673	0.285	0.423	0.620	0.438	0.477	0.657	0.397	0.514	0.485	0.268	0.172	NaN	0.248	0.180	0.251	0.341	0.189	0.721	0.716	0.670	0.773	0.724	0.802	0.768	0.766	0.797	NaN	0.907	0.666	0.823	0.254	NaN	NaN	0.545	0.258	0.408	0.297
bin	512	512	0.576	0.255	0.408	0.564	0.361	0.411	0.548	0.310	0.500	0.478	0.225	0.145	NaN	0.231	0.145	0.225	0.344	0.164	0.727	0.690	0.638	0.734	0.690	0.775	0.745	0.737	0.757	NaN	0.878	0.636	0.805	0.177	NaN	NaN	0.521	0.248	0.385	0.290
bin	256	256	0.386	0.213	0.378	0.512	0.224	0.291	0.383	0.170	0.493	0.493	0.162	0.107	NaN	0.222	0.106	0.205	0.350	0.138	0.612	0.616	0.529	0.635	0.603	0.691	0.665	0.631	0.683	NaN	0.751	0.561	0.754	0.080	NaN	NaN	0.495	0.241	0.329	0.286
bin	128	128	0.250	0.210	0.375	0.546	0.158	0.202	0.286	0.135	0.489	0.501	0.128	0.094	NaN	0.219	0.095	0.199	0.356	0.137	0.475	0.529	0.432	0.521	0.501	0.600	0.570	0.520	0.541	NaN	0.519	0.488	0.687	0.040	NaN	NaN	0.472	0.238	0.277	0.273
bin	64	64	0.184	0.204	0.365	0.518	0.124	0.189	0.277	0.089	0.500	0.480	0.116	0.087	NaN	0.215	0.101	0.198	0.356	0.131	0.551	0.453	0.376	0.449	0.406	0.497	0.491	0.453	0.485	NaN	0.349	0.435	0.594	0.030	NaN	NaN	0.438	0.244	0.243	0.281
bin	32	32	0.107	0.186	0.347	0.546	0.068	0.133	0.235	0.044	0.478	0.488	0.109	0.082	NaN	0.200	0.095	0.193	0.354	0.120	0.409	0.385	0.374	0.326	0.315	0.392	0.403	0.405	0.346	NaN	0.198	0.361	0.507	0.027	NaN	NaN	0.428	0.241	0.220	0.274
bin	16	16	0.054	0.183	0.345	0.535	0.040	0.088	0.152	0.021	0.486	0.463	0.113	0.089	NaN	0.215	0.105	0.203	0.354	0.121	0.246	0.344	0.391	0.288	0.287	0.309	0.371	0.337	0.325	NaN	0.128	0.334	0.447	0.007	NaN	NaN	0.421	0.230	0.193	0.253
bin	8	8	0.025	0.170	0.342	0.532	0.028	0.062	0.129	0.013	0.434	0.472	0.135	0.100	NaN	0.211	0.101	0.201	0.221	0.118	0.218	0.227	0.229	0.135	0.170	0.153	0.170	0.188	0.178	NaN	0.058	0.295	0.381	0.000	NaN	NaN	0.296	0.102	0.055	0.315

Table 27: Absolute performance for nomic-embed-text-v1.5 on all tasks. Table 2 serves as a legend.

q	m	req. bits	CLA 1	CLA 2	CLA 3	CLA 4	CLA 5	CLA 6	CLA 7	CLA 8	CLU 1	CLU 2	CLU 3	CLU 4	CLU 5	CLU 6	CLU 7	CLU 8	CLU 9	CLU 10	STS 1	STS 2	STS 3	STS 4	STS 5	STS 6	STS 7	STS 8	STS 9	STS 10	PCL 1	PCL 2	PCL 3	RET 1	RET 2	RET 3	RER 1	RER 2	RER 3	SUM 1
f32	768	24576	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	nan	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	nan	1.000	1.000	1.000	1.000	nan	nan	1.000	1.000	1.000	1.000
f32	512	16384	1.000	0.994	0.994	0.982	0.992	0.994	0.995	0.985	1.006	0.979	0.966	0.995	nan	0.974	0.998	1.010	1.000	0.995	0.993	1.000	0.997	0.998	0.999	0.998	0.997	0.996	0.997	nan	1.000	1.000	0.999	0.987	nan	nan	0.995	0.997	1.000	0.996
f32	256	8192	0.995	0.938	0.961	0.967	0.970	0.971	0.979	0.950	0.979	0.976	0.956	0.953	nan	0.982	0.960	0.979	0.996	1.013	0.982	1.000	1.000	0.999	0.997	0.995	0.993	0.994	0.988	nan	0.997	0.997	0.996	0.958	nan	nan	0.995	0.987	0.993	0.980
f32	128	4096	0.985	0.877	0.932	0.912	0.922	0.937	0.949	0.894	0.974	0.984	0.926	0.904	nan	0.975	0.940	0.979	0.984	0.965	0.968	0.997	0.993	0.991	0.988	0.986	0.987	0.987	0.984	nan	0.991	0.988	0.990	0.930	nan	nan	0.987	0.975	0.976	0.918
f32	64	2048	0.955	0.807	0.874	0.866	0.849	0.872	0.900	0.786	0.970	0.976	0.880	0.828	nan	0.941	0.850	0.934	0.979	0.881	0.927	0.994	0.989	0.970	0.974	0.971	0.978	0.978	0.980	nan	0.981	0.969	0.980	0.831	nan	nan	0.992	0.957	0.950	0.889
f32	32	1024	0.868	0.696	0.822	0.816	0.687	0.717	0.767	0.593	0.928	0.967	0.744	0.664	nan	0.861	0.573	0.739	0.964	0.618	0.883	0.978	0.963	0.919	0.930	0.931	0.939	0.942	0.960	nan	0.946	0.927	0.957	0.664	nan	nan	0.947	0.895	0.878	0.875
f32	16	512	0.692	0.569	0.790	0.795	0.492	0.532	0.623	0.427	0.910	0.913	0.576	0.499	nan	0.779	0.361	0.577	0.950	0.462	0.757	0.939	0.951	0.887	0.884	0.872	0.887	0.905	0.909	nan	0.813	0.854	0.911	0.348	nan	nan	0.877	0.807	0.777	0.857
f32	8	256	0.454	0.561	0.756	0.693	0.265	0.340	0.426	0.208	0.863	0.906	0.459	0.419	nan	0.716	0.263	0.493	0.931	0.366	0.588	0.866	0.908	0.793	0.810	0.802	0.817	0.834	0.801	nan	0.577	0.738	0.832	0.088	nan	nan	0.812	0.785	0.652	0.880
int	768	6144	0.989	0.948	0.976	0.872	0.960	0.957	0.995	0.917	0.994	0.991	0.976	1.018	nan	1.002	0.996	1.004	0.996	0.999	1.000	0.996	1.001	1.000	0.995	0.999	0.991	1.000	1.014	nan	1.004	0.999	1.001	1.027	nan	nan	0.993	0.989	1.002	0.980
int	512	4096	0.986	0.933	0.965	0.840	0.950	0.950	0.988	0.893	0.983	0.977	0.961	0.973	nan	0.982	0.996	0.992	1.002	0.993	0.989	0.995	1.002	0.999	0.996	0.999	0.988	0.998	1.012	nan	1.004	0.999	1.000	1.027	nan	nan	0.991	0.984	0.995	0.966
int	256	2048	0.978	0.877	0.934	0.811	0.928	0.929	0.969	0.847	0.962	0.957	0.954	0.948	nan	0.965	0.933	0.970	1.001	0.963	0.971	0.994	0.997	0.998	0.989	0.991	0.983	0.994	1.000	nan	1.000	0.995	0.997	1.005	nan	nan	0.982	0.980	0.982	0.957
int	128	1024	0.956	0.802	0.897	0.768	0.869	0.885	0.928	0.771	0.957	0.976	0.919	0.896	nan	0.963	0.924	0.961	0.996	0.947	0.948	0.990	0.984	0.996	0.977	0.983	0.975	0.985	0.998	nan	0.996	0.986	0.991	0.951	nan	nan	0.984	0.978	0.959	0.944
int	64	512	0.901	0.711	0.832	0.781	0.767	0.813	0.857	0.623	0.959	0.993	0.867	0.818	nan	0.939	0.855	0.924	0.978	0.883	0.907	0.985	0.974	0.967	0.956	0.971	0.958	0.970	0.987	nan	0.988	0.970	0.980	0.864	nan	nan	0.972	0.965	0.922	0.910
int	32	256	0.748	0.557	0.767	0.680	0.573	0.650	0.690	0.431	0.941	0.973	0.735	0.652	nan	0.861	0.568	0.735	0.963	0.615	0.900	0.959	0.944	0.917	0.898	0.925	0.931	0.927	0.927	nan	0.952	0.926	0.954	0.650	nan	nan	0.921	0.892	0.859	0.927
int	16	128	0.468	0.490	0.768	0.675	0.308	0.396	0.518	0.259	0.888	0.914	0.549	0.468	nan	0.784	0.360	0.577	0.952	0.459	0.777	0.900	0.894	0.840	0.842	0.848	0.874	0.853	0.835	nan	0.835	0.853	0.910	0.367	nan	nan	0.863	0.849	0.759	0.803
int	8	64	0.343	0.525	0.738	0.686	0.212	0.305	0.325	0.165	0.855	0.902	0.440	0.404	nan	0.723	0.267	0.491	0.934	0.379	0.618	0.813	0.792	0.738	0.750	0.772	0.756	0.713	0.679	nan	0.575	0.734	0.830	0.081	nan	nan	0.805	0.786	0.633	0.850
bin	768	768	0.794	0.585	0.733	0.845	0.609	0.625	0.709	0.540	0.879	0.914	0.647	0.524	nan	0.758	0.371	0.510	0.865	0.429	0.836	0.912	0.900	0.902	0.900	0.920	0.919	0.910	0.905	nan	0.949	0.905	0.957	0.474	nan	nan	0.884	0.832	0.811	0.913
bin	512	512	0.679	0.522	0.707	0.768	0.501	0.538	0.591	0.422	0.855	0.901	0.544	0.442	nan	0.706	0.299	0.457	0.875	0.374	0.843	0.879	0.857	0.857	0.858	0.888	0.891	0.875	0.859	nan	0.919	0.865	0.936	0.330	nan	nan	0.844	0.800	0.764	0.892
bin	256	256	0.455	0.437	0.654	0.698	0.311	0.382	0.413	0.231	0.843	0.930	0.392	0.327	nan	0.679	0.218	0.416	0.890	0.314	0.710	0.784	0.711	0.742	0.750	0.792	0.795	0.749	0.776	nan	0.786	0.762	0.876	0.148	nan	nan	0.802	0.776	0.654	0.882
bin	128	128	0.295	0.429	0.649	0.744	0.220	0.265	0.308	0.184	0.836	0.945	0.309	0.285	nan	0.669	0.197	0.404	0.904	0.312	0.551	0.674	0.580	0.609	0.623	0.688	0.682	0.618	0.615	nan	0.543	0.664	0.799	0.075	nan	nan	0.765	0.768	0.550	0.839
bin	64	64	0.217	0.419	0.632	0.706	0.172	0.248	0.298	0.121	0.855	0.905	0.279	0.265	nan	0.657	0.207	0.401	0.904	0.299	0.639	0.577	0.505	0.524	0.504	0.570	0.587	0.538	0.550	nan	0.365	0.592	0.691	0.056	nan	nan	0.710	0.785	0.483	0.864
bin	32	32	0.127	0.382	0.601	0.744	0.095	0.175	0.253	0.060	0.817	0.919	0.263	0.249	nan	0.612	0.196	0.392	0.900	0.273	0.474	0.491	0.502	0.381	0.392	0.450	0.482	0.480	0.393	nan	0.207	0.490	0.589	0.050	nan	nan	0.694	0.777	0.436	0.843
bin	16	16	0.064	0.375	0.597	0.729	0.055	0.115	0.164	0.029	0.831	0.871	0.273	0.271	nan	0.656	0.216	0.411	0.899	0.275	0.285	0.438	0.525	0.336	0.357	0.354	0.443	0.400	0.369	nan	0.134	0.453	0.520	0.013	nan	nan	0.682	0.741	0.382	0.779
bin	8	8	0.030	0.349	0.593	0.725	0.038	0.081	0.139	0.018	0.741	0.888	0.326	0.302	nan	0.644	0.209	0.407	0.561	0.268	0.253	0.289	0.307	0.157	0.212	0.175	0.203	0.223	0.202	nan	0.061	0.401	0.443	0.000	nan	nan	0.480	0.328	0.110	0.969

Table 28: Relative performance for nomic-embed-text-v1.5 on all tasks. Table 2 serves as a legend.

q	m	req. bits	Average classification	Average clustering	Average sts	Average pairclass	Average retrieval	Average rerank	Average summ	Average all
f32	768	24576	0.724	0.444	0.832	0.851	0.536	0.477	0.325	0.650
f32	512	16384	0.718	0.441	0.829	0.850	0.529	0.476	0.324	0.647
f32	256	8192	0.701	0.434	0.827	0.848	0.514	0.474	0.319	0.640
f32	128	4096	0.673	0.427	0.821	0.842	0.498	0.468	0.298	0.628
f32	64	2048	0.629	0.408	0.809	0.831	0.445	0.463	0.289	0.606
f32	32	1024	0.542	0.351	0.780	0.803	0.356	0.435	0.284	0.555
f32	16	512	0.444	0.301	0.737	0.729	0.186	0.394	0.278	0.492
f32	8	256	0.325	0.272	0.665	0.603	0.047	0.358	0.286	0.419
int	768	6144	0.690	0.442	0.831	0.852	0.551	0.475	0.318	0.642
int	512	4096	0.681	0.437	0.829	0.851	0.550	0.473	0.314	0.638
int	256	2048	0.661	0.427	0.824	0.849	0.539	0.468	0.311	0.628
int	128	1024	0.626	0.422	0.816	0.843	0.509	0.465	0.307	0.615
int	64	512	0.574	0.407	0.801	0.833	0.463	0.455	0.296	0.591
int	32	256	0.464	0.350	0.769	0.804	0.348	0.426	0.301	0.533
int	16	128	0.346	0.297	0.707	0.736	0.197	0.393	0.261	0.460
int	8	64	0.286	0.271	0.611	0.601	0.044	0.353	0.276	0.394
bin	768	768	0.496	0.294	0.749	0.799	0.254	0.404	0.297	0.515
bin	512	512	0.429	0.273	0.722	0.773	0.177	0.385	0.290	0.480
bin	256	256	0.320	0.253	0.629	0.689	0.080	0.355	0.286	0.412
bin	128	128	0.270	0.246	0.521	0.565	0.040	0.329	0.273	0.355
bin	64	64	0.244	0.243	0.462	0.460	0.030	0.308	0.281	0.321
bin	32	32	0.208	0.235	0.373	0.355	0.027	0.297	0.274	0.276
bin	16	16	0.177	0.239	0.322	0.303	0.007	0.281	0.253	0.249
bin	8	8	0.163	0.221	0.185	0.245	0.000	0.151	0.315	0.190

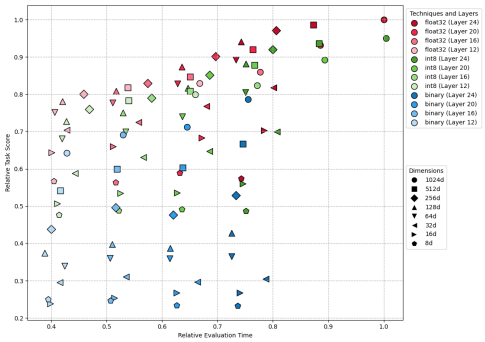
Table 29: Performance for nomic-embed-text-v1.5, averaged per category. Table 2 serves as a legend.

q	m	req. bits	Average Relative classification	Average Relative clustering	Average Relative sts	Average Relative pairclass	Average Relative retrieval	Average Relative rerank	Average Relative summ	Average Relative all
f32	768	24576	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
f32	512	16384	0.992	0.991	0.997	1.000	0.987	0.998	0.996	0.994
f32	256	8192	0.966	0.977	0.994	0.997	0.958	0.992	0.980	0.982
f32	128	4096	0.926	0.959	0.987	0.990	0.930	0.979	0.918	0.961
f32	64	2048	0.864	0.915	0.974	0.977	0.831	0.966	0.889	0.925
f32	32	1024	0.746	0.784	0.938	0.943	0.664	0.907	0.875	0.840
f32	16	512	0.615	0.670	0.888	0.859	0.348	0.820	0.857	0.741
f32	8	256	0.463	0.602	0.802	0.716	0.088	0.750	0.880	0.638
int	768	6144	0.952	0.997	1.000	1.001	1.027	0.995	0.980	0.988
int	512	4096	0.938	0.984	0.997	1.001	1.027	0.990	0.966	0.980
int	256	2048	0.909	0.961	0.991	0.998	1.005	0.981	0.957	0.963
int	128	1024	0.860	0.949	0.982	0.991	0.951	0.974	0.944	0.942
int	64	512	0.786	0.913	0.964	0.979	0.864	0.953	0.910	0.904
int	32	256	0.637	0.782	0.925	0.944	0.650	0.891	0.927	0.810
int	16	128	0.485	0.661	0.851	0.866	0.367	0.824	0.803	0.698
int	8	64	0.412	0.600	0.737	0.713	0.081	0.742	0.850	0.606
bin	768	768	0.680	0.655	0.900	0.937	0.474	0.842	0.913	0.770
bin	512	512	0.591	0.606	0.868	0.907	0.330	0.803	0.892	0.716
bin	256	256	0.448	0.556	0.756	0.808	0.148	0.744	0.882	0.620
bin	128	128	0.387	0.540	0.626	0.669	0.075	0.694	0.839	0.547
bin	64	64	0.352	0.530	0.555	0.549	0.056	0.659	0.864	0.504
bin	32	32	0.304	0.513	0.450	0.429	0.050	0.636	0.843	0.447
bin	16	16	0.266	0.523	0.390	0.369	0.013	0.602	0.779	0.413
bin	8	8	0.247	0.483	0.225	0.301	0.000	0.306	0.969	0.327

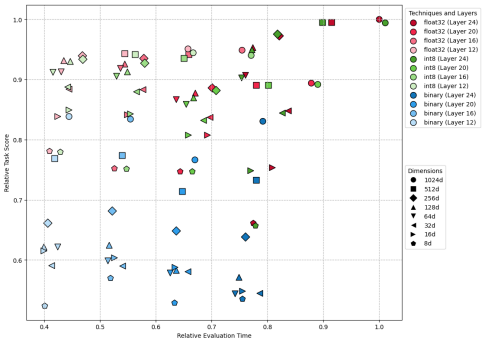
Table 30: Relative performance for nomic-embed-text-v1.5, averaged per category. Table 2 serves as a legend.

F. mxbai-embed-2d-large-v1

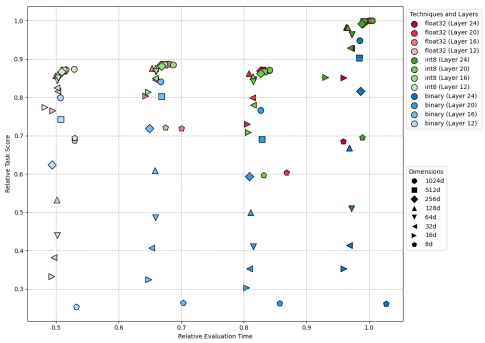
This section contains additional figures and tables for the MBAI-2D model.



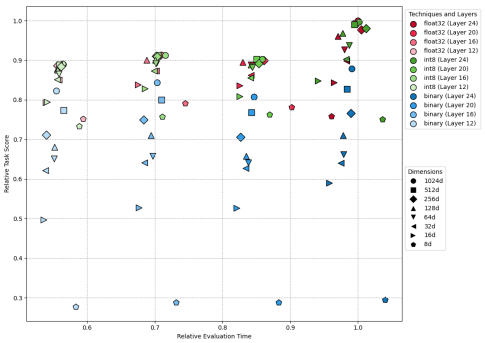
(a) Classification



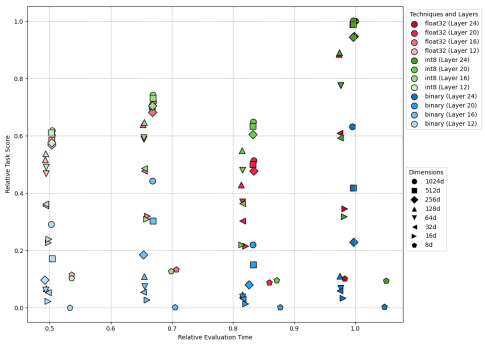
(b) Clustering



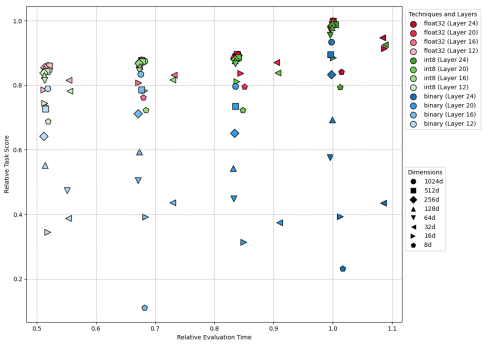
(c) Pair Classification



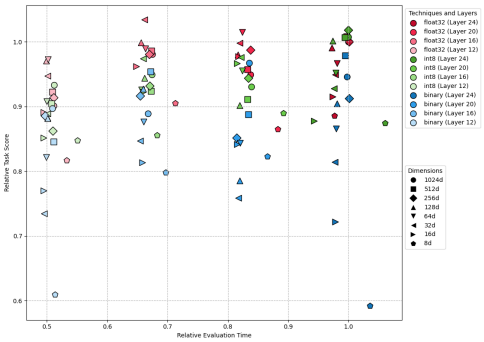
(d) Re-Ranking



(e) Retrieval



(f) Semantic Textual Similarity



(g) Summarization

Figure 16: Trade-off between memory consumption, evaluation time, and performance of MBAI-2D, averaged over all selected MTEB tasks for each task category. The x-axis represents the relative evaluation time while the y-axis represents the relative performance. The color of the markers represent the quantization technique and inference layer, while the shape represents the embedding size of the respective MR-quantization combination.

q	m	l	CLA 1	CLA 2	CLA 3	CLA 4	CLA 5	CLA 6	CLA 7	CLA 8	CLU 1	CLU 2	CLU 3	CLU 4	CLU 5	CLU 6	CLU 7	CLU 8	CLU 9	CLU 10	STS 1	STS 2	STS 3	STS 4	STS 5	STS 6	STS 7	STS 8	STS 9	STS 10	PCL 1	PCL 2	PCL 3	RET 1	RET 2	RET 3	RER 1	RER 2	RER 3	SUM 1
f32	1024	24	68.22	18.40	27.82	11.08	45.70	26.74	18.19	76.19	14.78	8.95	165.95	18.11	132.78	16.55	239.84	230.99	190.74	12.34	2.39	57.73	25.31	10.26	27.41	21.87	9.40	10.23	1.50	31.36	41.51	58.56	257.29	457.45	718.69	288.03	32.70	293.66	311.40	39.45
f32	1024	20	60.65	15.93	23.57	9.43	42.60	24.74	15.10	71.85	13.74	9.22	140.15	15.76	112.17	14.68	201.77	195.59	162.66	10.28	1.97	48.57	21.19	8.46	23.02	18.61	7.96	8.52	1.30	26.07	35.08	49.11	215.32	380.03	600.52	240.81	27.52	261.31	259.91	33.03
f32	1024	16	54.53	13.07	20.12	7.66	39.16	22.78	13.28	65.19	13.22	7.74	112.46	15.33	89.76	12.86	164.83	160.36	133.54	8.90	1.61	39.21	17.11	6.82	18.15	15.00	6.52	6.96	1.03	20.91	29.05	39.12	172.93	305.25	482.23	192.98	22.20	230.51	207.42	26.63
f32	1024	12	48.84	10.35	15.92	6.07	35.51	20.51	10.48	62.86	10.29	9.19	87.63	12.43	71.57	12.78	126.21	125.11	108.46	8.48	1.23	30.21	13.13	5.11	13.78	11.27	4.89	5.38	0.84	16.06	22.59	29.13	130.37	230.40	362.23	145.63	16.76	201.43	154.52	20.18
f32	512	24	57.17	17.95	27.63	11.24	39.01	15.12	17.37	60.07	12.06	7.16	162.60	16.28	127.72	16.04	236.20	225.60	179.20	10.08	2.37	57.69	25.34	10.17	27.38	21.92	9.46	10.24	1.53	31.14	40.31	58.89	256.36	453.93	717.38	287.47	32.73	281.63	320.76	39.33
f32	512	20	52.09	15.44	23.11	9.31	35.97	13.73	14.72	55.37	10.20	5.45	137.60	15.12	107.30	14.25	199.69	190.28	151.56	8.79	1.96	48.84	21.12	8.40	23.03	18.63	7.94	8.52	1.30	26.07	33.98	49.24	213.63	379.63	599.39	239.98	27.51	250.54	267.41	32.83
f32	512	16	46.21	12.92	18.93	7.59	32.26	11.41	12.10	50.17	9.13	5.66	110.26	12.71	88.04	11.56	160.17	154.85	124.74	7.66	1.59	39.26	17.18	6.86	18.14	14.91	6.48	6.97	1.04	21.02	27.80	39.94	171.96	304.23	480.16	193.01	22.20	217.90	215.73	26.56
f32	512	12	39.21	10.06	14.95	6.25	28.80	8.90	9.47	45.63	8.56	5.84	85.64	10.36	67.70	9.44	121.48	117.71	99.50	6.26	1.23	29.81	13.25	5.21	13.75	11.22	4.98	5.24	0.87	16.06	21.42	30.25	129.62	229.59	361.41	145.41	16.72	188.46	163.22	20.09
f32	256	24	52.03	17.66	27.37	11.15	26.14	14.81	16.54	53.17	7.97	3.31	162.01	16.39	127.69	12.98	234.61	220.48	173.64	10.19	2.38	57.93	25.37	10.18	27.29	21.94	9.43	10.24	1.53	30.96	40.05	58.91	256.66	454.51	719.23	287.68	32.87	287.84	320.54	39.50
f32	256	20	46.17	15.32	23.07	9.39	22.87	13.02	14.12	47.54	7.26	3.64	135.48	14.23	105.54	11.09	197.09	186.45	145.09	8.04	2.01	48.40	21.18	8.37	22.89	18.60	7.90	8.57	1.31	25.89	33.53	49.29	213.94	380.36	600.07	240.71	27.57	257.94	268.37	33.05
f32	256	16	40.13	12.14	18.93	7.52	19.06	10.25	11.57	41.86	6.38	3.37	109.54	10.94	86.06	9.39	158.57	151.80	118.68	6.84	1.59	38.88	17.13	6.76	18.12	14.88	6.54	6.95	1.03	20.86	27.32	39.64	171.55	304.48	482.12	192.53	22.17	216.13	215.56	26.41
f32	256	12	33.97	9.59	14.56	5.96	14.99	8.07	8.87	35.89	5.53	3.21	83.79	8.86	67.57	8.31	119.69	113.30	92.62	5.84	1.23	29.52	13.07	5.11	13.76	11.19	4.81	5.30	0.81	15.87	20.93	30.28	129.30	229.80	361.83	145.19	16.75	185.57	163.26	20.16
f32	128	24	41.41	17.10	26.66	10.98	24.45	14.22	16.02	38.84	6.90	2.25	161.36	15.03	126.30	12.54	233.63	218.62	169.01	8.65	2.35	57.17	25.35	10.10	27.39	21.79	9.39	10.24	1.55	31.02	39.11	57.28	249.54	442.76	700.96	280.96	32.01	271.98	313.10	38.35
f32	128	20	35.52	14.87	22.59	9.18	20.92	12.28	13.93	32.87	7.19	2.28	135.41	12.57	105.69	11.17	196.55	185.02	142.55	7.63	1.95	47.78	21.36	8.44	22.74	18.34	7.92	8.48	1.26	26.07	32.92	48.00	208.69	370.34	584.89	234.93	26.85	243.15	261.85	32.22
f32	128	16	29.23	11.94	18.60	7.41	17.23	9.83	11.15	27.68	5.87	2.27	108.90	10.31	84.94	8.48	157.31	148.60	114.90	6.30	1.56	38.36	17.23	6.74	18.19	14.81	6.48	6.88	1.05	20.89	26.77	38.61	168.73	297.33	468.89	188.60	21.64	212.96	210.51	25.90
f32	128	12	23.95	9.87	14.63	5.89	14.18	8.02	9.22	22.86	4.56	2.71	83.18	8.89	65.86	6.71	119.38	112.77	88.24	4.86	1.21	28.95	13.05	5.22	13.76	11.24	4.82	5.19	0.82	16.05	20.77	29.50	126.91	225.19	353.26	142.17	16.41	191.69	159.75	19.68
f32	64	24	40.93	17.04	26.49	10.92	23.53	14.04	15.89	37.24	6.85	1.83	161.08	15.24	125.24	11.60	232.94	218.50	167.95	8.43	2.32	57.17	25.35	10.15	27.23	21.88	9.44	10.18	1.53	31.15	39.76	57.50	251.31	445.29	702.21	281.87	32.10	282.06	310.61	38.71
f32	64	20	34.95	14.64	22.86	9.27	19.98	12.28	13.53	31.84	5.68	1.88	135.06	12.16	104.09	9.61	194.91	181.81	140.59	7.16	1.99	47.67	21.29	8.40	22.74	18.52	7.97	8.49	1.29	25.99	33.60	48.16	209.60	371.82	586.91	235.53	26.98	251.81	262.39	32.51
f32	64	16	28.59	12.04	18.44	7.38	16.55	9.66	11.10	26.61	6.56	1.85	108.58	10.00	84.49	8.09	156.58	148.21	113.62	6.07	1.60	38.42	17.25	6.73	18.27	14.82	6.47	6.92	1.05	20.82	27.36	38.91	168.43	298.68	470.31	188.74	21.77	223.51	211.96	26.17
f32	64	12	23.09	9.20	14.79	5.67	13.39	8.26	8.83	21.12	4.19	2.96	83.23	8.00	64.54	6.41	119.29	112.58	86.85	5.37	1.26	28.94	13.04	5.13	13.79	11.20	4.82	5.31	0.81	15.99	20.99	29.59	127.14	225.87	354.79	142.60	16.43	192.54	160.26	19.81
f32	32	24	43.68	18.38	29.52	12.10	25.64	14.57	17.91	40.10	8.40	2.59	173.30	15.62	132.97	13.08	255.38	237.50	181.80	9.51	2.50	62.80	27.83	11.23	29.87	23.77	10.28	11.14	1.62	33.69	39.67	57.48	251.40	444.59	701.21	281.43	32.13	281.88	313.66	38.58
f32	32	20	38.04	15.77	25.04	10.19	21.55	12.67	14.76	34.46	6.64	1.67	146.30	13.80	111.19	10.40	213.72	198.52	153.78	8.19	2.09	52.48	23.12	9.36	25.06	19.95	8.58	9.27	1.35	28.19	33.34	48.09	209.86	371.33	587.13	235.65	26.94	252.02	262.83	32.34
f32	32	16	30.56	13.22	19.77	8.37	17.77	10.66	12.17	28.34	6.25	2.79	117.07	10.72	90.14	8.42	171.24	159.64	121.94	6.25	1.71	42.49	18.53	7.40	20.04	16.19	6.87	7.45	1.13	22.74	27.47	38.71	168.32	298.66	471.52	188.95	21.72	223.99	211.68	26.10
f32	32	12	23.51	10.19	15.13	6.28	13.66	8.05	9.43	22.59	4.29	1.81	89.53	9.04	68.68	7.50	129.25	121.60	92.67	4.80	1.29	31.97	14.03	5.60	15.10	12.29	5.28	5.63	0.88	16.96	21.12	29.63	126.70	225.65	354.55	142.52	16.45	192.69	160.35	19.77
f32	16	24	43.01	17.91	28.96	11.92	24.94	14.67	17.06	39.73	6.75	1.72	173.16	15.45	132.40	12.04	255.02	239.14	181.41	9.48	2.53	62.69	27.78	11.20	29.93	23.80	10.34	11.21	1.64	33.45	38.78	57.06	249.31	445.18	705.36	286.07	31.92	268.81	311.92	38.43
f32	16	20	36.56	15.50	23.98	10.06	21.35	12.90	14.84	35.16	5.93	2.31	144.94	12.87	112.00	10.74	213.32	198.38	151.24	7.93	2.02	47.58	21.82	8.65	22.93	18.43	7.98	8.62	1.27	26.69	32.64	47.85	208.80	372.42	588.58	238.36	26.86	239.85	261.07	32.25
f32	16	16	26.41	11.84	17.85	7.60	16.55	9.92	11.89	26.51	5.77	1.95	111.98	10.57	86.22	9.01	158.93	150.77	118.56	6.05	1.55	38.35	17.42	6.94	18.27	14.86	6.44	6.94	0.99	21.10	26.69	37.62	165.68	300.07	473.06	191.59	21.29	205.64	210.10	25.56
f32	16	12	22.53	9.41	14.13	5.70	12.68	7.63	9.07	21.09	4.17	1.84	83.59	8.02	65.84	6.70	120.76	114.43	89.74	5.37	1.18	29.94	13.17	5.28	13.80	11.18	4.80	5.22	0.78	16.22	20.52	29.18	126.00	225.22	357.08	145.13	16.47	180.34	155.51	19.51
f32	8	24	40.82	17.53	27.04	11.04	23.71	13.76	16.18	37.81	6.29	2.38	164.55	14.98	127.30	11.57	241.49	225.53	174.13	8.39	2.35	58.39	26.28	10.42	27.78	22.49	9.71	10.54	1.49	31.22	38.69	57.10	249.34	445.23	705.18	285.71	31.81	266.99	311.32	38.54
f32	8	20	36.04	15.08	22.47	9.26	20.15	11.90	13.77	32.19	5.38	1.53	137.91	12.29	106.02	9.77	201.06	190.65	144.97	7.16	1.97	48.98	22.08	8.62	23.28	18.71	8.17	8.77	1.28	26.36	35.22	51.91	223.78	372.87	631.20	254.69	29.45	264.62	281.84	34.82
f32	8	16	28.55	11.97	18.34	7.61	16.45	10.24	11.24	26.95	4.50	1.44	110.97	10.08	85.98	8.15	162.60	152.29	116.89	5.88	1.58	39.24	17.57	6.96	18.61	15.04	6.46	7.11	1.00	21.08	28.50	41.91	179.79	322.14	506.93	205.14	23.16	233.72	227.31	28.12
f32	8	12	22.64	9.58	14.71	5.69	12.96	8.25	8.53	21.18	3.70	1.46	84.29	7.72	65.81	6.36	121.96	115.24	89.39	4.82	1.19	29.87	13.36	5.19	13.95	11.34	4.88	5.32	0.78	15.99	21.77	31.32	136.17	245.84	383.19	154.80	17.96	200.77	171.16	21.02

Table 31: Absolute evaluation time for mxbai-embed-2d-large-v1 on all tasks using float quantization. Table 2 serves as a legend.

q	m	l	CLA 1	CLA 2	CLA 3	CLA 4	CLA 5	CLA 6	CLA 7	CLA 8	CLU 1	CLU 2	CLU 3	CLU 4	CLU 5	CLU 6	CLU 7	CLU 8	CLU 9	CLU 10	STS 1	STS 2	STS 3	STS 4	STS 5	STS 6	STS 7	STS 8	STS 9	STS 10	PCL 1	PCL 2	PCL 3	RET 1	RET 2	RET 3	RER 1	RER 2	RER 3	SUM 1
int	1024	24	70.41	17.84	27.48	11.21	47.66	26.47	17.43	79.14	14.57	8.40	167.29	18.38	130.46	18.16	240.57	232.89	189.46	13.22	2.38	58.17	25.46	10.27	27.51	21.98	9.49	10.32	1.52	31.01	41.93	58.82	257.54	453.30	718.28	288.13	32.92	291.97	312.55	39.43
int	1024	20	63.03	15.65	23.48	9.46	43.40	24.60	15.20	73.94	13.29	8.02	138.75	18.02	111.51	16.88	202.18	196.33	161.51	10.76	1.96	48.87	21.23	8.56	23.17	18.51	7.98	8.59	1.28	26.28	35.18	49.31	214.83	379.57	599.19	240.91	27.56	263.47	260.33	33.09
int	1024	16	56.93	13.04	19.04	7.81	38.72	21.77	12.75	66.77	12.62	8.64	113.48	14.44	92.04	13.77	165.25	160.87	133.28	9.80	1.61	39.38	17.26	6.83	18.35	15.03	6.56	6.97	1.07	20.92	29.12	40.09	173.64	304.78	480.59	193.26	22.28	232.70	209.67	26.59
int	1024	12	48.72	10.24	15.53	6.25	35.90	19.61	10.39	60.64	11.78	10.12	87.68	12.03	71.13	11.99	126.10	124.71	108.09	8.08	1.22	30.12	13.34	5.29	13.88	11.36	4.91	5.27	0.83	16.11	23.11	30.48	130.84	229.92	362.37	145.51	16.79	198.66	156.58	20.20
int	512	24	57.97	18.06	27.77	11.49	39.49	15.02	17.80	60.73	10.78	6.64	163.63	17.06	128.69	14.77	236.50	225.81	177.39	10.19	2.38	57.90	25.49	10.20	27.40	21.87	9.46	10.29	1.57	30.95	40.32	58.94	256.66	453.97	717.60	287.55	32.81	279.94	319.99	39.22
int	512	20	51.51	15.46	23.19	9.46	36.51	13.68	14.74	55.89	10.96	7.25	136.45	15.18	107.23	12.37	198.74	189.43	150.42	10.05	1.97	48.83	21.20	8.41	23.09	18.64	7.94	8.54	1.30	25.88	34.04	49.36	214.49	378.82	599.28	240.30	27.57	248.64	267.87	32.85
int	512	16	45.81	12.84	18.91	7.88	32.27	11.08	12.27	49.44	8.46	5.40	110.47	12.03	89.15	12.04	159.90	154.32	123.19	7.64	1.60	39.25	17.17	6.86	18.15	14.93	6.50	6.96	1.05	21.00	27.79	39.91	171.88	304.17	482.12	193.16	22.12	218.76	215.80	26.53
int	512	12	40.25	10.13	14.93	6.46	29.07	8.42	9.50	44.45	8.74	6.43	85.26	10.95	69.31	10.66	121.56	117.02	97.14	6.37	1.20	29.75	13.22	5.31	13.74	11.27	4.89	5.34	0.81	16.09	21.46	30.25	129.48	229.99	360.78	145.25	16.78	187.95	163.31	20.02
int	256	24	52.41	17.36	27.14	11.28	25.78	14.09	16.80	51.54	7.99	4.48	161.17	15.23	125.29	13.35	234.87	219.93	170.15	9.25	2.39	57.56	25.27	10.14	27.31	21.85	9.44	10.19	1.52	31.18	40.01	58.86	256.26	452.55	718.46	288.12	32.76	294.53	320.92	39.44
int	256	20	45.16	14.75	22.73	9.49	21.97	12.58	14.35	46.22	7.53	4.31	134.93	13.36	105.55	10.70	196.59	184.21	145.34	8.82	1.99	48.33	21.17	8.39	22.80	18.51	7.99	8.53	1.26	25.97	33.54	49.30	213.82	378.74	600.07	240.21	27.43	252.55	268.23	32.91
int	256	16	39.99	12.63	18.61	7.81	18.47	10.41	12.12	41.25	6.30	3.36	109.32	10.94	85.50	9.15	158.91	149.27	118.82	7.49	1.57	39.16	17.18	6.69	18.12	14.78	6.42	6.91	1.05	20.90	27.33	39.72	172.29	304.35	481.80	192.98	22.14	217.38	215.72	26.43
int	256	12	33.96	10.03	14.71	6.46	15.27	7.86	9.10	35.55	6.04	3.92	84.18	8.88	65.31	7.43	120.02	114.31	90.64	5.43	1.20	29.27	13.14	5.11	13.67	11.20	4.94	5.25	0.81	15.82	20.93	30.42	129.29	229.85	361.08	145.37	16.76	190.36	163.01	20.12
int	128	24	41.34	17.45	26.91	11.29	24.49	13.98	16.35	38.72	7.36	2.20	161.93	15.33	125.55	11.72	234.32	218.35	167.61	8.65	2.38	57.07	25.36	10.12	27.37	21.80	9.41	10.23	1.54	30.94	39.17	57.38	250.29	443.92	701.69	280.71	32.08	277.61	313.42	38.43
int	128	20	35.17	15.34	22.90	9.60	21.03	12.09	14.40	32.82	7.36	2.43	135.19	12.67	105.22	10.11	196.18	184.27	141.75	7.76	1.98	47.80	21.27	8.39	22.73	18.44	7.95	8.51	1.28	25.95	33.57	47.93	210.02	371.37	586.03	235.26	26.94	252.51	262.34	32.34
int	128	16	30.21	12.48	18.91	7.71	17.38	9.74	11.51	27.69	5.38	2.32	109.28	10.78	84.88	8.52	157.26	147.53	115.05	6.93	1.64	38.21	17.11	6.81	18.23	14.82	6.40	6.90	1.04	20.85	27.46	38.73	168.41	298.58	470.61	188.96	21.73	223.09	211.20	26.11
int	128	12	23.91	9.64	15.32	6.06	14.11	8.10	9.70	22.69	4.73	3.47	83.57	8.08	64.87	6.77	119.69	112.75	87.56	5.74	1.25	28.97	13.05	5.22	13.84	11.23	4.84	5.22	0.79	15.88	21.19	29.60	126.78	225.57	353.71	142.49	16.45	191.84	159.82	19.77
int	64	24	41.03	17.90	27.33	11.38	23.70	13.68	16.39	37.06	6.64	2.00	161.12	14.41	124.91	11.33	233.69	217.19	167.37	8.41	2.36	56.96	25.37	10.09	27.22	21.88	9.41	10.22	1.52	31.17	39.72	57.45	252.00	444.49	703.52	281.51	32.24	283.81	314.20	38.63
int	64	20	34.18	15.09	22.74	9.56	20.19	11.72	14.47	31.76	6.60	2.13	134.88	12.36	104.56	9.71	195.20	183.14	141.18	7.92	1.97	47.94	21.24	8.38	22.80	18.49	7.87	8.46	1.31	26.02	33.43	48.23	209.82	371.53	586.39	235.56	26.90	254.43	262.70	32.51
int	64	16	29.48	12.85	18.74	8.04	16.23	10.05	11.98	26.76	5.16	2.01	108.59	10.39	84.33	8.20	156.70	146.37	114.54	5.89	1.60	38.36	17.15	6.83	18.18	14.88	6.40	6.97	1.03	20.97	27.27	39.08	168.41	297.90	470.37	189.13	21.72	223.00	211.72	25.92
int	64	12	22.75	9.74	15.30	6.02	13.36	8.14	9.54	21.27	4.73	1.77	82.55	8.15	65.23	6.44	118.47	111.30	86.47	4.67	1.23	28.87	12.96	5.16	13.76	11.24	4.86	5.35	0.80	15.99	21.08	29.68	127.63	226.05	354.56	142.64	16.43	192.96	160.37	19.71
int	32	24	43.39	18.81	30.01	12.30	25.08	14.92	17.73	40.54	6.97	2.87	173.70	15.47	133.02	12.11	254.87	238.70	181.43	9.77	2.55	62.39	28.11	11.10	29.77	23.84	10.34	11.29	1.63	33.55	39.54	57.40	251.43	444.66	702.51	281.16	32.06	281.77	313.62	38.49
int	32	20	37.29	16.07	24.95	10.36	21.48	12.97	15.02	34.38	5.96	1.78	145.38	13.79	111.23	10.40	212.94	198.74	150.52	7.57	2.09	52.85	23.09	9.27	25.18	19.94	8.64	9.33	1.36	28.27	33.60	47.99	209.69	371.68	587.20	235.16	26.92	251.86	262.38	32.41
int	32	16	29.90	13.58	20.11	8.51	17.64	10.71	12.81	28.37	5.13	1.81	117.22	11.32	89.92	9.01	171.70	159.55	121.57	6.25	1.69	42.72	18.68	7.38	20.06	16.20	6.85	7.47	1.10	22.64	27.29	38.83	168.29	298.85	470.46	188.81	21.81	220.34	211.31	26.02
int	32	12	23.73	10.46	16.43	6.42	13.73	8.48	9.83	22.72	5.21	1.62	88.96	8.33	68.51	7.21	129.11	120.89	94.19	4.75	1.32	31.37	14.16	5.64	14.85	12.15	5.30	5.62	0.89	17.24	20.95	29.63	127.11	225.61	354.76	142.45	16.39	191.49	160.09	19.78
int	16	24	40.98	17.22	26.62	11.33	23.45	14.23	16.64	37.09	6.64	2.03	163.08	14.74	126.99	11.51	235.78	220.22	171.48	9.11	2.33	57.93	25.78	10.26	27.21	22.06	9.52	10.35	1.46	31.56	37.44	54.98	244.70	444.94	704.61	285.50	31.45	265.16	298.42	37.20
int	16	20	33.99	14.60	22.52	9.73	19.89	11.66	13.63	31.51	5.90	2.04	139.56	12.57	107.28	10.26	200.62	187.74	143.17	7.29	1.94	48.32	21.55	8.58	22.72	18.48	8.01	8.56	1.26	26.27	32.72	48.03	208.71	368.10	581.86	238.52	26.92	239.52	260.82	32.17
int	16	16	28.37	12.14	18.73	7.80	16.50	9.92	11.91	27.28	5.47	2.16	113.08	10.91	86.92	8.28	163.28	152.28	115.96	6.72	1.54	38.78	17.66	7.00	18.75	15.08	6.50	7.05	1.02	21.47	26.60	38.33	166.07	298.11	472.06	191.99	21.72	211.63	209.00	26.02
int	16	12	22.82	9.54	14.49	6.01	12.78	7.73	9.44	21.59	4.69	2.47	85.09	8.86	65.71	7.27	122.66	114.69	88.74	5.41	1.19	29.86	13.37	5.20	13.98	11.38	4.92	5.35	0.74	16.16	20.04	28.29	123.35	226.71	356.20	145.05	16.37	180.30	158.33	19.51
int	8	24	41.06	17.91	27.36	11.22	23.76	13.85	16.46	37.88	7.23	2.01	165.06	15.31	126.36	11.59	240.11	225.19	170.54	8.74	2.35	58.23	26.22	10.40	27.69	22.45	9.74	10.50	1.49	31.17	39.35	58.62	261.76	478.50	754.09	303.83	34.63	297.58	322.71	41.83
int	8	20	34.56	15.32	22.76	9.52	20.03	11.78	13.95	32.16	6.51	1.99	138.83	12.80	107.33	10.46	201.34	188.50	144.54	7.34	1.96	48.95	22.09	8.66	23.16	18.74	8.12	8.79	1.25	26.25	33.28	49.35	218.84	393.95	630.96	252.00	28.31	258.73	268.35	35.18
int	8	16	29.42	12.47	19.18	7.58	16.03	9.69	11.37	26.86	6.04	1.91	111.86	10.62	86.67	8.20	161.79	151.64	116.21	6.21	1.56	39.07	17.71	6.95	18.55	15.11	6.58	7.02	1.05	21.40	27.08	39.70	178.41	319.22	507.11	199.75	22.09	226.43	213.56	26.94
int	8	12	24.13	9.43	14.58	6.23	13.48	7.67	8.94	21.62	4.80	1.81	85.43	8.06	66.68	6.45	122.70	114.82	88.89	5.41	1.22	30.35	13.45	5.30	14.00	11.36	4.89	5.32	0.78	16.11	21.62	31.69	135.81	245.38	381.88	155.68	17.78	198.07	170.37	21.73

Table 32: Absolute evaluation time for mxbai-embed-2d-large-v1 on all tasks using int quantization. Table 2 serves as a legend.

q	m	l	CLA 1	CLA 2	CLA 3	CLA 4	CLA 5	CLA 6	CLA 7	CLA 8	CLU 1	CLU 2	CLU 3	CLU 4	CLU 5	CLU 6	CLU 7	CLU 8	CLU 9	CLU 10	STS 1	STS 2	STS 3	STS 4	STS 5	STS 6	STS 7	STS 8	STS 9	STS 10	PCL 1	PCL 2	PCL 3	RET 1	RET 2	RET 3	RER 1	RER 2	RER 3	SUM 1
bin	1024	24	42.32	17.36	26.99	11.15	24.80	14.15	16.49	39.63	7.98	3.41	161.67	14.93	124.98	11.96	234.13	219.25	168.71	8.93	2.35	57.32	25.39	10.22	27.29	21.98	9.41	10.20	1.52	31.10	39.67	58.87	255.71	453.09	717.00	287.55	32.81	276.44	320.05	39.34
bin	1024	20	37.17	15.09	22.56	9.28	21.41	12.06	14.27	33.89	6.41	2.56	134.87	13.17	104.98	10.41	197.61	183.26	143.57	8.01	1.98	47.95	21.34	8.42	22.82	18.62	7.97	8.51	1.26	25.92	33.44	49.23	214.58	378.97	599.38	240.34	27.37	247.62	267.62	32.95
bin	1024	16	29.70	12.21	18.98	7.52	17.80	10.09	11.48	28.57	5.56	2.63	109.26	10.87	84.87	9.00	158.26	148.10	114.94	6.51	1.59	38.54	17.25	6.86	18.22	14.88	6.52	6.90	1.04	20.93	27.22	39.72	171.80	304.47	480.95	192.82	22.13	217.53	215.57	26.34
bin	1024	12	24.60	9.53	14.98	5.86	14.53	8.44	9.66	23.73	4.68	2.37	83.36	9.13	65.68	6.94	120.03	114.43	88.12	6.02	1.23	29.26	13.13	5.26	13.84	11.30	4.89	5.34	0.84	15.89	20.84	30.16	129.47	229.74	361.03	145.19	16.72	184.28	163.32	20.09
bin	512	24	41.16	17.29	26.79	11.19	24.01	14.38	16.12	37.96	7.52	2.03	161.56	15.20	124.45	12.39	233.50	217.90	169.25	9.39	2.36	57.23	25.41	10.14	27.21	21.89	9.39	10.18	1.51	31.20	39.49	58.76	256.48	452.80	717.60	288.12	32.69	271.31	320.12	39.24
bin	512	20	35.52	14.72	23.10	9.51	20.29	12.37	13.86	31.94	6.01	2.19	134.79	12.44	104.18	9.97	195.89	182.78	140.37	7.29	1.99	47.82	21.41	8.44	22.71	18.55	7.92	8.55	1.26	26.02	33.81	49.23	213.80	379.90	599.31	240.51	27.53	242.56	268.04	32.90
bin	512	16	28.76	12.06	18.79	7.46	17.11	9.86	11.26	27.26	5.48	1.93	109.09	10.61	84.74	9.02	157.76	147.11	113.60	6.13	1.59	38.69	17.28	6.84	18.32	14.86	6.43	6.88	1.08	20.75	27.27	39.87	171.96	305.37	480.38	193.30	22.21	222.12	215.85	26.51
bin	512	12	22.82	9.68	14.51	6.29	13.73	7.76	9.07	21.93	4.26	1.86	83.77	8.50	64.73	6.60	119.28	111.99	88.76	4.76	1.23	29.23	13.11	5.23	13.83	11.28	4.84	5.38	0.79	16.09	20.97	30.24	129.17	230.17	361.86	145.70	16.76	192.87	163.68	20.17
bin	256	24	39.66	17.09	26.68	11.15	23.22	13.48	16.29	36.76	7.58	1.59	160.77	14.60	124.88	11.38	232.78	218.17	168.66	8.74	2.38	57.05	25.40	10.07	27.25	21.91	9.46	10.19	1.53	31.12	39.77	58.64	257.04	454.56	718.01	288.01	32.62	276.95	320.19	39.49
bin	256	20	34.26	14.41	22.41	9.33	19.84	11.78	13.37	31.53	6.30	1.59	135.47	12.14	104.53	9.53	195.42	181.81	141.83	7.02	1.96	47.58	21.31	8.43	22.68	18.32	7.97	8.55	1.29	26.00	32.97	47.89	209.44	379.50	599.87	234.67	26.96	239.40	261.88	32.15
bin	256	16	28.27	12.37	18.23	7.66	15.88	9.82	11.51	26.64	5.13	1.61	108.55	9.97	83.82	8.31	156.55	146.16	114.81	5.75	1.57	38.31	17.18	6.84	18.16	14.85	6.38	6.97	1.02	20.97	26.47	38.61	167.42	298.11	469.80	188.37	21.68	208.99	210.50	25.81
bin	256	12	22.05	9.23	14.57	5.75	13.00	7.99	8.59	21.16	3.84	1.52	82.32	8.10	64.47	6.08	118.91	111.46	85.92	5.03	1.22	28.91	13.12	5.17	13.83	11.19	4.83	5.31	0.80	15.88	20.33	29.36	125.96	224.82	352.84	142.08	16.33	178.72	159.23	19.60
bin	128	24	39.58	16.92	26.30	11.14	23.08	13.43	15.72	36.72	6.11	1.55	160.55	14.50	124.65	11.61	232.66	218.19	168.18	8.58	2.38	56.78	25.52	10.10	27.16	21.75	9.46	10.23	1.55	31.13	39.49	57.28	251.05	444.32	702.13	281.10	32.01	278.34	313.59	38.71
bin	128	20	33.95	14.14	22.07	9.38	19.65	11.76	13.34	31.06	6.45	1.47	134.93	12.00	104.32	9.39	195.16	182.25	141.22	7.34	1.96	47.74	21.26	8.44	22.71	18.35	7.93	8.53	1.25	26.03	33.25	47.89	209.58	372.25	586.34	234.97	26.89	246.89	262.10	32.32
bin	128	16	28.85	11.92	17.79	7.57	15.61	9.76	11.51	26.28	4.67	1.40	108.39	9.79	83.95	8.17	156.22	145.77	113.57	6.15	1.59	38.24	17.21	6.84	18.14	14.83	6.33	6.94	1.05	20.92	27.25	38.74	168.65	298.45	470.87	189.22	21.75	219.58	208.68	26.03
bin	128	12	21.62	8.91	13.84	5.74	12.39	7.41	8.46	20.86	3.80	1.34	82.17	8.01	64.38	5.95	118.19	110.93	85.66	4.74	1.24	29.03	13.01	5.20	13.78	11.25	4.85	5.21	0.82	15.98	21.02	29.58	126.86	225.83	354.58	142.59	16.42	190.54	157.06	19.77
bin	64	24	39.78	17.16	26.40	10.90	22.87	13.57	15.79	36.44	6.18	1.54	160.98	14.32	124.57	11.40	232.25	216.57	166.81	8.12	2.35	57.05	25.43	10.07	27.15	21.78	9.45	10.24	1.53	31.05	39.70	57.41	251.47	445.38	702.74	281.42	32.08	278.21	313.72	38.64
bin	64	20	33.94	14.51	21.92	9.04	19.45	11.59	13.66	31.17	5.91	1.41	134.91	11.93	103.84	9.21	194.46	180.86	139.30	6.97	1.95	47.72	21.23	8.47	22.68	18.31	7.93	8.53	1.27	25.96	33.55	48.12	209.72	371.67	587.46	235.40	26.95	248.75	262.71	32.37
bin	64	16	28.57	11.68	17.73	7.33	15.92	10.17	11.39	26.12	4.73	1.41	108.56	9.76	83.97	7.65	156.26	146.27	112.41	6.21	1.57	38.31	17.16	6.80	18.15	14.78	6.38	6.90	1.05	20.83	27.35	38.81	168.40	299.07	471.15	189.06	21.79	218.61	211.80	26.04
bin	64	12	24.29	9.97	15.26	6.00	13.55	8.04	9.48	21.92	4.44	1.30	82.44	7.98	70.01	6.36	129.85	121.73	91.90	4.95	1.30	31.72	14.02	5.57	14.88	12.46	5.30	5.61	0.82	17.20	21.00	29.65	126.77	225.83	354.35	142.53	16.38	187.13	160.41	19.69
bin	32	24	43.31	18.31	29.08	11.80	25.02	14.21	17.39	39.73	6.36	1.12	172.97	15.47	132.02	11.47	253.98	236.81	178.78	8.67	2.53	63.05	27.83	11.15	29.63	23.89	10.35	11.23	1.61	33.58	39.46	57.30	250.91	444.16	701.06	281.49	32.00	275.86	313.64	38.55
bin	32	20	36.66	15.40	24.56	9.88	21.24	12.25	14.50	33.35	5.08	1.03	144.77	12.89	110.68	9.69	212.17	197.77	149.55	7.21	2.13	52.36	23.17	9.36	25.16	19.98	8.59	9.31	1.39	28.02	33.02	47.93	208.92	371.91	587.32	235.49	26.83	246.56	262.52	32.26
bin	32	16	29.88	12.41	19.61	8.04	17.45	9.71	11.48	27.56	4.85	1.05	117.37	10.55	88.96	7.96	170.51	160.22	121.27	5.88	1.73	42.09	18.63	7.39	19.98	16.29	6.90	7.51	1.09	22.64	26.73	38.65	167.91	298.02	470.39	188.70	21.65	209.86	210.81	25.82
bin	32	12	23.43	9.86	14.69	6.14	13.36	7.62	9.11	21.79	3.96	0.90	88.78	8.11	68.18	6.07	129.47	120.20	91.59	4.49	1.28	31.48	14.24	5.63	15.03	12.30	5.30	5.71	0.85	17.08	20.26	29.98	126.19	225.11	357.97	145.08	16.59	175.74	158.92	19.54
bin	16	24	42.02	17.66	26.88	11.01	23.74	13.37	15.80	37.81	6.26	1.32	163.76	14.40	126.96	11.57	240.58	224.23	170.05	8.34	2.36	58.39	26.13	10.39	27.61	22.44	9.74	10.49	1.49	31.11	38.76	57.15	249.21	445.46	701.85	284.68	31.79	264.80	311.07	38.60
bin	16	20	35.03	14.94	22.68	9.38	19.93	11.36	13.44	32.14	5.05	1.39	137.86	12.18	105.63	9.36	201.18	187.82	142.87	7.19	1.96	48.60	22.12	8.66	23.28	18.70	8.12	8.74	1.28	26.27	32.51	47.90	208.39	372.35	588.50	238.53	26.79	236.92	260.42	32.17
bin	16	16	29.24	12.30	18.46	7.60	16.44	9.52	10.82	26.81	4.44	1.75	111.40	10.19	86.24	7.72	161.83	152.16	117.12	5.75	1.58	39.30	17.56	6.92	18.68	15.05	6.48	7.11	1.04	21.25	26.38	38.65	166.91	299.63	472.75	191.66	21.48	205.48	209.53	25.98
bin	16	12	23.05	9.48	14.45	5.80	13.23	7.12	8.28	21.19	3.52	1.19	85.25	7.60	66.03	5.87	122.14	115.03	88.79	4.48	1.21	30.24	13.50	5.30	13.99	11.30	4.87	5.27	0.79	16.27	19.98	29.81	125.65	226.18	356.15	144.24	16.36	175.21	158.92	19.51
bin	8	24	40.99	17.64	26.81	10.98	23.28	13.57	15.83	37.38	6.27	1.37	164.47	14.34	126.81	11.59	239.52	223.58	170.43	8.31	2.37	58.61	26.33	10.31	27.81	22.51	9.73	10.48	1.52	31.27	41.19	61.19	268.37	476.17	753.13	303.56	34.42	289.56	336.57	40.85
bin	8	20	34.50	14.69	23.03	9.32	19.64	11.62	13.70	31.98	4.87	1.22	134.79	12.60	105.94	9.83	200.46	189.49	142.67	6.98	1.95	48.74	21.96	8.60	23.13	18.73	8.11	8.79	1.26	26.56	34.37	51.15	223.66	400.71	628.14	253.44	28.70	255.39	280.61	34.16
bin	8	16	28.06	12.14	18.34	7.55	16.18	9.34	10.76	26.50	4.25	1.59	109.04	10.07	86.09	7.67	161.42	151.24	117.16	5.64	1.57	39.26	17.67	6.96	18.61	15.11	6.53	7.06	1.02	21.21	29.31	41.36	179.20	320.83	505.65	204.40	23.25	223.10	225.26	27.51
bin	8	12	22.58	9.16	14.11	5.91	12.85	7.06	8.49	20.85	3.92	1.31	81.72	7.60	65.38	5.99	122.04	114.37	87.72	4.59	1.18	29.80	13.51	5.26	14.15	11.34	4.93	5.31	0.74	16.21	22.18	31.48	135.18	243.99	381.09	154.61	17.76	191.76	172.58	20.25

Table 33: Absolute evaluation time for mxbai-embed-2d-large-v1 on all tasks using binary quantization. Table 2 serves as a legend.

q	m	l	CLA 1	CLA 2	CLA 3	CLA 4	CLA 5	CLA 6	CLA 7	CLA 8	CLU 1	CLU 2	CLU 3	CLU 4	CLU 5	CLU 6	CLU 7	CLU 8	CLU 9	CLU 10	STS 1	STS 2	STS 3	STS 4	STS 5	STS 6	STS 7	STS 8	STS 9	STS 10	PCL 1	PCL 2	PCL 3	RET 1	RET 2	RET 3	RER 1	RER 2	RER 3	SUM 1
f32	1024	24	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
f32	1024	20	0.889	0.866	0.847	0.851	0.932	0.925	0.830	0.943	0.929	1.030	0.845	0.870	0.845	0.887	0.841	0.847	0.853	0.833	0.823	0.841	0.837	0.824	0.840	0.851	0.846	0.832	0.870	0.831	0.845	0.839	0.837	0.831	0.836	0.836	0.842	0.890	0.835	0.837
f32	1024	16	0.799	0.711	0.723	0.692	0.857	0.852	0.730	0.856	0.895	0.865	0.678	0.846	0.676	0.777	0.687	0.694	0.700	0.721	0.673	0.679	0.676	0.665	0.662	0.686	0.693	0.680	0.688	0.667	0.700	0.668	0.672	0.667	0.671	0.670	0.679	0.785	0.666	0.675
f32	1024	12	0.716	0.562	0.572	0.548	0.777	0.767	0.576	0.825	0.697	1.027	0.528	0.687	0.539	0.772	0.526	0.542	0.569	0.687	0.515	0.523	0.519	0.498	0.503	0.515	0.519	0.526	0.560	0.512	0.544	0.497	0.507	0.504	0.504	0.506	0.512	0.686	0.496	0.512
f32	512	24	0.838	0.976	0.993	1.015	0.854	0.566	0.955	0.788	0.816	0.800	0.980	0.899	0.962	0.970	0.985	0.977	0.940	0.817	0.989	0.999	1.001	0.991	0.999	1.002	1.006	1.000	1.023	0.993	0.971	1.006	0.996	0.992	0.998	0.998	1.001	0.959	1.030	0.997
f32	512	20	0.764	0.839	0.831	0.841	0.787	0.514	0.809	0.727	0.690	0.610	0.829	0.835	0.808	0.861	0.833	0.824	0.795	0.713	0.820	0.846	0.835	0.819	0.840	0.852	0.844	0.832	0.868	0.831	0.819	0.841	0.830	0.830	0.834	0.833	0.842	0.853	0.859	0.832
f32	512	16	0.677	0.702	0.680	0.685	0.706	0.427	0.665	0.658	0.618	0.632	0.664	0.702	0.663	0.699	0.668	0.670	0.654	0.621	0.664	0.680	0.679	0.669	0.662	0.682	0.689	0.681	0.694	0.670	0.670	0.682	0.668	0.665	0.668	0.670	0.679	0.742	0.693	0.673
f32	512	12	0.575	0.547	0.537	0.564	0.630	0.333	0.521	0.599	0.579	0.653	0.516	0.572	0.510	0.571	0.506	0.510	0.522	0.507	0.514	0.516	0.524	0.508	0.502	0.513	0.529	0.512	0.582	0.512	0.516	0.516	0.504	0.502	0.503	0.505	0.511	0.642	0.524	0.509
f32	256	24	0.763	0.960	0.984	1.007	0.572	0.554	0.910	0.698	0.539	0.370	0.976	0.905	0.962	0.784	0.978	0.955	0.910	0.826	0.994	1.004	1.002	0.992	0.996	1.004	1.003	1.000	1.024	0.987	0.965	1.006	0.998	0.994	1.001	0.999	1.005	0.980	1.029	1.001
f32	256	20	0.677	0.833	0.829	0.848	0.500	0.487	0.776	0.624	0.491	0.407	0.816	0.786	0.795	0.670	0.822	0.807	0.761	0.652	0.842	0.838	0.837	0.816	0.835	0.850	0.840	0.837	0.876	0.826	0.808	0.842	0.832	0.832	0.835	0.836	0.843	0.878	0.862	0.838
f32	256	16	0.588	0.660	0.680	0.678	0.417	0.383	0.636	0.549	0.432	0.377	0.660	0.604	0.648	0.568	0.661	0.657	0.622	0.554	0.667	0.673	0.677	0.659	0.661	0.680	0.695	0.679	0.687	0.665	0.658	0.677	0.667	0.666	0.671	0.668	0.678	0.736	0.692	0.669
f32	256	12	0.498	0.521	0.523	0.538	0.328	0.302	0.488	0.471	0.374	0.359	0.505	0.489	0.509	0.502	0.499	0.490	0.486	0.473	0.516	0.511	0.516	0.498	0.502	0.511	0.512	0.518	0.541	0.506	0.504	0.517	0.502	0.502	0.503	0.504	0.512	0.632	0.524	0.511
f32	128	24	0.607	0.930	0.958	0.991	0.535	0.532	0.881	0.510	0.467	0.251	0.972	0.830	0.951	0.758	0.974	0.946	0.886	0.701	0.981	0.990	1.002	0.984	0.999	0.997	0.998	1.000	1.036	0.989	0.942	0.978	0.970	0.968	0.975	0.976	0.979	0.926	1.006	0.972
f32	128	20	0.521	0.808	0.812	0.829	0.458	0.459	0.766	0.431	0.486	0.255	0.816	0.694	0.796	0.675	0.820	0.801	0.747	0.619	0.816	0.828	0.844	0.822	0.830	0.839	0.842	0.829	0.838	0.831	0.793	0.820	0.811	0.810	0.814	0.816	0.821	0.828	0.841	0.817
f32	128	16	0.428	0.649	0.669	0.669	0.377	0.367	0.613	0.363	0.397	0.253	0.656	0.569	0.640	0.513	0.656	0.643	0.602	0.511	0.652	0.664	0.681	0.656	0.663	0.677	0.689	0.672	0.704	0.666	0.645	0.659	0.656	0.650	0.652	0.655	0.662	0.725	0.676	0.656
f32	128	12	0.351	0.536	0.526	0.531	0.310	0.300	0.507	0.300	0.309	0.303	0.501	0.491	0.496	0.405	0.498	0.488	0.463	0.394	0.507	0.501	0.516	0.509	0.502	0.514	0.512	0.507	0.545	0.512	0.500	0.504	0.493	0.492	0.491	0.494	0.502	0.653	0.513	0.499
f32	64	24	0.600	0.926	0.952	0.986	0.515	0.525	0.874	0.489	0.463	0.204	0.971	0.842	0.943	0.701	0.971	0.946	0.880	0.683	0.969	0.990	1.002	0.989	0.994	1.000	1.004	0.995	1.021	0.993	0.958	0.982	0.977	0.973	0.977	0.979	0.982	0.961	0.998	0.981
f32	64	20	0.512	0.796	0.822	0.837	0.437	0.459	0.744	0.418	0.385	0.211	0.814	0.672	0.784	0.581	0.813	0.787	0.737	0.580	0.830	0.826	0.841	0.819	0.830	0.847	0.848	0.830	0.863	0.829	0.809	0.822	0.815	0.813	0.817	0.818	0.825	0.858	0.843	0.824
f32	64	16	0.419	0.654	0.663	0.667	0.362	0.361	0.611	0.349	0.444	0.207	0.654	0.552	0.636	0.489	0.653	0.642	0.596	0.491	0.671	0.666	0.681	0.656	0.667	0.678	0.688	0.676	0.704	0.664	0.659	0.664	0.655	0.653	0.654	0.655	0.666	0.761	0.681	0.663
f32	64	12	0.338	0.500	0.532	0.512	0.293	0.309	0.486	0.277	0.284	0.330	0.501	0.442	0.486	0.388	0.497	0.487	0.455	0.435	0.527	0.501	0.515	0.500	0.503	0.512	0.512	0.519	0.538	0.510	0.506	0.505	0.494	0.494	0.494	0.495	0.502	0.656	0.515	0.502
f32	32	24	0.640	0.999	1.061	1.093	0.561	0.545	0.985	0.526	0.568	0.289	1.044	0.863	1.001	0.790	1.065	1.028	0.953	0.771	1.046	1.088	1.100	1.094	1.090	1.087	1.093	1.089	1.080	1.074	0.956	0.982	0.977	0.972	0.976	0.977	0.983	0.960	1.007	0.978
f32	32	20	0.558	0.857	0.900	0.920	0.471	0.474	0.811	0.452	0.450	0.187	0.882	0.762	0.837	0.629	0.891	0.859	0.806	0.664	0.873	0.909	0.913	0.912	0.914	0.912	0.912	0.905	0.901	0.899	0.803	0.821	0.816	0.812	0.817	0.818	0.824	0.858	0.844	0.820
f32	32	16	0.448	0.719	0.711	0.755	0.389	0.399	0.669	0.372	0.423	0.311	0.706	0.592	0.679	0.509	0.714	0.691	0.639	0.507	0.714	0.736	0.732	0.721	0.731	0.740	0.731	0.728	0.756	0.725	0.662	0.661	0.654	0.653	0.656	0.656	0.664	0.763	0.680	0.662
f32	32	12	0.345	0.554	0.544	0.567	0.299	0.301	0.519	0.296	0.290	0.202	0.539	0.499	0.517	0.453	0.539	0.526	0.486	0.389	0.539	0.554	0.554	0.546	0.551	0.562	0.561	0.550	0.587	0.541	0.509	0.506	0.492	0.493	0.493	0.495	0.503	0.656	0.515	0.501
f32	16	24	0.630	0.974	1.041	1.076	0.546	0.549	0.938	0.521	0.457	0.192	1.044	0.853	0.997	0.728	1.063	1.035	0.951	0.768	1.058	1.086	1.098	1.092	1.092	1.089	1.099	1.095	1.094	1.067	0.934	0.974	0.969	0.973	0.981	0.993	0.976	0.915	1.002	0.974
f32	16	20	0.536	0.843	0.862	0.908	0.467	0.482	0.816	0.462	0.401	0.259	0.873	0.711	0.844	0.649	0.889	0.859	0.793	0.642	0.842	0.824	0.862	0.843	0.837	0.843	0.849	0.842	0.850	0.851	0.786	0.817	0.811	0.814	0.819	0.828	0.822	0.817	0.838	0.818
f32	16	16	0.387	0.644	0.641	0.686	0.362	0.371	0.653	0.348	0.390	0.218	0.675	0.584	0.649	0.545	0.663	0.653	0.622	0.490	0.647	0.664	0.688	0.676	0.667	0.679	0.685	0.678	0.661	0.673	0.643	0.642	0.644	0.656	0.658	0.665	0.651	0.700	0.675	0.648
f32	16	12	0.330	0.512	0.508	0.514	0.277	0.285	0.499	0.277	0.282	0.206	0.504	0.443	0.496	0.405	0.503	0.495	0.470	0.435	0.493	0.519	0.520	0.515	0.504	0.511	0.511	0.510	0.523	0.517	0.494	0.498	0.490	0.492	0.497	0.504	0.504	0.614	0.499	0.495
f32	8	24	0.598	0.953	0.972	0.997	0.519	0.514	0.890	0.496	0.425	0.266	0.992	0.827	0.959	0.699	1.007	0.976	0.913	0.680	0.983	1.011	1.038	1.015	1.014	1.029	1.033	1.030	0.993	0.995	0.932	0.975	0.969	0.973	0.981	0.992	0.973	0.909	1.000	0.977
f32	8	20	0.528	0.820	0.808	0.836	0.441	0.445	0.757	0.422	0.364	0.171	0.831	0.679	0.798	0.590	0.838	0.825	0.760	0.580	0.823	0.849	0.872	0.840	0.849	0.856	0.868	0.857	0.857	0.841	0.849	0.886	0.870	0.815	0.878	0.884	0.901	0.901	0.905	0.883
f32	8	16	0.418	0.650	0.659	0.687	0.360	0.383	0.618	0.354	0.304	0.161	0.669	0.556	0.648	0.492	0.678	0.659	0.613	0.476	0.659	0.680	0.694	0.678	0.679	0.688	0.687	0.695	0.668	0.672	0.687	0.716	0.699	0.704	0.705	0.712	0.708	0.796	0.730	0.713
f32	8	12	0.332	0.521	0.529	0.514	0.283	0.308	0.469	0.278	0.250	0.163	0.508	0.426	0.496	0.384	0.508	0.499	0.469	0.391	0.499	0.517	0.528	0.506	0.509	0.519	0.519	0.520	0.523	0.510	0.524	0.535	0.529	0.537	0.533	0.537	0.549	0.684	0.550	0.533

Table 34: Relative evaluation time for mxbai-embed-2d-large-v1 on all tasks using float quantization. Table 2 serves as a legend.

q	m	l	CLA 1	CLA 2	CLA 3	CLA 4	CLA 5	CLA 6	CLA 7	CLA 8	CLU 1	CLU 2	CLU 3	CLU 4	CLU 5	CLU 6	CLU 7	CLU 8	CLU 9	CLU 10	STS 1	STS 2	STS 3	STS 4	STS 5	STS 6	STS 7	STS 8	STS 9	STS 10	PCL 1	PCL 2	PCL 3	RET 1	RET 2	RET 3	RER 1	RER 2	RER 3	SUM 1
int	1024	24	1.032	0.970	0.988	1.012	1.043	0.990	0.958	1.039	0.986	0.939	1.008	1.015	0.983	1.098	1.003	1.008	0.993	1.071	0.995	1.008	1.006	1.001	1.004	1.005	1.009	1.008	1.013	0.989	1.010	1.004	1.001	0.991	0.999	1.000	1.007	0.994	1.004	1.000
int	1024	20	0.924	0.851	0.844	0.854	0.950	0.920	0.836	0.971	0.899	0.896	0.836	0.995	0.840	1.020	0.843	0.850	0.847	0.872	0.820	0.847	0.839	0.834	0.845	0.847	0.849	0.839	0.852	0.838	0.848	0.842	0.835	0.830	0.834	0.836	0.843	0.897	0.836	0.839
int	1024	16	0.835	0.709	0.684	0.705	0.847	0.814	0.701	0.876	0.854	0.965	0.684	0.797	0.693	0.832	0.689	0.696	0.699	0.794	0.674	0.682	0.682	0.665	0.670	0.687	0.698	0.681	0.712	0.667	0.702	0.685	0.675	0.666	0.669	0.671	0.681	0.792	0.673	0.674
int	1024	12	0.714	0.557	0.558	0.564	0.785	0.733	0.571	0.796	0.797	1.131	0.528	0.664	0.536	0.725	0.526	0.540	0.567	0.654	0.510	0.522	0.527	0.516	0.506	0.519	0.522	0.515	0.557	0.514	0.557	0.520	0.509	0.503	0.504	0.505	0.513	0.676	0.503	0.512
int	512	24	0.850	0.982	0.998	1.038	0.864	0.562	0.979	0.797	0.730	0.742	0.986	0.942	0.969	0.892	0.986	0.978	0.930	0.826	0.994	1.003	1.007	0.994	1.000	1.000	1.006	1.005	1.046	0.987	0.971	1.006	0.998	0.992	0.999	0.998	1.004	0.953	1.028	0.994
int	512	20	0.755	0.841	0.833	0.854	0.799	0.512	0.810	0.734	0.742	0.810	0.822	0.838	0.808	0.747	0.829	0.820	0.789	0.814	0.822	0.846	0.838	0.820	0.842	0.852	0.844	0.834	0.871	0.825	0.820	0.843	0.834	0.828	0.834	0.834	0.843	0.847	0.860	0.833
int	512	16	0.672	0.698	0.680	0.712	0.706	0.414	0.674	0.649	0.573	0.603	0.666	0.664	0.671	0.728	0.667	0.668	0.646	0.619	0.669	0.680	0.678	0.668	0.662	0.683	0.691	0.681	0.704	0.670	0.670	0.681	0.668	0.665	0.671	0.671	0.677	0.745	0.693	0.673
int	512	12	0.590	0.551	0.537	0.583	0.636	0.315	0.522	0.583	0.591	0.719	0.514	0.605	0.522	0.644	0.507	0.507	0.509	0.516	0.501	0.515	0.522	0.517	0.501	0.515	0.520	0.522	0.541	0.513	0.517	0.516	0.503	0.503	0.502	0.504	0.513	0.640	0.524	0.508
int	256	24	0.768	0.943	0.976	1.018	0.564	0.527	0.924	0.677	0.541	0.500	0.971	0.841	0.944	0.807	0.979	0.952	0.892	0.750	1.000	0.997	0.999	0.988	0.997	0.999	1.004	0.996	1.012	0.994	0.964	1.005	0.996	0.989	1.000	1.000	1.002	1.003	1.031	1.000
int	256	20	0.662	0.802	0.817	0.857	0.481	0.470	0.789	0.607	0.509	0.482	0.813	0.738	0.795	0.646	0.820	0.797	0.762	0.714	0.832	0.837	0.837	0.817	0.832	0.847	0.850	0.834	0.838	0.828	0.808	0.842	0.831	0.828	0.835	0.834	0.839	0.860	0.861	0.834
int	256	16	0.586	0.686	0.669	0.705	0.404	0.389	0.666	0.541	0.426	0.376	0.659	0.604	0.644	0.553	0.663	0.646	0.623	0.607	0.656	0.678	0.679	0.652	0.661	0.676	0.683	0.675	0.702	0.666	0.658	0.678	0.670	0.665	0.670	0.670	0.677	0.740	0.693	0.670
int	256	12	0.498	0.545	0.529	0.583	0.334	0.294	0.500	0.467	0.408	0.438	0.507	0.491	0.492	0.449	0.500	0.495	0.475	0.440	0.500	0.507	0.519	0.498	0.499	0.512	0.525	0.513	0.538	0.504	0.504	0.519	0.502	0.502	0.502	0.505	0.513	0.648	0.523	0.510
int	128	24	0.606	0.949	0.967	1.019	0.536	0.523	0.899	0.508	0.498	0.245	0.976	0.847	0.946	0.708	0.977	0.945	0.879	0.701	0.994	0.989	1.002	0.986	0.999	0.997	1.000	1.000	1.028	0.987	0.944	0.980	0.973	0.970	0.976	0.975	0.981	0.945	1.006	0.974
int	128	20	0.515	0.834	0.823	0.867	0.460	0.452	0.792	0.431	0.498	0.272	0.815	0.700	0.792	0.611	0.818	0.798	0.743	0.629	0.829	0.828	0.840	0.818	0.829	0.843	0.846	0.831	0.852	0.828	0.809	0.818	0.816	0.812	0.815	0.817	0.824	0.860	0.843	0.820
int	128	16	0.443	0.679	0.680	0.696	0.380	0.364	0.633	0.363	0.364	0.259	0.658	0.595	0.639	0.515	0.656	0.639	0.603	0.561	0.684	0.662	0.676	0.663	0.665	0.678	0.680	0.674	0.694	0.665	0.661	0.661	0.655	0.653	0.655	0.656	0.665	0.760	0.678	0.662
int	128	12	0.350	0.524	0.551	0.547	0.309	0.303	0.533	0.298	0.320	0.388	0.504	0.446	0.488	0.409	0.499	0.488	0.459	0.465	0.521	0.502	0.515	0.509	0.505	0.513	0.514	0.510	0.530	0.506	0.510	0.505	0.493	0.493	0.492	0.495	0.503	0.653	0.513	0.501
int	64	24	0.601	0.973	0.982	1.028	0.519	0.511	0.901	0.486	0.450	0.223	0.971	0.796	0.941	0.685	0.974	0.940	0.877	0.681	0.985	0.987	1.002	0.983	0.993	1.000	1.000	0.999	1.013	0.994	0.957	0.981	0.980	0.972	0.979	0.977	0.986	0.966	1.009	0.979
int	64	20	0.501	0.820	0.817	0.863	0.442	0.439	0.795	0.417	0.447	0.237	0.813	0.682	0.787	0.587	0.814	0.793	0.740	0.642	0.823	0.830	0.839	0.817	0.832	0.846	0.837	0.827	0.874	0.830	0.805	0.824	0.816	0.812	0.816	0.818	0.823	0.866	0.844	0.824
int	64	16	0.432	0.699	0.674	0.726	0.355	0.376	0.659	0.351	0.349	0.225	0.654	0.574	0.635	0.495	0.653	0.634	0.601	0.477	0.668	0.665	0.678	0.665	0.663	0.680	0.681	0.681	0.686	0.669	0.657	0.667	0.655	0.651	0.654	0.657	0.664	0.759	0.680	0.657
int	64	12	0.334	0.529	0.550	0.543	0.292	0.304	0.525	0.279	0.320	0.198	0.497	0.450	0.491	0.389	0.494	0.482	0.453	0.379	0.516	0.500	0.512	0.503	0.502	0.514	0.517	0.523	0.534	0.510	0.508	0.507	0.496	0.494	0.493	0.495	0.502	0.657	0.515	0.500
int	32	24	0.636	1.022	1.079	1.111	0.549	0.558	0.975	0.532	0.472	0.321	1.047	0.854	1.002	0.732	1.063	1.033	0.951	0.792	1.066	1.081	1.111	1.082	1.086	1.090	1.100	1.104	1.091	1.070	0.953	0.980	0.977	0.972	0.978	0.976	0.981	0.960	1.007	0.976
int	32	20	0.547	0.873	0.897	0.936	0.470	0.485	0.826	0.451	0.403	0.199	0.876	0.761	0.838	0.628	0.888	0.860	0.789	0.614	0.872	0.915	0.912	0.904	0.919	0.912	0.919	0.912	0.905	0.902	0.809	0.820	0.815	0.812	0.817	0.816	0.823	0.858	0.843	0.822
int	32	16	0.438	0.738	0.723	0.768	0.386	0.400	0.704	0.372	0.347	0.203	0.706	0.625	0.677	0.545	0.716	0.691	0.637	0.507	0.707	0.740	0.738	0.719	0.732	0.741	0.729	0.730	0.737	0.722	0.657	0.663	0.654	0.653	0.655	0.655	0.667	0.750	0.679	0.660
int	32	12	0.348	0.569	0.590	0.580	0.300	0.317	0.541	0.298	0.352	0.182	0.536	0.460	0.516	0.436	0.538	0.523	0.494	0.385	0.552	0.543	0.559	0.550	0.542	0.556	0.563	0.549	0.593	0.550	0.505	0.506	0.494	0.493	0.494	0.495	0.501	0.652	0.514	0.501
int	16	24	0.601	0.936	0.957	1.023	0.513	0.532	0.915	0.487	0.450	0.227	0.983	0.814	0.956	0.696	0.983	0.953	0.899	0.738	0.974	1.004	1.019	1.000	0.993	1.009	1.012	1.011	0.977	1.006	0.902	0.939	0.951	0.973	0.980	0.991	0.962	0.903	0.958	0.943
int	16	20	0.498	0.794	0.809	0.879	0.435	0.436	0.749	0.414	0.399	0.227	0.841	0.694	0.808	0.620	0.837	0.813	0.751	0.591	0.810	0.837	0.852	0.836	0.829	0.845	0.852	0.836	0.842	0.838	0.788	0.820	0.811	0.805	0.810	0.828	0.823	0.816	0.838	0.816
int	16	16	0.416	0.660	0.673	0.704	0.361	0.371	0.655	0.358	0.370	0.241	0.681	0.603	0.655	0.501	0.681	0.659	0.608	0.544	0.645	0.672	0.698	0.682	0.684	0.689	0.691	0.689	0.684	0.685	0.641	0.654	0.645	0.652	0.657	0.667	0.664	0.721	0.671	0.660
int	16	12	0.335	0.519	0.521	0.542	0.280	0.289	0.519	0.283	0.318	0.276	0.513	0.489	0.495	0.439	0.511	0.496	0.465	0.439	0.499	0.517	0.528	0.506	0.510	0.521	0.523	0.522	0.494	0.515	0.483	0.483	0.479	0.496	0.496	0.504	0.501	0.614	0.508	0.494
int	8	24	0.602	0.974	0.983	1.013	0.520	0.518	0.905	0.497	0.489	0.224	0.995	0.846	0.952	0.700	1.001	0.975	0.894	0.708	0.981	1.009	1.036	1.014	1.010	1.027	1.036	1.026	0.993	0.994	0.948	1.001	1.017	1.046	1.049	1.055	1.059	1.013	1.036	1.060
int	8	20	0.507	0.833	0.818	0.860	0.438	0.441	0.767	0.422	0.440	0.222	0.837	0.707	0.808	0.632	0.840	0.816	0.758	0.595	0.819	0.848	0.873	0.844	0.845	0.857	0.863	0.859	0.835	0.837	0.802	0.843	0.851	0.861	0.878	0.875	0.866	0.881	0.862	0.892
int	8	16	0.431	0.678	0.690	0.684	0.351	0.362	0.625	0.353	0.409	0.213	0.674	0.586	0.653	0.495	0.675	0.656	0.609	0.503	0.652	0.677	0.700	0.677	0.677	0.691	0.700	0.686	0.699	0.682	0.652	0.678	0.693	0.698	0.706	0.694	0.676	0.771	0.686	0.683
int	8	12	0.354	0.513	0.524	0.563	0.295	0.287	0.492	0.284	0.325	0.203	0.515	0.445	0.502	0.390	0.512	0.497	0.466	0.438	0.509	0.526	0.532	0.517	0.511	0.519	0.520	0.520	0.524	0.514	0.521	0.541	0.528	0.536	0.531	0.540	0.544	0.674	0.547	0.551

Table 35: Relative evaluation time for mxbai-embed-2d-large-v1 on all tasks using int quantization. Table 2 serves as a legend.

q	m	l	CLA 1	CLA 2	CLA 3	CLA 4	CLA 5	CLA 6	CLA 7	CLA 8	CLU 1	CLU 2	CLU 3	CLU 4	CLU 5	CLU 6	CLU 7	CLU 8	CLU 9	CLU 10	STS 1	STS 2	STS 3	STS 4	STS 5	STS 6	STS 7	STS 8	STS 9	STS 10	PCL 1	PCL 2	PCL 3	RET 1	RET 2	RET 3	RER 1	RER 2	RER 3	SUM 1
bin	1024	24	0.620	0.944	0.970	1.007	0.542	0.529	0.907	0.520	0.540	0.381	0.974	0.825	0.941	0.723	0.976	0.949	0.884	0.724	0.981	0.993	1.003	0.996	0.996	1.005	1.001	0.997	1.014	0.992	0.956	1.005	0.994	0.991	0.998	0.998	1.004	0.941	1.028	0.997
bin	1024	20	0.545	0.820	0.811	0.838	0.469	0.451	0.784	0.445	0.433	0.286	0.813	0.727	0.791	0.629	0.824	0.793	0.753	0.649	0.830	0.831	0.843	0.820	0.833	0.851	0.848	0.832	0.840	0.827	0.806	0.841	0.834	0.828	0.834	0.834	0.837	0.843	0.859	0.835
bin	1024	16	0.435	0.664	0.682	0.679	0.390	0.377	0.631	0.375	0.376	0.294	0.658	0.600	0.639	0.544	0.660	0.641	0.603	0.528	0.664	0.668	0.681	0.669	0.665	0.680	0.694	0.675	0.696	0.667	0.656	0.678	0.668	0.666	0.669	0.669	0.677	0.741	0.692	0.668
bin	1024	12	0.360	0.518	0.539	0.529	0.318	0.316	0.531	0.311	0.316	0.265	0.502	0.504	0.495	0.419	0.500	0.495	0.462	0.488	0.514	0.507	0.519	0.513	0.505	0.517	0.520	0.522	0.560	0.507	0.502	0.515	0.503	0.502	0.502	0.504	0.511	0.627	0.524	0.509
bin	512	24	0.603	0.940	0.963	1.010	0.525	0.538	0.886	0.498	0.509	0.227	0.974	0.840	0.937	0.749	0.974	0.943	0.887	0.761	0.986	0.991	1.004	0.988	0.993	1.001	0.998	0.995	1.007	0.995	0.951	1.003	0.997	0.990	0.999	1.000	1.000	0.924	1.028	0.995
bin	512	20	0.521	0.800	0.830	0.858	0.444	0.462	0.762	0.419	0.406	0.244	0.812	0.687	0.785	0.602	0.817	0.791	0.736	0.590	0.833	0.828	0.846	0.823	0.829	0.848	0.843	0.835	0.843	0.830	0.814	0.841	0.831	0.831	0.834	0.835	0.842	0.826	0.861	0.834
bin	512	16	0.422	0.656	0.675	0.674	0.374	0.369	0.619	0.358	0.371	0.215	0.657	0.586	0.638	0.545	0.658	0.637	0.596	0.497	0.665	0.670	0.683	0.667	0.669	0.680	0.684	0.672	0.721	0.662	0.657	0.681	0.668	0.667	0.668	0.671	0.679	0.756	0.693	0.672
bin	512	12	0.335	0.526	0.522	0.568	0.300	0.290	0.499	0.288	0.288	0.208	0.505	0.469	0.487	0.399	0.497	0.485	0.465	0.385	0.513	0.506	0.518	0.510	0.505	0.516	0.515	0.526	0.529	0.513	0.505	0.516	0.502	0.503	0.503	0.506	0.513	0.657	0.526	0.511
bin	256	24	0.581	0.929	0.959	1.006	0.508	0.504	0.896	0.482	0.513	0.177	0.969	0.806	0.941	0.687	0.971	0.945	0.884	0.708	0.995	0.988	1.004	0.981	0.994	1.002	1.006	0.996	1.020	0.992	0.958	1.001	0.999	0.994	0.999	1.000	0.998	0.943	1.028	1.001
bin	256	20	0.502	0.783	0.805	0.843	0.434	0.441	0.735	0.414	0.426	0.177	0.816	0.670	0.787	0.576	0.815	0.787	0.744	0.569	0.818	0.824	0.842	0.821	0.827	0.838	0.848	0.836	0.860	0.829	0.794	0.818	0.814	0.830	0.835	0.815	0.825	0.815	0.841	0.815
bin	256	16	0.414	0.672	0.655	0.692	0.347	0.367	0.633	0.350	0.347	0.179	0.654	0.551	0.631	0.502	0.653	0.633	0.602	0.466	0.657	0.664	0.679	0.666	0.663	0.679	0.678	0.681	0.678	0.669	0.638	0.659	0.651	0.652	0.654	0.654	0.663	0.712	0.676	0.654
bin	256	12	0.323	0.502	0.524	0.519	0.284	0.299	0.472	0.278	0.260	0.170	0.496	0.447	0.485	0.368	0.496	0.482	0.451	0.408	0.511	0.501	0.518	0.504	0.505	0.511	0.513	0.519	0.533	0.506	0.490	0.501	0.490	0.491	0.491	0.493	0.499	0.609	0.511	0.497
bin	128	24	0.580	0.920	0.945	1.005	0.505	0.502	0.864	0.482	0.413	0.173	0.968	0.801	0.939	0.702	0.970	0.945	0.882	0.695	0.994	0.984	1.008	0.984	0.991	0.995	1.006	1.000	1.036	0.993	0.951	0.978	0.976	0.971	0.977	0.976	0.979	0.948	1.007	0.981
bin	128	20	0.498	0.769	0.793	0.847	0.430	0.440	0.734	0.408	0.436	0.164	0.813	0.663	0.786	0.567	0.814	0.789	0.740	0.595	0.821	0.827	0.840	0.823	0.829	0.839	0.844	0.834	0.834	0.830	0.801	0.818	0.815	0.814	0.816	0.816	0.823	0.841	0.842	0.820
bin	128	16	0.423	0.648	0.639	0.683	0.342	0.365	0.633	0.345	0.316	0.156	0.653	0.540	0.632	0.494	0.651	0.631	0.595	0.498	0.664	0.662	0.680	0.666	0.662	0.678	0.673	0.679	0.699	0.667	0.657	0.661	0.655	0.652	0.655	0.657	0.665	0.748	0.670	0.660
bin	128	12	0.317	0.484	0.497	0.518	0.271	0.277	0.465	0.274	0.257	0.149	0.495	0.442	0.485	0.360	0.493	0.480	0.449	0.384	0.519	0.503	0.514	0.506	0.503	0.514	0.515	0.509	0.548	0.510	0.506	0.505	0.493	0.494	0.493	0.495	0.502	0.649	0.504	0.501
bin	64	24	0.583	0.933	0.949	0.984	0.500	0.507	0.868	0.478	0.418	0.173	0.970	0.791	0.938	0.689	0.968	0.938	0.875	0.658	0.981	0.988	1.005	0.982	0.991	0.996	1.005	1.000	1.019	0.990	0.957	0.980	0.977	0.974	0.978	0.977	0.981	0.947	1.008	0.980
bin	64	20	0.497	0.789	0.788	0.816	0.425	0.433	0.751	0.409	0.400	0.157	0.813	0.659	0.782	0.557	0.811	0.783	0.730	0.565	0.816	0.827	0.839	0.826	0.827	0.837	0.843	0.833	0.850	0.828	0.808	0.822	0.815	0.812	0.817	0.817	0.824	0.847	0.844	0.821
bin	64	16	0.419	0.635	0.637	0.662	0.348	0.380	0.626	0.343	0.320	0.158	0.654	0.539	0.632	0.463	0.651	0.633	0.589	0.503	0.655	0.664	0.678	0.663	0.662	0.676	0.678	0.674	0.700	0.664	0.659	0.663	0.654	0.654	0.656	0.656	0.667	0.744	0.680	0.660
bin	64	12	0.356	0.542	0.549	0.541	0.296	0.301	0.521	0.288	0.300	0.145	0.497	0.441	0.527	0.384	0.541	0.527	0.482	0.401	0.545	0.549	0.554	0.543	0.543	0.570	0.563	0.548	0.548	0.548	0.506	0.506	0.493	0.494	0.493	0.495	0.501	0.637	0.515	0.499
bin	32	24	0.635	0.995	1.045	1.065	0.547	0.531	0.956	0.521	0.430	0.126	1.042	0.854	0.994	0.693	1.059	1.025	0.937	0.703	1.058	1.092	1.100	1.086	1.081	1.092	1.101	1.097	1.077	1.071	0.951	0.978	0.975	0.971	0.976	0.977	0.979	0.939	1.007	0.977
bin	32	20	0.537	0.837	0.883	0.892	0.465	0.458	0.797	0.438	0.344	0.115	0.872	0.712	0.834	0.586	0.885	0.856	0.784	0.584	0.891	0.907	0.916	0.913	0.918	0.914	0.914	0.909	0.930	0.893	0.796	0.818	0.812	0.813	0.817	0.818	0.821	0.840	0.843	0.818
bin	32	16	0.438	0.674	0.705	0.726	0.382	0.363	0.631	0.362	0.328	0.117	0.707	0.583	0.670	0.481	0.711	0.694	0.636	0.476	0.722	0.729	0.736	0.720	0.729	0.745	0.734	0.734	0.725	0.722	0.644	0.660	0.653	0.651	0.654	0.655	0.662	0.715	0.677	0.655
bin	32	12	0.343	0.536	0.528	0.554	0.292	0.285	0.501	0.286	0.268	0.100	0.535	0.448	0.513	0.367	0.540	0.520	0.480	0.364	0.536	0.545	0.563	0.549	0.548	0.562	0.563	0.558	0.568	0.544	0.488	0.512	0.490	0.492	0.498	0.504	0.507	0.598	0.510	0.495
bin	16	24	0.616	0.960	0.966	0.994	0.519	0.500	0.869	0.496	0.424	0.147	0.987	0.795	0.956	0.699	1.003	0.971	0.891	0.675	0.986	1.012	1.033	1.013	1.008	1.026	1.036	1.026	0.996	0.992	0.934	0.976	0.969	0.974	0.977	0.988	0.972	0.902	0.999	0.979
bin	16	20	0.513	0.812	0.815	0.847	0.436	0.425	0.739	0.422	0.342	0.156	0.831	0.672	0.795	0.566	0.839	0.813	0.749	0.583	0.821	0.842	0.874	0.844	0.849	0.855	0.863	0.854	0.856	0.838	0.783	0.818	0.810	0.814	0.819	0.828	0.819	0.807	0.836	0.816
bin	16	16	0.429	0.668	0.663	0.686	0.360	0.356	0.595	0.352	0.300	0.196	0.671	0.563	0.649	0.467	0.675	0.659	0.614	0.466	0.661	0.681	0.694	0.674	0.682	0.688	0.690	0.695	0.694	0.677	0.635	0.660	0.649	0.655	0.658	0.665	0.657	0.700	0.673	0.659
bin	16	12	0.338	0.515	0.519	0.523	0.289	0.266	0.456	0.278	0.238	0.133	0.514	0.419	0.497	0.355	0.509	0.498	0.466	0.363	0.504	0.524	0.533	0.516	0.511	0.517	0.517	0.515	0.526	0.519	0.481	0.509	0.488	0.494	0.496	0.501	0.500	0.597	0.510	0.495
bin	8	24	0.601	0.959	0.964	0.991	0.509	0.507	0.870	0.491	0.424	0.153	0.991	0.792	0.955	0.701	0.999	0.968	0.893	0.673	0.992	1.015	1.040	1.005	1.015	1.029	1.035	1.024	1.015	0.997	0.992	1.045	1.043	1.041	1.048	1.054	1.053	0.986	1.081	1.036
bin	8	20	0.506	0.798	0.828	0.842	0.430	0.434	0.753	0.420	0.329	0.136	0.812	0.696	0.798	0.594	0.836	0.820	0.748	0.566	0.816	0.844	0.868	0.838	0.844	0.857	0.862	0.859	0.844	0.847	0.828	0.873	0.869	0.876	0.874	0.880	0.878	0.870	0.901	0.866
bin	8	16	0.411	0.660	0.659	0.682	0.354	0.349	0.591	0.348	0.288	0.177	0.657	0.556	0.648	0.464	0.673	0.655	0.614	0.457	0.655	0.680	0.698	0.678	0.679	0.691	0.694	0.690	0.678	0.676	0.706	0.706	0.697	0.701	0.704	0.710	0.711	0.760	0.723	0.697
bin	8	12	0.331	0.498	0.507	0.533	0.281	0.264	0.467	0.274	0.265	0.146	0.492	0.419	0.492	0.362	0.509	0.495	0.460	0.372	0.495	0.516	0.534	0.512	0.516	0.519	0.524	0.519	0.493	0.517	0.534	0.537	0.525	0.533	0.530	0.537	0.543	0.653	0.554	0.513

Table 36: Relative evaluation time for mxbai-embed-2d-large-v1 on all tasks using binary quantization. Table 2 serves as a legend.

q	m	l	Average All Tasks	Average classification	Average clustering	Average sts	Average pairclass	Average retrieval	Average rerank	Average summ
f32	1024	24	105.78	36.54	103.10	19.75	119.12	488.06	212.59	39.45
f32	1024	20	89.69	32.98	87.60	16.57	99.84	407.12	182.91	33.03
f32	1024	16	73.59	29.47	71.90	13.33	80.37	326.82	153.38	26.63
f32	1024	12	57.84	26.32	57.21	10.19	60.70	246.09	124.24	20.18
f32	512	24	103.28	30.70	99.29	19.72	118.52	486.26	211.71	39.33
f32	512	20	87.37	27.47	84.02	16.58	98.95	406.33	181.82	32.83
f32	512	16	71.30	23.95	68.48	13.35	79.90	325.80	151.94	26.56
f32	512	12	55.36	20.41	53.25	10.16	60.43	245.47	122.80	20.09
f32	256	24	102.19	27.36	96.93	19.73	118.54	487.14	213.75	39.50
f32	256	20	86.19	23.94	81.39	16.51	98.92	407.05	184.63	33.05
f32	256	16	69.83	20.18	66.16	13.27	79.50	326.38	151.29	26.41
f32	256	12	53.80	16.49	50.87	10.07	60.17	245.61	121.86	20.16
f32	128	24	99.12	23.71	95.43	19.64	115.31	474.89	205.70	38.35
f32	128	20	83.59	20.27	80.61	16.43	96.54	396.72	177.28	32.22
f32	128	16	67.71	16.63	64.79	13.22	78.04	318.27	148.37	25.90
f32	128	12	52.41	13.58	49.72	10.03	59.06	240.21	122.62	19.68
f32	64	24	99.30	23.26	94.97	19.64	116.19	476.46	208.26	38.71
f32	64	20	83.58	19.92	79.30	16.44	97.12	398.09	180.39	32.51
f32	64	16	67.96	16.30	64.41	13.23	78.23	319.24	152.41	26.17
f32	64	12	52.32	13.04	49.34	10.03	59.24	241.09	123.08	19.81
f32	32	24	102.34	25.24	103.01	21.47	116.18	475.74	209.22	38.58
f32	32	20	86.20	21.56	86.42	17.95	97.10	398.04	180.60	32.34
f32	32	16	69.92	17.61	69.45	14.46	78.17	319.71	152.46	26.10
f32	32	12	53.59	13.61	52.92	10.90	59.15	240.91	123.16	19.77
f32	16	24	101.90	24.77	102.66	21.46	115.05	478.87	204.22	38.43
f32	16	20	85.39	21.29	85.97	16.60	96.43	399.79	175.93	32.25
f32	16	16	67.86	16.07	65.98	13.29	76.66	321.57	145.68	25.56
f32	16	12	52.08	12.78	50.05	10.16	58.57	242.48	117.44	19.51
f32	8	24	99.87	23.49	97.66	20.07	115.04	478.71	203.37	38.54
f32	8	20	87.53	20.11	81.67	16.82	103.64	419.59	191.97	34.82
f32	8	16	71.62	16.42	65.88	13.46	83.40	344.74	161.40	28.12
f32	8	12	55.00	12.94	50.08	10.19	63.09	261.28	129.96	21.02
int	1024	24	105.90	37.20	103.34	19.81	119.43	486.57	212.48	39.43
int	1024	20	89.89	33.59	87.72	16.64	99.77	406.56	183.79	33.09
int	1024	16	73.89	29.60	72.42	13.40	80.95	326.21	154.88	26.59
int	1024	12	57.78	25.91	57.17	10.23	61.48	245.93	124.01	20.20
int	512	24	103.27	31.04	99.15	19.75	118.64	486.37	210.91	39.22
int	512	20	87.30	27.55	83.81	16.58	99.30	406.13	181.36	32.85
int	512	16	71.28	23.81	68.26	13.35	79.86	326.48	152.23	26.53
int	512	12	55.36	20.40	53.34	10.16	60.40	245.34	122.68	20.02
int	256	24	102.02	27.05	96.17	19.69	118.38	486.38	216.07	39.44
int	256	20	85.80	23.41	81.13	16.49	98.89	406.34	182.74	32.91
int	256	16	69.82	20.16	65.91	13.28	79.78	326.38	151.75	26.43
int	256	12	53.86	16.62	50.62	10.04	60.21	245.43	123.38	20.12
int	128	24	99.33	23.82	95.30	19.62	115.61	475.44	207.70	38.43
int	128	20	83.92	20.42	80.29	16.43	97.17	397.55	180.60	32.34
int	128	16	68.17	16.95	64.79	13.20	78.20	319.38	152.01	26.11
int	128	12	52.48	13.69	49.72	10.03	59.19	240.59	122.70	19.77
int	64	24	99.46	23.56	94.71	19.62	116.39	476.51	210.08	38.63
int	64	20	83.77	19.96	79.77	16.45	97.16	397.83	181.34	32.51
int	64	16	67.98	16.77	64.22	13.24	78.25	319.13	152.15	25.92
int	64	12	52.30	13.26	48.98	10.02	59.46	241.08	123.25	19.71
int	32	24	102.34	25.35	102.89	21.46	116.12	476.11	209.15	38.49
int	32	20	86.05	21.57	85.83	18.00	97.09	398.01	180.39	32.41
int	32	16	69.79	17.70	69.35	14.48	78.14	319.37	151.15	26.02
int	32	12	53.62	13.97	52.88	10.85	59.23	240.94	122.66	19.78
int	16	24	98.74	23.44	96.16	19.85	112.37	478.35	198.34	37.20
int	16	20	83.61	19.69	81.64	16.57	96.49	396.16	175.75	32.17
int	16	16	68.27	16.58	66.51	13.48	77.00	320.72	147.45	26.02
int	16	12	52.27	13.05	50.56	10.21	57.23	242.65	118.33	19.51
int	8	24	104.07	23.69	97.21	20.02	119.91	512.14	218.31	41.83
int	8	20	87.28	20.01	81.96	16.80	100.49	425.64	185.13	35.18
int	8	16	70.76	16.58	66.12	13.50	81.73	342.03	154.03	26.94
int	8	12	55.10	13.26	50.51	10.28	63.04	260.98	128.74	21.73
bin	1024	24	100.69	24.11	95.59	19.68	118.08	485.88	209.77	39.34
bin	1024	20	84.92	20.72	80.48	16.48	99.08	406.23	180.87	32.95
bin	1024	16	68.89	17.04	65.00	13.27	79.58	326.08	151.74	26.34
bin	1024	12	53.00	13.92	50.08	10.10	60.16	245.32	121.44	20.09
bin	512	24	100.40	23.61	95.32	19.65	118.24	486.17	208.04	39.24
bin	512	20	84.46	20.16	79.59	16.47	98.95	406.57	179.38	32.90
bin	512	16	68.83	16.57	64.55	13.27	79.70	326.35	153.39	26.51
bin	512	12	52.97	13.22	49.45	10.10	60.13	245.91	124.44	20.17
bin	256	24	100.40	23.04	94.91	19.64	118.48	486.86	209.92	39.49
bin	256	20	83.72	19.62	79.56	16.41	96.77	404.68	176.08	32.15
bin	256	16	67.34	16.30	64.07	13.22	77.50	318.76	147.06	25.81
bin	256	12	51.57	12.79	48.77	10.03	58.55	239.91	118.09	19.60
bin	128	24	99.04	22.86	94.66	19.61	115.94	475.85	207.98	38.71
bin	128	20	83.33	19.42	79.45	16.42	96.91	397.85	178.63	32.32
bin	128	16	67.60	16.16	63.81	13.21	78.21	319.51	150.00	26.03
bin	128	12	51.82	12.40	48.52	10.04	59.15	241.00	121.34	19.77
bin	64	24	99.01	22.86	94.27	19.61	116.19	476.51	208.00	38.64
bin	64	20	83.28	19.41	78.88	16.41	97.13	398.18	179.47	32.37
bin	64	16	67.64	16.11	63.72	13.19	78.19	319.76	150.73	26.04
bin	64	12	53.21	13.56	52.10	10.89	59.14	240.90	121.31	19.69
bin	32	24	101.73	24.86	101.77	21.48	115.89	475.57	207.17	38.55
bin	32	20	85.55	20.98	85.08	17.95	96.62	398.24	178.64	32.26
bin	32	16	69.15	17.02	68.86	14.43	77.76	319.04	147.44	25.82
bin	32	12	52.95	13.25	52.17	10.89	58.81	242.72	117.08	19.54
bin	16	24	99.45	23.54	96.75	20.02	115.04	477.33	202.55	38.60
bin	16	20	83.73	19.86	81.05	16.77	96.27	399.79	174.71	32.17
bin	16	16	67.98	16.40	65.86	13.50	77.31	321.35	145.50	25.98
bin	16	12	52.03	12.83	49.99	10.27	58.48	242.19	116.83	19.51
bin	8	24	104.19	23.31	96.67	20.09	123.58	510.95	220.18	40.85
bin	8	20	87.51	19.81	80.88	16.78	103.06	427.43	188.23	34.16
bin	8	16	71.00	16.11	65.42	13.50	83.29	343.63	157.20	27.51
bin	8	12	54.45	12.63	49.46	10.24	62.95	259.90	127.37	20.25

Table 37: Evaluation time for mxbai-embed-2d-large-v1, averaged per category. Table 2 serves as a legend.

q	m	l	Average Relative classification	Average Relative clustering	Average Relative sts	Average Relative pairclass	Average Relative retrieval	Average Relative rerank	Average Relative summ	Average Relative all
f32	1024	24	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
f32	1024	20	0.885	0.878	0.840	0.840	0.834	0.855	0.837	0.860
f32	1024	16	0.777	0.754	0.677	0.680	0.669	0.710	0.675	0.721
f32	1024	12	0.668	0.657	0.519	0.516	0.504	0.565	0.512	0.589
f32	512	24	0.873	0.914	1.000	0.991	0.996	0.997	0.997	0.950
f32	512	20	0.764	0.780	0.839	0.830	0.832	0.851	0.832	0.807
f32	512	16	0.650	0.659	0.677	0.673	0.668	0.705	0.673	0.668
f32	512	12	0.538	0.545	0.521	0.512	0.503	0.559	0.509	0.531
f32	256	24	0.806	0.821	1.000	0.989	0.998	1.005	1.001	0.911
f32	256	20	0.697	0.701	0.840	0.827	0.834	0.861	0.838	0.773
f32	256	16	0.574	0.578	0.674	0.667	0.668	0.702	0.669	0.629
f32	256	12	0.459	0.469	0.513	0.508	0.503	0.556	0.511	0.492
f32	128	24	0.743	0.774	0.998	0.963	0.973	0.970	0.972	0.878
f32	128	20	0.635	0.671	0.832	0.808	0.813	0.830	0.817	0.744
f32	128	16	0.517	0.544	0.672	0.653	0.652	0.688	0.656	0.604
f32	128	12	0.420	0.435	0.513	0.499	0.492	0.556	0.499	0.473
f32	64	24	0.733	0.760	0.996	0.972	0.976	0.980	0.981	0.874
f32	64	20	0.628	0.636	0.836	0.816	0.816	0.842	0.824	0.737
f32	64	16	0.511	0.536	0.675	0.659	0.654	0.703	0.663	0.603
f32	64	12	0.406	0.431	0.514	0.502	0.494	0.557	0.502	0.470
f32	32	24	0.801	0.837	1.084	0.971	0.975	0.983	0.978	0.931
f32	32	20	0.680	0.697	0.905	0.813	0.816	0.842	0.820	0.781
f32	32	16	0.558	0.577	0.732	0.659	0.655	0.702	0.662	0.638
f32	32	12	0.428	0.444	0.554	0.502	0.494	0.558	0.501	0.489
f32	16	24	0.784	0.809	1.087	0.959	0.983	0.965	0.974	0.919
f32	16	20	0.672	0.692	0.844	0.805	0.820	0.826	0.818	0.761
f32	16	16	0.512	0.549	0.672	0.643	0.660	0.675	0.648	0.602
f32	16	12	0.400	0.424	0.512	0.494	0.498	0.539	0.495	0.465
f32	8	24	0.742	0.774	1.014	0.959	0.982	0.961	0.977	0.882
f32	8	20	0.632	0.644	0.851	0.868	0.859	0.902	0.883	0.757
f32	8	16	0.516	0.526	0.680	0.700	0.707	0.745	0.713	0.615
f32	8	12	0.404	0.409	0.515	0.529	0.536	0.594	0.533	0.473
int	1024	24	1.004	1.010	1.004	1.005	0.997	1.002	1.000	1.005
int	1024	20	0.893	0.890	0.841	0.842	0.833	0.859	0.839	0.866
int	1024	16	0.771	0.770	0.682	0.687	0.669	0.716	0.674	0.726
int	1024	12	0.660	0.667	0.521	0.529	0.504	0.564	0.512	0.591
int	512	24	0.884	0.898	1.004	0.992	0.996	0.995	0.994	0.948
int	512	20	0.767	0.802	0.840	0.832	0.832	0.850	0.833	0.814
int	512	16	0.651	0.650	0.678	0.673	0.669	0.705	0.673	0.666
int	512	12	0.540	0.563	0.517	0.512	0.503	0.559	0.508	0.535
int	256	24	0.800	0.818	0.998	0.988	0.996	1.012	1.000	0.909
int	256	20	0.686	0.708	0.835	0.827	0.832	0.853	0.834	0.771
int	256	16	0.581	0.580	0.673	0.669	0.669	0.703	0.670	0.631
int	256	12	0.469	0.469	0.512	0.509	0.503	0.561	0.510	0.494
int	128	24	0.751	0.772	0.998	0.966	0.974	0.978	0.974	0.880
int	128	20	0.647	0.668	0.835	0.815	0.815	0.842	0.820	0.748
int	128	16	0.530	0.549	0.674	0.659	0.654	0.701	0.662	0.610
int	128	12	0.427	0.447	0.513	0.503	0.493	0.556	0.501	0.478
int	64	24	0.750	0.754	0.996	0.973	0.976	0.987	0.979	0.876
int	64	20	0.637	0.654	0.836	0.815	0.815	0.844	0.824	0.743
int	64	16	0.534	0.530	0.674	0.660	0.654	0.701	0.657	0.605
int	64	12	0.420	0.415	0.513	0.503	0.494	0.558	0.500	0.469
int	32	24	0.808	0.827	1.088	0.970	0.975	0.982	0.976	0.931
int	32	20	0.686	0.686	0.907	0.815	0.815	0.841	0.822	0.780
int	32	16	0.566	0.565	0.730	0.658	0.654	0.699	0.660	0.636
int	32	12	0.443	0.442	0.556	0.502	0.494	0.556	0.501	0.491
int	16	24	0.746	0.770	1.000	0.931	0.981	0.941	0.943	0.873
int	16	20	0.627	0.658	0.838	0.807	0.814	0.826	0.816	0.740
int	16	16	0.525	0.554	0.682	0.647	0.658	0.685	0.660	0.610
int	16	12	0.411	0.444	0.514	0.482	0.498	0.541	0.494	0.472
int	8	24	0.751	0.778	1.013	0.989	1.050	1.036	1.060	0.900
int	8	20	0.636	0.665	0.848	0.832	0.871	0.870	0.892	0.759
int	8	16	0.522	0.547	0.684	0.674	0.699	0.711	0.683	0.616
int	8	12	0.414	0.429	0.519	0.530	0.536	0.589	0.551	0.482
bin	1024	24	0.755	0.792	0.998	0.985	0.996	0.991	0.997	0.891
bin	1024	20	0.645	0.670	0.835	0.827	0.832	0.847	0.835	0.752
bin	1024	16	0.529	0.554	0.676	0.667	0.668	0.703	0.668	0.614
bin	1024	12	0.428	0.445	0.518	0.507	0.503	0.554	0.509	0.480
bin	512	24	0.746	0.780	0.996	0.984	0.996	0.984	0.995	0.884
bin	512	20	0.637	0.647	0.836	0.829	0.833	0.843	0.834	0.744
bin	512	16	0.518	0.540	0.677	0.669	0.669	0.710	0.672	0.609
bin	512	12	0.416	0.419	0.515	0.508	0.504	0.565	0.511	0.471
bin	256	24	0.733	0.760	0.998	0.986	0.998	0.990	1.001	0.878
bin	256	20	0.620	0.637	0.834	0.809	0.826	0.827	0.815	0.733
bin	256	16	0.516	0.522	0.671	0.649	0.653	0.684	0.654	0.597
bin	256	12	0.400	0.406	0.512	0.493	0.492	0.540	0.497	0.459
bin	128	24	0.726	0.749	0.999	0.968	0.975	0.978	0.981	0.869
bin	128	20	0.615	0.637	0.832	0.811	0.815	0.835	0.820	0.732
bin	128	16	0.510	0.517	0.673	0.658	0.655	0.694	0.660	0.596
bin	128	12	0.388	0.400	0.514	0.502	0.494	0.552	0.501	0.458
bin	64	24	0.725	0.742	0.996	0.971	0.976	0.979	0.980	0.867
bin	64	20	0.614	0.626	0.833	0.815	0.816	0.838	0.821	0.730
bin	64	16	0.506	0.514	0.671	0.659	0.655	0.697	0.660	0.595
bin	64	12	0.424	0.424	0.551	0.502	0.494	0.551	0.499	0.481
bin	32	24	0.787	0.786	1.085	0.968	0.975	0.975	0.977	0.914
bin	32	20	0.663	0.657	0.910	0.809	0.816	0.834	0.818	0.768
bin	32	16	0.535	0.540	0.730	0.652	0.654	0.685	0.655	0.621
bin	32	12	0.416	0.413	0.554	0.497	0.498	0.539	0.495	0.476
bin	16	24	0.740	0.755	1.013	0.959	0.980	0.958	0.979	0.875
bin	16	20	0.626	0.634	0.850	0.804	0.820	0.821	0.816	0.737
bin	16	16	0.514	0.526	0.683	0.648	0.659	0.676	0.659	0.600
bin	16	12	0.398	0.399	0.518	0.493	0.497	0.536	0.495	0.459
bin	8	24	0.737	0.755	1.017	1.027	1.048	1.040	1.036	0.894
bin	8	20	0.626	0.634	0.848	0.857	0.877	0.883	0.866	0.751
bin	8	16	0.507	0.519	0.682	0.703	0.705	0.731	0.697	0.610
bin	8	12	0.394	0.401	0.515	0.532	0.533	0.583	0.513	0.468

Table 38: Relative evaluation time for mxbai-embed-2d-large-v1, averaged per category. Table 2 serves as a legend.

q	m	l	req. bits	CLA 1	CLA 2	CLA 3	CLA 4	CLA 5	CLA 6	CLA 7	CLA 8	CLU 1	CLU 2	CLU 3	CLU 4	CLU 5	CLU 6	CLU 7	CLU 8	CLU 9	CLU 10	STS 1	STS 2	STS 3	STS 4	STS 5	STS 6	STS 7	STS 8	STS 9	STS 10	PCL 1	PCL 2	PCL 3	RET 1	RET 2	RET 3	RER 1	RER 2	RER 3	SUM 1
f32	1024	24	32768	0.866	0.492	0.592	0.747	0.740	0.781	0.931	0.733	0.605	0.603	0.420	0.397	0.372	0.356	0.546	0.575	0.400	0.511	0.875	0.810	0.796	0.896	0.850	0.881	0.867	0.887	0.886	0.697	0.961	0.761	0.855	0.630	0.379	0.370	0.638	0.319	0.532	0.316
f32	1024	20	32768	0.811	0.407	0.586	0.680	0.692	0.745	0.871	0.706	0.605	0.595	0.328	0.316	0.342	0.335	0.416	0.542	0.383	0.438	0.782	0.736	0.708	0.769	0.714	0.792	0.808	0.804	0.815	0.630	0.758	0.669	0.805	0.383	0.198	0.151	0.577	0.300	0.453	0.300
f32	1024	16	32768	0.785	0.396	0.517	0.592	0.631	0.717	0.846	0.604	0.605	0.583	0.380	0.353	0.372	0.363	0.459	0.539	0.400	0.477	0.809	0.700	0.680	0.765	0.685	0.746	0.766	0.776	0.829	0.664	0.911	0.587	0.805	0.471	0.240	0.285	0.572	0.317	0.452	0.310
f32	1024	12	32768	0.754	0.347	0.488	0.593	0.613	0.704	0.844	0.589	0.610	0.586	0.394	0.348	0.377	0.352	0.468	0.551	0.390	0.471	0.745	0.680	0.690	0.754	0.680	0.766	0.757	0.755	0.801	0.637	0.904	0.563	0.799	0.425	0.190	0.233	0.548	0.323	0.422	0.285
f32	512	24	16384	0.864	0.484	0.585	0.720	0.735	0.773	0.920	0.722	0.603	0.598	0.421	0.392	0.371	0.359	0.536	0.574	0.400	0.502	0.874	0.807	0.796	0.897	0.848	0.878	0.865	0.886	0.879	0.702	0.960	0.759	0.854	0.627	0.371	0.366	0.629	0.318	0.530	0.319
f32	512	20	16384	0.804	0.406	0.580	0.667	0.684	0.737	0.864	0.692	0.593	0.592	0.325	0.313	0.344	0.335	0.412	0.539	0.384	0.441	0.778	0.737	0.711	0.774	0.711	0.785	0.809	0.803	0.817	0.640	0.759	0.673	0.803	0.391	0.185	0.145	0.580	0.302	0.449	0.303
f32	512	16	16384	0.779	0.381	0.512	0.589	0.626	0.706	0.836	0.590	0.599	0.584	0.376	0.345	0.374	0.361	0.455	0.535	0.400	0.464	0.804	0.700	0.681	0.763	0.684	0.737	0.764	0.774	0.827	0.664	0.909	0.588	0.803	0.467	0.236	0.274	0.570	0.316	0.450	0.312
f32	512	12	16384	0.745	0.338	0.488	0.595	0.603	0.693	0.834	0.574	0.611	0.586	0.382	0.346	0.374	0.349	0.464	0.547	0.391	0.464	0.748	0.682	0.693	0.751	0.678	0.761	0.755	0.753	0.796	0.635	0.899	0.562	0.797	0.420	0.184	0.224	0.548	0.321	0.420	0.292
f32	256	24	8192	0.861	0.471	0.577	0.708	0.723	0.766	0.909	0.706	0.602	0.597	0.403	0.385	0.365	0.345	0.514	0.560	0.398	0.486	0.873	0.807	0.796	0.894	0.845	0.874	0.863	0.885	0.877	0.697	0.957	0.751	0.850	0.611	0.351	0.349	0.625	0.309	0.522	0.316
f32	256	20	8192	0.794	0.390	0.574	0.649	0.675	0.727	0.853	0.666	0.595	0.590	0.319	0.311	0.340	0.335	0.406	0.533	0.388	0.441	0.768	0.741	0.707	0.774	0.709	0.778	0.807	0.800	0.817	0.636	0.764	0.669	0.798	0.393	0.170	0.133	0.578	0.302	0.447	0.312
f32	256	16	8192	0.768	0.370	0.506	0.574	0.612	0.692	0.825	0.568	0.609	0.579	0.369	0.345	0.367	0.361	0.448	0.535	0.396	0.458	0.804	0.701	0.676	0.757	0.681	0.727	0.762	0.771	0.824	0.653	0.907	0.587	0.800	0.463	0.226	0.263	0.570	0.317	0.447	0.310
f32	256	12	8192	0.732	0.324	0.487	0.580	0.590	0.678	0.821	0.551	0.606	0.584	0.385	0.340	0.373	0.356	0.451	0.545	0.391	0.461	0.747	0.684	0.677	0.740	0.673	0.747	0.752	0.754	0.802	0.631	0.893	0.560	0.793	0.405	0.182	0.214	0.547	0.322	0.420	0.289
f32	128	24	4096	0.854	0.454	0.563	0.674	0.701	0.741	0.893	0.669	0.585	0.585	0.395	0.375	0.358	0.347	0.494	0.543	0.396	0.478	0.873	0.803	0.791	0.886	0.836	0.869	0.854	0.877	0.863	0.694	0.948	0.742	0.845	0.586	0.318	0.328	0.621	0.300	0.513	0.313
f32	128	20	4096	0.777	0.374	0.562	0.627	0.653	0.709	0.832	0.630	0.591	0.584	0.309	0.306	0.341	0.334	0.395	0.524	0.388	0.443	0.764	0.740	0.718	0.771	0.707	0.774	0.802	0.796	0.804	0.641	0.770	0.656	0.790	0.376	0.143	0.115	0.575	0.305	0.441	0.310
f32	128	16	4096	0.755	0.355	0.493	0.572	0.594	0.675	0.806	0.546	0.592	0.573	0.372	0.339	0.367	0.359	0.434	0.526	0.398	0.452	0.800	0.696	0.677	0.748	0.672	0.717	0.756	0.764	0.815	0.651	0.898	0.582	0.793	0.454	0.201	0.246	0.567	0.315	0.440	0.316
f32	128	12	4096	0.709	0.319	0.476	0.566	0.581	0.669	0.806	0.523	0.610	0.570	0.380	0.337	0.372	0.356	0.442	0.536	0.392	0.455	0.768	0.682	0.675	0.733	0.665	0.745	0.747	0.750	0.792	0.630	0.882	0.556	0.786	0.392	0.155	0.193	0.545	0.318	0.415	0.307
f32	64	24	2048	0.827	0.420	0.536	0.647	0.666	0.702	0.859	0.614	0.571	0.572	0.367	0.349	0.353	0.337	0.439	0.509	0.394	0.439	0.850	0.796	0.786	0.869	0.828	0.858	0.845	0.864	0.828	0.686	0.927	0.726	0.832	0.549	0.271	0.274	0.606	0.285	0.497	0.306
f32	64	20	2048	0.745	0.361	0.534	0.594	0.611	0.677	0.803	0.574	0.587	0.582	0.299	0.296	0.340	0.332	0.385	0.515	0.392	0.431	0.759	0.744	0.721	0.765	0.702	0.761	0.794	0.790	0.793	0.646	0.762	0.636	0.779	0.347	0.117	0.093	0.567	0.305	0.435	0.321
f32	64	16	2048	0.727	0.341	0.485	0.557	0.571	0.651	0.776	0.501	0.584	0.581	0.363	0.335	0.367	0.359	0.424	0.519	0.399	0.448	0.781	0.694	0.675	0.736	0.665	0.701	0.748	0.755	0.800	0.650	0.892	0.575	0.783	0.427	0.180	0.226	0.566	0.313	0.430	0.313
f32	64	12	2048	0.678	0.302	0.480	0.553	0.556	0.651	0.777	0.477	0.589	0.575	0.367	0.326	0.370	0.350	0.423	0.529	0.394	0.436	0.750	0.680	0.669	0.722	0.659	0.727	0.735	0.739	0.772	0.633	0.869	0.552	0.773	0.366	0.136	0.172	0.539	0.317	0.407	0.307
f32	32	24	1024	0.768	0.387	0.519	0.617	0.591	0.647	0.798	0.503	0.577	0.561	0.322	0.300	0.333	0.323	0.383	0.474	0.394	0.392	0.829	0.779	0.774	0.841	0.799	0.833	0.827	0.837	0.803	0.674	0.891	0.691	0.812	0.461	0.209	0.202	0.592	0.280	0.472	0.300
f32	32	20	1024	0.685	0.333	0.508	0.586	0.552	0.626	0.755	0.496	0.582	0.575	0.275	0.273	0.322	0.321	0.377	0.497	0.393	0.412	0.754	0.729	0.712	0.743	0.682	0.750	0.781	0.778	0.774	0.640	0.679	0.609	0.760	0.305	0.091	0.069	0.551	0.301	0.413	0.316
f32	32	16	1024	0.676	0.313	0.463	0.545	0.527	0.607	0.735	0.437	0.587	0.580	0.327	0.307	0.354	0.348	0.403	0.500	0.396	0.422	0.753	0.685	0.657	0.707	0.640	0.684	0.731	0.736	0.770	0.644	0.862	0.565	0.767	0.370	0.134	0.181	0.552	0.310	0.415	0.327
f32	32	12	1024	0.602	0.287	0.465	0.546	0.517	0.615	0.728	0.421	0.590	0.581	0.339	0.309	0.356	0.338	0.401	0.510	0.394	0.411	0.690	0.673	0.641	0.694	0.636	0.710	0.718	0.721	0.752	0.640	0.829	0.538	0.751	0.312	0.102	0.113	0.532	0.311	0.393	0.299
f32	16	24	512	0.636	0.351	0.493	0.566	0.479	0.537	0.695	0.367	0.537	0.548	0.258	0.244	0.299	0.288	0.307	0.418	0.386	0.330	0.784	0.757	0.753	0.798	0.754	0.807	0.789	0.805	0.781	0.674	0.807	0.616	0.773	0.308	0.091	0.114	0.563	0.279	0.412	0.289
f32	16	20	512	0.587	0.303	0.477	0.563	0.466	0.548	0.694	0.397	0.569	0.568	0.261	0.254	0.309	0.309	0.358	0.471	0.390	0.400	0.700	0.708	0.687	0.715	0.649	0.722	0.759	0.753	0.730	0.636	0.581	0.555	0.731	0.232	0.056	0.048	0.542	0.296	0.387	0.309
f32	16	16	512	0.581	0.283	0.443	0.538	0.463	0.558	0.683	0.359	0.595	0.586	0.303	0.277	0.336	0.328	0.360	0.468	0.391	0.393	0.711	0.674	0.652	0.687	0.625	0.664	0.721	0.714	0.718	0.637	0.807	0.535	0.743	0.285	0.076	0.114	0.527	0.304	0.390	0.304
f32	16	12	512	0.490	0.270	0.449	0.543	0.460	0.557	0.672	0.361	0.581	0.579	0.311	0.271	0.339	0.320	0.367	0.482	0.387	0.387	0.662	0.657	0.639	0.661	0.614	0.674	0.701	0.700	0.694	0.620	0.746	0.511	0.723	0.224	0.049	0.073	0.502	0.291	0.361	0.282
f32	8	24	256	0.425	0.308	0.434	0.562	0.356	0.429	0.579	0.248	0.524	0.521	0.193	0.183	0.261	0.249	0.243	0.352	0.379	0.284	0.711	0.706	0.729	0.711	0.677	0.713	0.746	0.747	0.673	0.668	0.501	0.529	0.717	0.112	0.011	0.037	0.519	0.261	0.341	0.280
f32	8	20	256	0.412	0.284	0.457	0.564	0.354	0.449	0.615	0.306	0.571	0.558	0.222	0.206	0.293	0.283	0.302	0.427	0.385	0.364	0.666	0.678	0.671	0.666	0.609	0.665	0.725	0.718	0.717	0.593	0.352	0.490	0.685	0.110	0.010	0.024	0.516	0.285	0.340	0.273
f32	8	16	256	0.411	0.249	0.398	0.529	0.351	0.470	0.626	0.290	0.583	0.575	0.222	0.209	0.299	0.292	0.304	0.429	0.386	0.337	0.615	0.656	0.626	0.657	0.591	0.609	0.696	0.683	0.670	0.611	0.676	0.480	0.703	0.134	0.025	0.045	0.518	0.290	0.346	0.286
f32	8	12	256	0.353	0.241	0.428	0.552	0.367	0.478	0.619	0.296	0.582	0.577	0.252	0.231	0.314	0.299	0.319	0.445	0.387	0.358	0.491	0.633	0.598	0.628	0.583	0.620	0.672	0.665	0.667	0.604	0.623	0.465	0.685	0.116	0.022	0.039	0.483	0.285	0.322	0.258

Table 39: Absolute performance for mxbai-embed-2d-large-v1 on all tasks using float quantization. Table 2 serves as a legend.

q	m	l	req. bits	CLA 1	CLA 2	CLA 3	CLA 4	CLA 5	CLA 6	CLA 7	CLA 8	CLU 1	CLU 2	CLU 3	CLU 4	CLU 5	CLU 6	CLU 7	CLU 8	CLU 9	CLU 10	STS 1	STS 2	STS 3	STS 4	STS 5	STS 6	STS 7	STS 8	STS 9	STS 10	PCL 1	PCL 2	PCL 3	RET 1	RET 2	RET 3	RER 1	RER 2	RER 3	SUM 1
int	1024	24	8192	0.859	0.473	0.568	0.649	0.706	0.754	0.928	0.666	0.608	0.602	0.413	0.385	0.374	0.356	0.543	0.574	0.400	0.504	0.869	0.815	0.768	0.896	0.842	0.876	0.855	0.884	0.885	0.683	0.964	0.758	0.855	0.614	0.386	0.374	0.634	0.315	0.535	0.319
int	1024	20	8192	0.807	0.392	0.575	0.599	0.669	0.710	0.865	0.657	0.600	0.581	0.331	0.320	0.344	0.332	0.412	0.541	0.383	0.439	0.755	0.748	0.686	0.762	0.697	0.782	0.804	0.790	0.830	0.610	0.755	0.669	0.812	0.421	0.249	0.229	0.582	0.304	0.448	0.294
int	1024	16	8192	0.779	0.366	0.510	0.535	0.608	0.684	0.841	0.562	0.594	0.585	0.379	0.349	0.369	0.361	0.453	0.538	0.399	0.458	0.808	0.706	0.650	0.772	0.682	0.760	0.756	0.772	0.842	0.638	0.910	0.582	0.806	0.472	0.260	0.293	0.569	0.317	0.452	0.300
int	1024	12	8192	0.751	0.324	0.473	0.543	0.593	0.685	0.851	0.552	0.609	0.577	0.390	0.345	0.371	0.352	0.465	0.552	0.389	0.470	0.727	0.682	0.647	0.765	0.673	0.756	0.746	0.750	0.817	0.596	0.901	0.568	0.801	0.420	0.202	0.243	0.550	0.323	0.423	0.295
int	512	24	4096	0.855	0.468	0.559	0.642	0.699	0.742	0.917	0.640	0.603	0.593	0.421	0.391	0.372	0.358	0.541	0.570	0.399	0.510	0.864	0.813	0.766	0.895	0.839	0.873	0.853	0.883	0.876	0.685	0.963	0.754	0.854	0.616	0.378	0.364	0.630	0.314	0.530	0.318
int	512	20	4096	0.800	0.383	0.565	0.582	0.660	0.709	0.858	0.638	0.597	0.595	0.328	0.314	0.340	0.335	0.409	0.541	0.386	0.433	0.757	0.749	0.691	0.765	0.701	0.783	0.806	0.793	0.831	0.610	0.747	0.667	0.810	0.415	0.240	0.224	0.584	0.304	0.446	0.288
int	512	16	4096	0.773	0.348	0.499	0.527	0.597	0.675	0.835	0.551	0.605	0.587	0.370	0.341	0.371	0.360	0.448	0.533	0.397	0.454	0.808	0.705	0.653	0.769	0.682	0.752	0.758	0.772	0.838	0.638	0.908	0.583	0.805	0.466	0.255	0.290	0.570	0.319	0.448	0.292
int	512	12	4096	0.742	0.301	0.471	0.550	0.577	0.670	0.842	0.532	0.607	0.586	0.390	0.342	0.370	0.351	0.463	0.547	0.388	0.460	0.719	0.684	0.646	0.760	0.674	0.752	0.744	0.748	0.808	0.590	0.896	0.569	0.800	0.413	0.202	0.238	0.551	0.323	0.420	0.286
int	256	24	2048	0.850	0.457	0.555	0.647	0.682	0.730	0.895	0.608	0.610	0.591	0.404	0.388	0.365	0.349	0.520	0.562	0.399	0.480	0.866	0.811	0.763	0.892	0.837	0.867	0.850	0.880	0.872	0.685	0.961	0.747	0.850	0.593	0.357	0.350	0.623	0.312	0.523	0.322
int	256	20	2048	0.785	0.347	0.552	0.588	0.642	0.690	0.840	0.606	0.605	0.595	0.323	0.308	0.338	0.329	0.398	0.534	0.385	0.424	0.730	0.751	0.682	0.766	0.706	0.777	0.803	0.791	0.833	0.603	0.743	0.664	0.805	0.406	0.221	0.216	0.572	0.302	0.443	0.298
int	256	16	2048	0.757	0.346	0.489	0.528	0.580	0.665	0.818	0.513	0.592	0.584	0.361	0.339	0.366	0.358	0.441	0.531	0.398	0.455	0.802	0.706	0.656	0.762	0.680	0.747	0.753	0.770	0.830	0.628	0.908	0.580	0.801	0.448	0.241	0.283	0.566	0.319	0.447	0.294
int	256	12	2048	0.729	0.279	0.465	0.536	0.559	0.654	0.827	0.505	0.602	0.583	0.384	0.337	0.369	0.347	0.452	0.542	0.389	0.463	0.725	0.684	0.641	0.751	0.665	0.743	0.737	0.743	0.804	0.591	0.889	0.567	0.797	0.397	0.188	0.223	0.550	0.320	0.418	0.273
int	128	24	1024	0.832	0.436	0.539	0.619	0.650	0.700	0.877	0.552	0.588	0.579	0.392	0.375	0.355	0.342	0.499	0.544	0.396	0.469	0.879	0.806	0.751	0.882	0.828	0.858	0.842	0.872	0.863	0.683	0.955	0.734	0.844	0.569	0.324	0.338	0.612	0.311	0.515	0.317
int	128	20	1024	0.763	0.331	0.534	0.603	0.601	0.659	0.824	0.536	0.592	0.584	0.307	0.306	0.337	0.330	0.387	0.522	0.385	0.426	0.726	0.750	0.685	0.768	0.700	0.765	0.798	0.786	0.820	0.601	0.744	0.653	0.796	0.394	0.186	0.196	0.571	0.303	0.435	0.285
int	128	16	1024	0.737	0.318	0.468	0.513	0.546	0.628	0.801	0.459	0.577	0.578	0.356	0.332	0.368	0.357	0.429	0.521	0.397	0.437	0.799	0.700	0.645	0.750	0.673	0.732	0.746	0.759	0.826	0.617	0.901	0.578	0.795	0.431	0.206	0.264	0.565	0.318	0.436	0.298
int	128	12	1024	0.701	0.269	0.442	0.511	0.540	0.635	0.809	0.458	0.608	0.578	0.381	0.336	0.372	0.349	0.439	0.537	0.392	0.452	0.719	0.680	0.639	0.733	0.654	0.729	0.730	0.742	0.801	0.587	0.881	0.563	0.790	0.394	0.162	0.208	0.550	0.317	0.409	0.279
int	64	24	512	0.788	0.365	0.488	0.592	0.598	0.648	0.827	0.478	0.566	0.563	0.364	0.340	0.349	0.336	0.439	0.509	0.400	0.442	0.838	0.799	0.736	0.868	0.814	0.839	0.831	0.858	0.826	0.664	0.932	0.722	0.831	0.515	0.282	0.282	0.596	0.305	0.490	0.301
int	64	20	512	0.692	0.289	0.504	0.538	0.539	0.607	0.787	0.449	0.588	0.574	0.298	0.291	0.333	0.337	0.380	0.511	0.391	0.420	0.704	0.755	0.680	0.754	0.690	0.752	0.786	0.775	0.816	0.605	0.738	0.638	0.782	0.363	0.153	0.171	0.564	0.304	0.429	0.302
int	64	16	512	0.679	0.310	0.454	0.481	0.502	0.589	0.747	0.396	0.575	0.568	0.356	0.333	0.361	0.358	0.416	0.514	0.398	0.433	0.767	0.696	0.637	0.734	0.662	0.726	0.732	0.749	0.808	0.622	0.897	0.572	0.786	0.396	0.180	0.251	0.566	0.315	0.425	0.293
int	64	12	512	0.644	0.248	0.423	0.516	0.492	0.593	0.762	0.402	0.602	0.579	0.366	0.328	0.369	0.346	0.420	0.526	0.395	0.425	0.696	0.674	0.634	0.714	0.636	0.708	0.716	0.726	0.779	0.598	0.873	0.557	0.779	0.356	0.147	0.193	0.540	0.317	0.402	0.287
int	32	24	256	0.687	0.328	0.454	0.544	0.485	0.561	0.736	0.353	0.566	0.566	0.318	0.302	0.332	0.321	0.382	0.469	0.396	0.386	0.816	0.784	0.710	0.844	0.785	0.817	0.814	0.827	0.794	0.637	0.901	0.686	0.812	0.422	0.206	0.209	0.578	0.298	0.462	0.293
int	32	20	256	0.577	0.260	0.448	0.533	0.441	0.546	0.725	0.320	0.580	0.574	0.278	0.275	0.319	0.320	0.364	0.497	0.393	0.404	0.704	0.735	0.652	0.704	0.657	0.739	0.764	0.752	0.784	0.587	0.627	0.606	0.762	0.299	0.110	0.120	0.540	0.307	0.401	0.308
int	32	16	256	0.569	0.279	0.418	0.514	0.441	0.530	0.691	0.301	0.582	0.567	0.330	0.309	0.354	0.348	0.398	0.498	0.394	0.420	0.729	0.688	0.599	0.707	0.637	0.706	0.715	0.720	0.777	0.615	0.873	0.562	0.771	0.335	0.143	0.203	0.554	0.316	0.404	0.308
int	32	12	256	0.522	0.233	0.399	0.413	0.413	0.536	0.686	0.309	0.593	0.577	0.343	0.306	0.359	0.341	0.405	0.511	0.395	0.417	0.616	0.664	0.617	0.672	0.612	0.699	0.690	0.687	0.744	0.589	0.836	0.546	0.758	0.292	0.101	0.132	0.528	0.317	0.388	0.281
int	16	24	128	0.462	0.293	0.474	0.507	0.330	0.399	0.562	0.229	0.542	0.550	0.253	0.243	0.300	0.285	0.299	0.413	0.383	0.324	0.814	0.758	0.695	0.788	0.723	0.762	0.754	0.782	0.773	0.630	0.814	0.614	0.772	0.252	0.085	0.122	0.550	0.291	0.409	0.278
int	16	20	128	0.391	0.244	0.450	0.526	0.313	0.412	0.598	0.207	0.576	0.570	0.263	0.255	0.311	0.309	0.350	0.470	0.391	0.394	0.731	0.713	0.622	0.698	0.613	0.688	0.735	0.712	0.732	0.601	0.517	0.557	0.731	0.207	0.052	0.073	0.514	0.294	0.371	0.305
int	16	16	128	0.385	0.242	0.408	0.524	0.332	0.424	0.599	0.233	0.581	0.581	0.304	0.289	0.337	0.329	0.365	0.469	0.390	0.391	0.673	0.680	0.604	0.674	0.604	0.676	0.699	0.693	0.723	0.585	0.825	0.539	0.747	0.233	0.073	0.135	0.531	0.305	0.369	0.292
int	16	12	128	0.336	0.229	0.412	0.491	0.307	0.419	0.571	0.205	0.593	0.581	0.312	0.279	0.346	0.325	0.369	0.486	0.388	0.393	0.647	0.645	0.610	0.625	0.564	0.650	0.640	0.656	0.676	0.560	0.758	0.518	0.731	0.206	0.073	0.073	0.507	0.298	0.346	0.269
int	8	24	64	0.341	0.263	0.429	0.528	0.283	0.321	0.461	0.184	0.519	0.525	0.190	0.177	0.263	0.249	0.239	0.350	0.376	0.283	0.682	0.712	0.619	0.660	0.637	0.688	0.680	0.724	0.667	0.620	0.516	0.540	0.717	0.081	0.012	0.046	0.511	0.263	0.334	0.276
int	8	20	64	0.311	0.276	0.426	0.558	0.276	0.344	0.464	0.174	0.567	0.565	0.223	0.211	0.293	0.279	0.302	0.426	0.386	0.360	0.640	0.675	0.551	0.607	0.546	0.629	0.676	0.642	0.613	0.519	0.331	0.491	0.684	0.112	0.007	0.033	0.511	0.286	0.313	0.281
int	8	16	64	0.297	0.251	0.385	0.543	0.274	0.364	0.477	0.240	0.582	0.573	0.225	0.210	0.299	0.292	0.304	0.428	0.386	0.333	0.595	0.644	0.573	0.604	0.542	0.599	0.657	0.622	0.670	0.572	0.682	0.480	0.703	0.129	0.016	0.050	0.498	0.294	0.303	0.271
int	8	12	64	0.279	0.209	0.410	0.549	0.302	0.360	0.440	0.219	0.578	0.573	0.256	0.232	0.314	0.300	0.318	0.445	0.387	0.350	0.515	0.618	0.564	0.585	0.497	0.572	0.605	0.617	0.628	0.583	0.641	0.465	0.688	0.094	0.022	0.038	0.477	0.278	0.308	0.268

Table 40: Absolute performance for mxbai-embed-2d-large-v1 on all tasks using int quantization. Table 2 serves as a legend.

q	m	l	req. bits	CLA 1	CLA 2	CLA 3	CLA 4	CLA 5	CLA 6	CLA 7	CLA 8	CLU 1	CLU 2	CLU 3	CLU 4	CLU 5	CLU 6	CLU 7	CLU 8	CLU 9	CLU 10	STS 1	STS 2	STS 3	STS 4	STS 5	STS 6	STS 7	STS 8	STS 9	STS 10	PCL 1	PCL 2	PCL 3	RET 1	RET 2	RET 3	RER 1	RER 2	RER 3	SUM 1
bin	1024	24	1024	0.756	0.366	0.478	0.584	0.577	0.621	0.785	0.488	0.547	0.546	0.339	0.301	0.323	0.313	0.415	0.462	0.363	0.367	0.753	0.771	0.744	0.839	0.790	0.818	0.824	0.843	0.836	0.664	0.918	0.701	0.829	0.455	0.204	0.235	0.588	0.274	0.453	0.299
bin	1024	20	1024	0.622	0.297	0.476	0.595	0.487	0.550	0.728	0.464	0.552	0.536	0.258	0.266	0.304	0.299	0.313	0.449	0.346	0.360	0.637	0.685	0.612	0.686	0.627	0.723	0.752	0.723	0.700	0.583	0.568	0.617	0.768	0.197	0.059	0.071	0.532	0.276	0.384	0.306
bin	1024	16	1024	0.623	0.284	0.436	0.557	0.484	0.587	0.734	0.409	0.575	0.551	0.325	0.307	0.324	0.321	0.370	0.463	0.358	0.398	0.789	0.667	0.644	0.719	0.634	0.699	0.736	0.722	0.796	0.630	0.846	0.563	0.772	0.312	0.118	0.193	0.538	0.306	0.387	0.281
bin	1024	12	1024	0.557	0.254	0.411	0.539	0.442	0.537	0.707	0.380	0.568	0.547	0.346	0.306	0.338	0.312	0.372	0.485	0.353	0.387	0.663	0.643	0.610	0.673	0.596	0.705	0.716	0.694	0.727	0.625	0.803	0.506	0.766	0.236	0.068	0.118	0.506	0.317	0.362	0.284
bin	512	24	512	0.634	0.320	0.457	0.579	0.449	0.501	0.634	0.351	0.524	0.525	0.270	0.246	0.302	0.291	0.298	0.386	0.361	0.298	0.728	0.742	0.720	0.805	0.756	0.768	0.782	0.812	0.786	0.651	0.870	0.657	0.804	0.331	0.119	0.153	0.553	0.270	0.408	0.309
bin	512	20	512	0.480	0.266	0.446	0.599	0.364	0.434	0.623	0.337	0.546	0.539	0.241	0.238	0.281	0.287	0.249	0.397	0.353	0.296	0.570	0.635	0.557	0.656	0.560	0.649	0.717	0.657	0.627	0.561	0.460	0.564	0.729	0.133	0.041	0.049	0.515	0.269	0.347	0.281
bin	512	16	512	0.512	0.265	0.406	0.543	0.383	0.491	0.646	0.306	0.569	0.545	0.284	0.264	0.311	0.299	0.312	0.416	0.360	0.347	0.744	0.620	0.610	0.702	0.586	0.669	0.703	0.686	0.707	0.603	0.785	0.545	0.748	0.234	0.074	0.126	0.520	0.292	0.356	0.302
bin	512	12	512	0.439	0.218	0.381	0.529	0.338	0.430	0.600	0.277	0.546	0.568	0.293	0.259	0.312	0.286	0.307	0.433	0.360	0.327	0.602	0.614	0.553	0.614	0.544	0.662	0.664	0.631	0.652	0.580	0.712	0.482	0.729	0.153	0.047	0.054	0.482	0.301	0.329	0.267
bin	256	24	256	0.440	0.265	0.425	0.554	0.309	0.374	0.489	0.219	0.510	0.499	0.208	0.188	0.279	0.273	0.200	0.301	0.362	0.223	0.702	0.706	0.655	0.742	0.683	0.696	0.726	0.756	0.713	0.637	0.758	0.586	0.759	0.180	0.057	0.092	0.512	0.263	0.355	0.288
bin	256	20	256	0.343	0.229	0.415	0.552	0.249	0.306	0.460	0.212	0.545	0.527	0.201	0.195	0.271	0.270	0.181	0.330	0.359	0.230	0.532	0.582	0.509	0.560	0.477	0.599	0.647	0.582	0.538	0.466	0.315	0.508	0.670	0.068	0.024	0.027	0.492	0.251	0.297	0.269
bin	256	16	256	0.372	0.233	0.397	0.537	0.275	0.362	0.519	0.212	0.551	0.515	0.224	0.207	0.276	0.276	0.236	0.355	0.370	0.260	0.662	0.561	0.546	0.632	0.521	0.609	0.652	0.617	0.656	0.549	0.680	0.477	0.704	0.137	0.043	0.085	0.492	0.280	0.317	0.290
bin	256	12	256	0.316	0.196	0.364	0.507	0.230	0.315	0.453	0.182	0.524	0.533	0.210	0.190	0.279	0.262	0.216	0.350	0.366	0.244	0.572	0.545	0.478	0.522	0.462	0.592	0.585	0.559	0.556	0.537	0.505	0.429	0.669	0.079	0.019	0.044	0.459	0.279	0.287	0.280
bin	128	24	128	0.276	0.265	0.444	0.530	0.188	0.239	0.336	0.139	0.497	0.518	0.164	0.150	0.242	0.242	0.151	0.248	0.361	0.168	0.512	0.609	0.526	0.638	0.569	0.574	0.616	0.629	0.643	0.526	0.518	0.499	0.691	0.083	0.030	0.045	0.483	0.261	0.294	0.286
bin	128	20	128	0.220	0.236	0.433	0.543	0.148	0.187	0.283	0.121	0.512	0.510	0.162	0.155	0.250	0.243	0.137	0.278	0.360	0.191	0.466	0.490	0.433	0.446	0.405	0.506	0.524	0.489	0.425	0.387	0.193	0.447	0.608	0.041	0.009	0.019	0.458	0.248	0.253	0.248
bin	128	16	128	0.251	0.207	0.382	0.532	0.183	0.233	0.351	0.143	0.517	0.516	0.200	0.188	0.264	0.262	0.170	0.293	0.363	0.213	0.606	0.446	0.437	0.547	0.412	0.507	0.589	0.496	0.546	0.435	0.481	0.435	0.647	0.068	0.032	0.051	0.478	0.272	0.281	0.293
bin	128	12	128	0.232	0.200	0.368	0.501	0.159	0.214	0.340	0.130	0.530	0.520	0.191	0.164	0.257	0.251	0.176	0.313	0.366	0.223	0.554	0.460	0.411	0.399	0.368	0.495	0.503	0.451	0.474	0.514	0.351	0.392	0.613	0.053	0.014	0.030	0.440	0.278	0.256	0.279
bin	64	24	64	0.177	0.238	0.408	0.513	0.144	0.211	0.278	0.073	0.508	0.507	0.140	0.134	0.229	0.224	0.140	0.231	0.357	0.151	0.427	0.526	0.449	0.502	0.451	0.471	0.500	0.532	0.537	0.460	0.274	0.424	0.588	0.040	0.015	0.038	0.450	0.257	0.253	0.274
bin	64	20	64	0.174	0.230	0.416	0.521	0.109	0.179	0.272	0.104	0.494	0.504	0.168	0.153	0.252	0.240	0.144	0.272	0.358	0.186	0.408	0.398	0.378	0.386	0.333	0.378	0.456	0.407	0.348	0.294	0.098	0.392	0.525	0.040	0.006	0.013	0.452	0.246	0.236	0.267
bin	64	16	64	0.198	0.199	0.388	0.514	0.134	0.212	0.297	0.097	0.511	0.508	0.176	0.168	0.248	0.249	0.161	0.288	0.362	0.199	0.413	0.412	0.415	0.471	0.359	0.453	0.484	0.451	0.441	0.362	0.272	0.388	0.568	0.054	0.017	0.035	0.444	0.257	0.251	0.277
bin	64	12	64	0.176	0.186	0.369	0.495	0.127	0.196	0.288	0.084	0.546	0.540	0.180	0.157	0.260	0.244	0.181	0.315	0.366	0.214	0.478	0.379	0.367	0.331	0.288	0.382	0.448	0.411	0.425	0.464	0.245	0.334	0.533	0.052	0.011	0.028	0.438	0.264	0.233	0.260
bin	32	24	32	0.098	0.203	0.363	0.516	0.083	0.163	0.216	0.041	0.494	0.514	0.140	0.127	0.231	0.218	0.143	0.249	0.358	0.155	0.296	0.451	0.346	0.348	0.363	0.362	0.421	0.421	0.452	0.223	0.169	0.358	0.508	0.039	0.011	0.032	0.422	0.263	0.230	0.257
bin	32	20	32	0.091	0.181	0.370	0.511	0.068	0.127	0.251	0.053	0.516	0.508	0.154	0.139	0.238	0.233	0.173	0.295	0.360	0.189	0.450	0.373	0.339	0.271	0.270	0.290	0.387	0.356	0.251	0.188	0.067	0.348	0.455	0.023	0.003	0.018	0.415	0.260	0.219	0.240
bin	32	16	32	0.108	0.183	0.375	0.495	0.083	0.156	0.268	0.070	0.513	0.510	0.161	0.150	0.249	0.241	0.171	0.303	0.358	0.187	0.373	0.398	0.385	0.332	0.298	0.362	0.445	0.375	0.373	0.329	0.189	0.341	0.494	0.036	0.016	0.024	0.430	0.264	0.223	0.268
bin	32	12	32	0.105	0.177	0.373	0.486	0.076	0.152	0.240	0.037	0.509	0.520	0.168	0.141	0.230	0.221	0.176	0.318	0.368	0.213	0.399	0.336	0.329	0.259	0.233	0.316	0.369	0.344	0.378	0.301	0.152	0.307	0.501	0.042	0.008	0.027	0.409	0.264	0.210	0.232
bin	16	24	16	0.044	0.203	0.331	0.564	0.039	0.100	0.142	0.019	0.494	0.491	0.132	0.130	0.222	0.211	0.172	0.273	0.356	0.176	0.331	0.391	0.279	0.343	0.301	0.343	0.374	0.391	0.365	0.218	0.110	0.334	0.432	0.016	0.008	0.021	0.413	0.251	0.179	0.228
bin	16	20	16	0.057	0.169	0.358	0.495	0.040	0.108	0.218	0.026	0.489	0.521	0.156	0.136	0.246	0.240	0.218	0.320	0.313	0.214	0.099	0.349	0.319	0.285	0.263	0.272	0.346	0.326	0.196	0.189	0.040	0.314	0.390	0.003	0.002	0.012	0.379	0.216	0.163	0.266
bin	16	16	16	0.054	0.153	0.338	0.494	0.040	0.104	0.181	0.029	0.498	0.519	0.170	0.162	0.269	0.260	0.208	0.326	0.275	0.230	0.195	0.359	0.336	0.308	0.272	0.350	0.465	0.369	0.325	0.314	0.090	0.301	0.414	0.008	0.006	0.021	0.372	0.231	0.146	0.257
bin	16	12	16	0.054	0.158	0.327	0.455	0.040	0.094	0.154	0.018	0.543	0.529	0.173	0.159	0.258	0.253	0.204	0.328	0.292	0.250	0.306	0.318	0.283	0.276	0.232	0.295	0.377	0.349	0.261	0.218	0.051	0.313	0.455	0.011	0.002	0.017	0.339	0.228	0.130	0.243
bin	8	24	8	0.027	0.144	0.329	0.503	0.031	0.099	0.107	0.022	0.488	0.487	0.134	0.134	0.234	0.223	0.190	0.270	0.240	0.208	0.114	0.224	0.155	0.239	0.220	0.156	0.217	0.262	0.238	0.146	0.042	0.272	0.327	0.000	0.001	0.003	0.294	0.104	0.052	0.187
bin	8	20	8	0.031	0.117	0.352	0.459	0.031	0.088	0.181	0.031	0.393	0.440	0.159	0.151	0.244	0.227	0.225	0.299	0.175	0.249	0.086	0.030	-0.058	0.079	0.074	0.016	0.147	0.039	0.045	0.165	0.018	0.294	0.325	0.000	0.000	0.001	0.294	0.101	0.047	0.260
bin	8	16	8	0.035	0.166	0.324	0.520	0.035	0.094	0.146	0.019	0.519	0.541	0.143	0.146	0.266	0.259	0.216	0.320	0.134	0.259	0.188	0.033	-0.011	0.050	0.085	0.097	0.204	0.100	0.098	0.103	0.030	0.281	0.333	0.000	0.000	0.002	0.285	0.107	0.044	0.252
bin	8	12	8	0.029	0.183	0.322	0.515	0.029	0.100	0.152	0.024	0.505	0.477	0.166	0.148	0.213	0.200	0.197	0.296	0.129	0.262	0.165	0.007	0.014	0.046	0.047	-0.034	0.074	0.103	0.069	-0.094	0.015	0.265	0.339	0.000	0.000	0.001	0.275	0.104	0.040	0.193

Table 41: Absolute performance for mxbai-embed-2d-large-v1 on all tasks using binary quantization. Table 2 serves as a legend.

q	m	l	req. bits	CLA 1	CLA 2	CLA 3	CLA 4	CLA 5	CLA 6	CLA 7	CLA 8	CLU 1	CLU 2	CLU 3	CLU 4	CLU 5	CLU 6	CLU 7	CLU 8	CLU 9	CLU 10	STS 1	STS 2	STS 3	STS 4	STS 5	STS 6	STS 7	STS 8	STS 9	STS 10	PCL 1	PCL 2	PCL 3	RET 1	RET 2	RET 3	RER 1	RER 2	RER 3	SUM 1
f32	1024	24	32768	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
f32	1024	20	32768	0.937	0.828	0.990	0.911	0.934	0.954	0.935	0.963	1.000	0.987	0.782	0.795	0.919	0.939	0.762	0.943	0.958	0.857	0.893	0.909	0.889	0.858	0.840	0.899	0.931	0.907	0.920	0.905	0.789	0.879	0.941	0.609	0.523	0.409	0.904	0.941	0.852	0.950
f32	1024	16	32768	0.906	0.803	0.872	0.792	0.853	0.917	0.909	0.823	1.001	0.967	0.906	0.888	0.999	1.018	0.840	0.939	1.000	0.933	0.925	0.864	0.854	0.853	0.806	0.847	0.883	0.875	0.935	0.953	0.949	0.772	0.942	0.748	0.635	0.771	0.897	0.994	0.851	0.981
f32	1024	12	32768	0.871	0.705	0.824	0.794	0.828	0.901	0.906	0.803	1.008	0.973	0.939	0.876	1.011	0.989	0.856	0.959	0.975	0.923	0.851	0.841	0.866	0.841	0.800	0.870	0.872	0.852	0.904	0.914	0.941	0.741	0.935	0.675	0.501	0.629	0.860	1.015	0.794	0.901
f32	512	24	16384	0.998	0.984	0.988	0.965	0.992	0.989	0.989	0.984	0.997	0.992	1.002	0.988	0.996	1.008	0.982	0.998	1.001	0.983	0.998	0.997	1.000	1.000	0.998	0.997	0.998	0.998	0.993	1.008	1.000	0.997	0.998	0.996	0.981	0.991	0.986	0.999	0.997	1.008
f32	512	20	16384	0.929	0.824	0.979	0.893	0.925	0.943	0.928	0.944	0.981	0.982	0.773	0.787	0.923	0.939	0.755	0.938	0.959	0.863	0.889	0.910	0.893	0.864	0.837	0.891	0.932	0.906	0.923	0.919	0.790	0.884	0.939	0.620	0.489	0.392	0.909	0.949	0.844	0.957
f32	512	16	16384	0.900	0.773	0.864	0.789	0.846	0.903	0.898	0.804	0.990	0.970	0.897	0.868	1.004	1.013	0.834	0.932	1.000	0.908	0.919	0.865	0.855	0.851	0.804	0.837	0.881	0.873	0.933	0.953	0.946	0.772	0.939	0.742	0.623	0.740	0.894	0.992	0.846	0.986
f32	512	12	16384	0.860	0.686	0.824	0.797	0.814	0.886	0.896	0.782	1.010	0.973	0.911	0.871	1.004	0.980	0.850	0.952	0.977	0.908	0.855	0.842	0.870	0.838	0.798	0.864	0.870	0.849	0.899	0.912	0.936	0.739	0.932	0.667	0.486	0.604	0.859	1.006	0.790	0.923
f32	256	24	8192	0.994	0.957	0.974	0.948	0.976	0.980	0.977	0.963	0.996	0.990	0.960	0.968	0.980	0.969	0.941	0.974	0.996	0.952	0.998	0.997	1.000	0.998	0.994	0.993	0.995	0.998	0.990	1.000	0.996	0.987	0.994	0.971	0.927	0.945	0.980	0.970	0.981	1.000
f32	256	20	8192	0.917	0.791	0.970	0.870	0.912	0.930	0.916	0.909	0.983	0.979	0.760	0.782	0.912	0.940	0.744	0.928	0.972	0.862	0.877	0.916	0.888	0.863	0.834	0.883	0.930	0.902	0.922	0.913	0.796	0.879	0.933	0.625	0.449	0.359	0.907	0.949	0.841	0.988
f32	256	16	8192	0.887	0.751	0.854	0.768	0.826	0.886	0.886	0.774	1.007	0.961	0.879	0.870	0.985	1.013	0.819	0.930	0.990	0.897	0.918	0.865	0.849	0.845	0.801	0.826	0.879	0.869	0.931	0.937	0.944	0.772	0.935	0.736	0.597	0.712	0.894	0.996	0.841	0.981
f32	256	12	8192	0.845	0.658	0.823	0.776	0.797	0.868	0.882	0.751	1.002	0.969	0.916	0.856	1.001	0.998	0.826	0.948	0.979	0.903	0.854	0.845	0.850	0.825	0.792	0.849	0.867	0.850	0.906	0.907	0.930	0.736	0.927	0.643	0.482	0.579	0.858	1.011	0.791	0.914
f32	128	24	4096	0.986	0.923	0.950	0.902	0.947	0.948	0.959	0.913	0.967	0.970	0.940	0.944	0.961	0.974	0.905	0.944	0.990	0.936	0.998	0.992	0.993	0.988	0.984	0.987	0.985	0.988	0.974	0.997	0.987	0.975	0.988	0.930	0.839	0.887	0.973	0.943	0.964	0.991
f32	128	20	4096	0.898	0.760	0.949	0.840	0.883	0.907	0.894	0.860	0.977	0.969	0.737	0.769	0.917	0.938	0.723	0.911	0.971	0.866	0.873	0.914	0.902	0.861	0.832	0.879	0.925	0.897	0.908	0.920	0.801	0.863	0.924	0.597	0.378	0.312	0.901	0.956	0.829	0.980
f32	128	16	4096	0.871	0.722	0.833	0.766	0.802	0.863	0.866	0.745	0.980	0.952	0.887	0.853	0.986	1.007	0.795	0.916	0.996	0.885	0.914	0.860	0.850	0.834	0.791	0.814	0.872	0.861	0.920	0.935	0.935	0.765	0.927	0.722	0.532	0.666	0.889	0.987	0.827	0.999
f32	128	12	4096	0.818	0.647	0.803	0.758	0.784	0.857	0.866	0.713	1.009	0.946	0.905	0.847	0.999	0.998	0.809	0.933	0.981	0.889	0.878	0.842	0.848	0.817	0.783	0.846	0.862	0.845	0.894	0.905	0.918	0.732	0.919	0.623	0.410	0.521	0.854	0.998	0.780	0.971
f32	64	24	2048	0.955	0.853	0.906	0.867	0.899	0.898	0.922	0.837	0.945	0.949	0.874	0.878	0.947	0.946	0.803	0.886	0.985	0.860	0.971	0.983	0.988	0.970	0.974	0.975	0.975	0.974	0.935	0.984	0.965	0.955	0.972	0.872	0.715	0.740	0.950	0.893	0.935	0.967
f32	64	20	2048	0.860	0.734	0.901	0.795	0.826	0.866	0.863	0.782	0.971	0.965	0.713	0.746	0.912	0.933	0.704	0.896	0.980	0.844	0.867	0.919	0.905	0.853	0.826	0.864	0.915	0.891	0.895	0.927	0.793	0.836	0.910	0.552	0.309	0.252	0.888	0.958	0.818	1.015
f32	64	16	2048	0.839	0.692	0.820	0.746	0.771	0.833	0.834	0.683	0.966	0.964	0.866	0.842	0.986	1.008	0.776	0.903	0.998	0.876	0.892	0.857	0.848	0.821	0.782	0.796	0.863	0.852	0.904	0.934	0.929	0.755	0.916	0.678	0.474	0.612	0.887	0.982	0.808	0.990
f32	64	12	2048	0.782	0.614	0.810	0.740	0.751	0.833	0.834	0.650	0.973	0.955	0.875	0.820	0.994	0.982	0.774	0.920	0.985	0.853	0.857	0.840	0.840	0.805	0.775	0.826	0.847	0.833	0.872	0.909	0.904	0.726	0.904	0.581	0.358	0.466	0.845	0.995	0.766	0.973
f32	32	24	1024	0.887	0.786	0.876	0.827	0.798	0.827	0.857	0.686	0.955	0.931	0.766	0.756	0.894	0.905	0.701	0.825	0.985	0.767	0.947	0.962	0.973	0.938	0.941	0.946	0.954	0.944	0.906	0.967	0.927	0.908	0.949	0.733	0.551	0.545	0.928	0.880	0.888	0.950
f32	32	20	1024	0.790	0.675	0.858	0.784	0.746	0.800	0.810	0.676	0.963	0.954	0.654	0.686	0.866	0.900	0.690	0.866	0.984	0.807	0.862	0.900	0.895	0.828	0.802	0.852	0.900	0.877	0.874	0.919	0.707	0.800	0.888	0.484	0.240	0.188	0.865	0.946	0.776	0.998
f32	32	16	1024	0.780	0.636	0.782	0.729	0.712	0.776	0.789	0.596	0.971	0.962	0.778	0.773	0.952	0.975	0.737	0.869	0.991	0.826	0.861	0.846	0.825	0.788	0.753	0.777	0.843	0.830	0.869	0.924	0.897	0.742	0.897	0.588	0.355	0.489	0.865	0.973	0.781	1.034
f32	32	12	1024	0.695	0.583	0.784	0.731	0.698	0.787	0.781	0.574	0.976	0.964	0.807	0.778	0.957	0.949	0.735	0.887	0.986	0.804	0.789	0.832	0.806	0.774	0.748	0.806	0.828	0.813	0.849	0.919	0.863	0.707	0.878	0.495	0.268	0.306	0.834	0.978	0.738	0.948
f32	16	24	512	0.734	0.713	0.832	0.758	0.647	0.687	0.747	0.501	0.889	0.910	0.615	0.614	0.803	0.807	0.562	0.727	0.965	0.645	0.896	0.935	0.946	0.891	0.887	0.916	0.910	0.908	0.882	0.968	0.841	0.810	0.904	0.489	0.240	0.308	0.883	0.875	0.775	0.915
f32	16	20	512	0.677	0.616	0.805	0.754	0.629	0.702	0.745	0.541	0.941	0.943	0.621	0.639	0.830	0.868	0.655	0.819	0.975	0.784	0.800	0.874	0.862	0.797	0.764	0.820	0.875	0.849	0.824	0.913	0.605	0.730	0.855	0.369	0.148	0.129	0.850	0.929	0.728	0.977
f32	16	16	512	0.671	0.575	0.748	0.720	0.625	0.714	0.734	0.490	0.984	0.972	0.722	0.697	0.902	0.920	0.660	0.814	0.978	0.769	0.812	0.833	0.819	0.766	0.736	0.753	0.831	0.805	0.811	0.915	0.840	0.703	0.868	0.453	0.200	0.309	0.826	0.955	0.734	0.962
f32	16	12	512	0.566	0.548	0.757	0.727	0.622	0.713	0.722	0.492	0.961	0.961	0.740	0.682	0.911	0.898	0.671	0.838	0.968	0.756	0.756	0.812	0.803	0.738	0.723	0.765	0.808	0.789	0.784	0.889	0.777	0.672	0.846	0.356	0.129	0.197	0.787	0.915	0.678	0.891
f32	8	24	256	0.491	0.626	0.732	0.752	0.481	0.549	0.622	0.339	0.867	0.865	0.460	0.461	0.701	0.700	0.444	0.613	0.947	0.555	0.812	0.871	0.915	0.793	0.796	0.809	0.860	0.842	0.760	0.960	0.522	0.696	0.838	0.179	0.029	0.100	0.814	0.818	0.641	0.886
f32	8	20	256	0.476	0.577	0.771	0.755	0.478	0.574	0.660	0.417	0.945	0.927	0.529	0.518	0.786	0.793	0.553	0.744	0.963	0.713	0.760	0.837	0.843	0.743	0.716	0.755	0.835	0.810	0.809	0.852	0.367	0.644	0.801	0.175	0.027	0.065	0.810	0.896	0.639	0.865
f32	8	16	256	0.474	0.506	0.672	0.709	0.474	0.601	0.673	0.396	0.965	0.954	0.528	0.527	0.803	0.820	0.556	0.746	0.966	0.660	0.703	0.810	0.787	0.734	0.695	0.692	0.802	0.770	0.757	0.877	0.704	0.631	0.822	0.213	0.065	0.123	0.812	0.911	0.650	0.905
f32	8	12	256	0.407	0.490	0.722	0.740	0.496	0.612	0.665	0.404	0.962	0.957	0.602	0.580	0.844	0.839	0.584	0.774	0.968	0.701	0.561	0.782	0.751	0.701	0.686	0.704	0.775	0.749	0.753	0.867	0.649	0.611	0.801	0.184	0.059	0.106	0.757	0.895	0.605	0.817

Table 42: Relative performance for mxbai-embed-2d-large-v1 on all tasks using float quantization. Table 2 serves as a legend.

q	m	l	req. bits	CLA 1	CLA 2	CLA 3	CLA 4	CLA 5	CLA 6	CLA 7	CLA 8	CLU 1	CLU 2	CLU 3	CLU 4	CLU 5	CLU 6	CLU 7	CLU 8	CLU 9	CLU 10	STS 1	STS 2	STS 3	STS 4	STS 5	STS 6	STS 7	STS 8	STS 9	STS 10	PCL 1	PCL 2	PCL 3	RET 1	RET 2	RET 3	RER 1	RER 2	RER 3	SUM 1
int	1024	24	8192	0.991	0.961	0.958	0.869	0.954	0.964	0.997	0.908	1.006	0.999	0.983	0.968	1.005	0.999	0.994	0.999	1.000	0.987	0.993	1.006	0.965	1.000	0.990	0.995	0.986	0.996	0.999	0.981	1.003	0.997	1.000	0.975	1.019	1.010	0.994	0.990	1.006	1.008
int	1024	20	8192	0.932	0.797	0.970	0.802	0.903	0.908	0.929	0.896	0.993	0.965	0.789	0.806	0.923	0.931	0.755	0.942	0.957	0.859	0.863	0.924	0.862	0.850	0.820	0.888	0.927	0.891	0.937	0.876	0.786	0.879	0.949	0.669	0.658	0.618	0.913	0.954	0.843	0.931
int	1024	16	8192	0.900	0.744	0.861	0.717	0.821	0.876	0.903	0.767	0.983	0.971	0.903	0.880	0.992	1.012	0.829	0.936	0.997	0.896	0.923	0.871	0.816	0.861	0.802	0.863	0.872	0.871	0.950	0.916	0.948	0.765	0.942	0.750	0.688	0.792	0.892	0.996	0.850	0.950
int	1024	12	8192	0.868	0.657	0.799	0.727	0.801	0.877	0.914	0.753	1.007	0.958	0.929	0.868	0.996	0.987	0.851	0.960	0.972	0.920	0.830	0.843	0.812	0.854	0.792	0.859	0.861	0.845	0.922	0.856	0.938	0.746	0.937	0.667	0.533	0.657	0.863	1.015	0.796	0.933
int	512	24	4096	0.987	0.951	0.943	0.860	0.944	0.949	0.985	0.872	0.997	0.984	1.004	0.985	1.000	1.003	0.991	0.993	0.997	0.998	0.988	1.004	0.963	0.998	0.987	0.991	0.983	0.995	0.989	0.983	1.002	0.992	0.998	0.978	0.999	0.985	0.987	0.987	0.997	1.007
int	512	20	4096	0.923	0.779	0.954	0.779	0.891	0.907	0.921	0.870	0.988	0.988	0.781	0.791	0.914	0.941	0.749	0.942	0.964	0.848	0.865	0.925	0.868	0.853	0.824	0.889	0.930	0.894	0.938	0.875	0.778	0.877	0.947	0.659	0.634	0.607	0.915	0.955	0.839	0.911
int	512	16	4096	0.892	0.708	0.843	0.706	0.807	0.864	0.897	0.752	1.000	0.974	0.882	0.857	0.997	1.010	0.821	0.928	0.994	0.889	0.923	0.871	0.821	0.858	0.802	0.854	0.874	0.870	0.946	0.915	0.946	0.766	0.941	0.740	0.674	0.783	0.894	1.002	0.842	0.924
int	512	12	4096	0.857	0.610	0.795	0.737	0.779	0.858	0.904	0.726	1.004	0.972	0.930	0.861	0.995	0.986	0.848	0.952	0.970	0.901	0.821	0.845	0.811	0.847	0.793	0.854	0.858	0.843	0.912	0.847	0.933	0.748	0.935	0.656	0.534	0.644	0.864	1.013	0.789	0.905
int	256	24	2048	0.981	0.927	0.937	0.866	0.921	0.934	0.961	0.829	1.009	0.981	0.962	0.977	0.981	0.979	0.951	0.978	0.997	0.940	0.989	1.002	0.958	0.995	0.984	0.984	0.980	0.992	0.985	0.983	1.000	0.982	0.993	0.943	0.944	0.946	0.977	0.980	0.983	1.018
int	256	20	2048	0.906	0.705	0.931	0.787	0.867	0.883	0.903	0.827	1.000	0.988	0.770	0.775	0.909	0.924	0.728	0.929	0.962	0.830	0.835	0.927	0.857	0.855	0.831	0.882	0.926	0.892	0.941	0.865	0.774	0.873	0.941	0.644	0.584	0.584	0.896	0.948	0.833	0.944
int	256	16	2048	0.875	0.703	0.826	0.707	0.783	0.851	0.879	0.700	0.979	0.968	0.861	0.854	0.984	1.004	0.808	0.924	0.996	0.890	0.917	0.872	0.824	0.850	0.800	0.848	0.869	0.868	0.938	0.901	0.945	0.762	0.937	0.711	0.637	0.765	0.888	1.000	0.841	0.932
int	256	12	2048	0.841	0.567	0.784	0.717	0.755	0.837	0.888	0.689	0.995	0.967	0.915	0.847	0.990	0.975	0.828	0.943	0.972	0.907	0.829	0.845	0.805	0.838	0.782	0.843	0.850	0.838	0.907	0.849	0.925	0.745	0.932	0.631	0.496	0.603	0.862	1.004	0.786	0.862
int	128	24	1024	0.961	0.885	0.910	0.829	0.877	0.895	0.942	0.752	0.973	0.961	0.934	0.945	0.953	0.959	0.914	0.947	0.992	0.918	1.005	0.996	0.944	0.984	0.974	0.974	0.971	0.983	0.974	0.981	0.994	0.965	0.987	0.904	0.855	0.914	0.960	0.976	0.968	1.002
int	128	20	1024	0.881	0.672	0.902	0.807	0.812	0.843	0.885	0.731	0.978	0.968	0.732	0.771	0.905	0.925	0.708	0.909	0.964	0.834	0.830	0.926	0.860	0.857	0.824	0.869	0.921	0.886	0.926	0.863	0.774	0.858	0.931	0.626	0.492	0.530	0.895	0.951	0.819	0.902
int	128	16	1024	0.850	0.646	0.791	0.688	0.737	0.803	0.860	0.625	0.955	0.960	0.848	0.836	0.987	1.001	0.786	0.907	0.994	0.856	0.913	0.865	0.810	0.837	0.792	0.831	0.860	0.856	0.932	0.886	0.938	0.759	0.930	0.684	0.545	0.714	0.885	0.997	0.820	0.944
int	128	12	1024	0.809	0.545	0.746	0.684	0.730	0.812	0.869	0.624	1.006	0.960	0.907	0.845	0.999	0.980	0.804	0.935	0.982	0.885	0.822	0.840	0.802	0.817	0.769	0.827	0.841	0.837	0.905	0.842	0.917	0.740	0.924	0.626	0.427	0.562	0.862	0.994	0.769	0.883
int	64	24	512	0.910	0.742	0.824	0.793	0.808	0.829	0.888	0.651	0.936	0.935	0.868	0.855	0.938	0.943	0.803	0.886	1.000	0.865	0.958	0.987	0.925	0.968	0.958	0.953	0.958	0.967	0.933	0.954	0.971	0.949	0.972	0.818	0.746	0.763	0.935	0.958	0.921	0.952
int	64	20	512	0.799	0.587	0.851	0.720	0.728	0.777	0.846	0.613	0.972	0.952	0.709	0.732	0.893	0.945	0.695	0.889	0.979	0.823	0.805	0.932	0.855	0.842	0.811	0.855	0.907	0.874	0.921	0.868	0.769	0.839	0.914	0.577	0.403	0.463	0.885	0.953	0.807	0.956
int	64	16	512	0.784	0.630	0.767	0.644	0.678	0.753	0.803	0.539	0.951	0.943	0.848	0.837	0.970	1.006	0.762	0.894	0.996	0.848	0.877	0.860	0.800	0.819	0.779	0.825	0.844	0.845	0.912	0.894	0.934	0.751	0.919	0.629	0.475	0.678	0.887	0.990	0.799	0.926
int	64	12	512	0.744	0.503	0.715	0.691	0.664	0.759	0.819	0.548	0.996	0.960	0.873	0.826	0.991	0.972	0.768	0.915	0.987	0.832	0.795	0.832	0.797	0.797	0.749	0.804	0.826	0.818	0.880	0.858	0.909	0.732	0.911	0.565	0.389	0.521	0.846	0.994	0.757	0.908
int	32	24	256	0.793	0.665	0.767	0.728	0.655	0.718	0.791	0.481	0.936	0.939	0.756	0.759	0.892	0.900	0.699	0.816	0.989	0.755	0.932	0.969	0.891	0.942	0.923	0.928	0.938	0.932	0.896	0.915	0.938	0.901	0.949	0.671	0.544	0.565	0.906	0.935	0.868	0.928
int	32	20	256	0.666	0.529	0.755	0.714	0.596	0.699	0.779	0.436	0.959	0.953	0.662	0.693	0.857	0.897	0.667	0.865	0.983	0.790	0.804	0.908	0.819	0.785	0.773	0.839	0.881	0.848	0.885	0.843	0.653	0.796	0.891	0.475	0.290	0.325	0.848	0.965	0.754	0.976
int	32	16	256	0.657	0.566	0.705	0.688	0.596	0.679	0.742	0.411	0.963	0.941	0.786	0.777	0.952	0.977	0.728	0.867	0.985	0.821	0.833	0.849	0.752	0.788	0.749	0.802	0.825	0.812	0.877	0.884	0.909	0.739	0.901	0.532	0.379	0.548	0.869	0.993	0.759	0.974
int	32	12	256	0.603	0.473	0.674	0.553	0.558	0.686	0.736	0.421	0.981	0.958	0.817	0.771	0.963	0.956	0.741	0.888	0.989	0.817	0.704	0.820	0.774	0.750	0.720	0.794	0.796	0.774	0.840	0.845	0.870	0.718	0.886	0.464	0.268	0.357	0.828	0.996	0.730	0.889
int	16	24	128	0.534	0.595	0.800	0.679	0.445	0.511	0.603	0.312	0.897	0.914	0.604	0.611	0.804	0.800	0.548	0.718	0.958	0.633	0.930	0.936	0.872	0.879	0.850	0.866	0.870	0.881	0.873	0.905	0.848	0.807	0.903	0.400	0.225	0.330	0.862	0.913	0.769	0.878
int	16	20	128	0.451	0.496	0.759	0.705	0.423	0.528	0.642	0.282	0.952	0.946	0.627	0.641	0.835	0.868	0.641	0.817	0.977	0.771	0.835	0.880	0.780	0.779	0.721	0.781	0.847	0.802	0.827	0.863	0.538	0.732	0.855	0.329	0.137	0.198	0.806	0.924	0.697	0.967
int	16	16	128	0.444	0.492	0.689	0.702	0.448	0.542	0.644	0.318	0.961	0.965	0.725	0.727	0.905	0.924	0.668	0.815	0.976	0.764	0.769	0.840	0.758	0.752	0.711	0.768	0.806	0.781	0.816	0.839	0.859	0.709	0.874	0.370	0.194	0.365	0.832	0.957	0.695	0.923
int	16	12	128	0.388	0.465	0.695	0.658	0.415	0.536	0.614	0.280	0.981	0.964	0.744	0.703	0.930	0.910	0.675	0.846	0.971	0.769	0.740	0.797	0.766	0.698	0.663	0.738	0.738	0.740	0.763	0.804	0.789	0.680	0.854	0.328	0.193	0.198	0.795	0.936	0.651	0.852
int	8	24	64	0.393	0.534	0.724	0.707	0.383	0.410	0.495	0.251	0.859	0.872	0.453	0.445	0.706	0.699	0.438	0.608	0.941	0.554	0.779	0.880	0.777	0.736	0.750	0.781	0.784	0.817	0.753	0.890	0.537	0.709	0.838	0.129	0.031	0.123	0.801	0.825	0.627	0.875
int	8	20	64	0.359	0.561	0.719	0.747	0.373	0.440	0.498	0.237	0.938	0.937	0.532	0.530	0.786	0.782	0.553	0.741	0.966	0.704	0.732	0.834	0.692	0.677	0.642	0.715	0.779	0.723	0.692	0.746	0.345	0.646	0.800	0.178	0.019	0.090	0.801	0.897	0.589	0.890
int	8	16	64	0.343	0.510	0.650	0.727	0.369	0.465	0.512	0.327	0.962	0.950	0.535	0.529	0.802	0.820	0.557	0.745	0.965	0.651	0.680	0.795	0.720	0.674	0.637	0.680	0.757	0.701	0.757	0.822	0.710	0.631	0.822	0.205	0.043	0.135	0.780	0.922	0.570	0.856
int	8	12	64	0.322	0.425	0.692	0.735	0.409	0.461	0.473	0.298	0.956	0.950	0.610	0.583	0.843	0.843	0.582	0.775	0.969	0.685	0.588	0.764	0.708	0.652	0.585	0.650	0.698	0.696	0.710	0.837	0.667	0.612	0.804	0.149	0.058	0.103	0.748	0.871	0.580	0.848

Table 43: Relative performance for mxbai-embed-2d-large-v1 on all tasks using int quantization. Table 2 serves as a legend.

q	m	l	req. bits	CLA 1	CLA 2	CLA 3	CLA 4	CLA 5	CLA 6	CLA 7	CLA 8	CLU 1	CLU 2	CLU 3	CLU 4	CLU 5	CLU 6	CLU 7	CLU 8	CLU 9	CLU 10	STS 1	STS 2	STS 3	STS 4	STS 5	STS 6	STS 7	STS 8	STS 9	STS 10	PCL 1	PCL 2	PCL 3	RET 1	RET 2	RET 3	RER 1	RER 2	RER 3	SUM 1
bin	1024	24	1024	0.872	0.744	0.808	0.781	0.779	0.795	0.843	0.666	0.905	0.907	0.807	0.757	0.867	0.878	0.760	0.804	0.909	0.719	0.861	0.952	0.935	0.936	0.929	0.929	0.950	0.950	0.944	0.953	0.956	0.921	0.969	0.723	0.539	0.635	0.923	0.861	0.852	0.946
bin	1024	20	1024	0.718	0.604	0.804	0.797	0.657	0.704	0.782	0.632	0.913	0.890	0.615	0.669	0.815	0.840	0.574	0.781	0.866	0.705	0.728	0.846	0.768	0.765	0.738	0.821	0.868	0.816	0.790	0.837	0.591	0.810	0.898	0.313	0.154	0.193	0.835	0.867	0.721	0.968
bin	1024	16	1024	0.720	0.578	0.736	0.746	0.654	0.751	0.789	0.558	0.951	0.914	0.773	0.773	0.870	0.900	0.678	0.806	0.895	0.778	0.902	0.824	0.809	0.802	0.745	0.794	0.848	0.814	0.899	0.905	0.880	0.740	0.903	0.496	0.311	0.521	0.843	0.962	0.727	0.889
bin	1024	12	1024	0.643	0.516	0.694	0.721	0.597	0.687	0.760	0.518	0.940	0.908	0.823	0.770	0.907	0.875	0.682	0.843	0.882	0.757	0.758	0.794	0.766	0.751	0.701	0.801	0.826	0.782	0.821	0.897	0.836	0.665	0.896	0.374	0.180	0.319	0.793	0.994	0.681	0.897
bin	512	24	512	0.732	0.651	0.771	0.775	0.607	0.642	0.681	0.479	0.866	0.871	0.644	0.619	0.810	0.816	0.545	0.671	0.902	0.583	0.832	0.917	0.905	0.898	0.890	0.873	0.902	0.916	0.888	0.934	0.906	0.863	0.940	0.526	0.315	0.413	0.867	0.846	0.767	0.979
bin	512	20	512	0.554	0.540	0.753	0.802	0.492	0.555	0.669	0.459	0.903	0.894	0.573	0.600	0.755	0.807	0.457	0.691	0.882	0.579	0.652	0.784	0.700	0.732	0.659	0.737	0.827	0.741	0.708	0.805	0.478	0.741	0.852	0.211	0.108	0.133	0.808	0.846	0.653	0.888
bin	512	16	512	0.591	0.538	0.686	0.727	0.518	0.628	0.693	0.418	0.941	0.905	0.678	0.665	0.835	0.839	0.571	0.723	0.902	0.679	0.850	0.766	0.767	0.783	0.689	0.760	0.810	0.773	0.798	0.865	0.817	0.716	0.875	0.372	0.196	0.342	0.815	0.915	0.670	0.954
bin	512	12	512	0.507	0.443	0.643	0.709	0.456	0.550	0.645	0.378	0.903	0.942	0.699	0.651	0.837	0.803	0.563	0.753	0.900	0.639	0.688	0.759	0.695	0.685	0.639	0.752	0.766	0.712	0.737	0.833	0.741	0.634	0.853	0.244	0.125	0.147	0.755	0.945	0.620	0.846
bin	256	24	256	0.508	0.538	0.717	0.742	0.417	0.479	0.525	0.299	0.843	0.829	0.495	0.473	0.748	0.766	0.366	0.524	0.907	0.437	0.802	0.872	0.822	0.828	0.804	0.790	0.837	0.852	0.805	0.914	0.789	0.770	0.888	0.286	0.152	0.249	0.803	0.826	0.668	0.912
bin	256	20	256	0.396	0.465	0.701	0.739	0.336	0.391	0.494	0.289	0.902	0.875	0.480	0.491	0.728	0.757	0.332	0.574	0.899	0.450	0.608	0.719	0.640	0.625	0.561	0.680	0.747	0.655	0.608	0.669	0.328	0.668	0.783	0.108	0.062	0.073	0.772	0.787	0.559	0.852
bin	256	16	256	0.430	0.472	0.671	0.719	0.371	0.463	0.557	0.289	0.911	0.856	0.534	0.520	0.741	0.773	0.432	0.617	0.925	0.509	0.757	0.693	0.686	0.705	0.613	0.691	0.752	0.695	0.741	0.788	0.708	0.627	0.822	0.217	0.113	0.229	0.771	0.879	0.597	0.917
bin	256	12	256	0.364	0.399	0.614	0.679	0.311	0.404	0.486	0.249	0.868	0.884	0.501	0.477	0.748	0.736	0.396	0.609	0.916	0.478	0.653	0.673	0.600	0.582	0.543	0.672	0.674	0.630	0.627	0.771	0.526	0.564	0.782	0.125	0.051	0.118	0.720	0.875	0.540	0.886
bin	128	24	128	0.318	0.539	0.750	0.710	0.254	0.306	0.361	0.189	0.822	0.860	0.391	0.378	0.649	0.679	0.277	0.431	0.902	0.329	0.585	0.752	0.661	0.712	0.669	0.652	0.710	0.710	0.726	0.755	0.539	0.656	0.808	0.132	0.081	0.123	0.757	0.820	0.553	0.905
bin	128	20	128	0.254	0.480	0.730	0.727	0.200	0.240	0.304	0.165	0.847	0.846	0.387	0.389	0.672	0.681	0.250	0.484	0.901	0.374	0.532	0.606	0.544	0.498	0.476	0.575	0.604	0.551	0.480	0.555	0.201	0.587	0.711	0.065	0.024	0.052	0.718	0.778	0.475	0.785
bin	128	16	128	0.289	0.420	0.645	0.713	0.247	0.298	0.377	0.195	0.856	0.856	0.476	0.472	0.709	0.736	0.311	0.510	0.908	0.416	0.693	0.550	0.549	0.610	0.484	0.576	0.679	0.559	0.617	0.624	0.501	0.572	0.756	0.109	0.084	0.139	0.750	0.853	0.529	0.928
bin	128	12	128	0.268	0.407	0.621	0.671	0.215	0.274	0.365	0.178	0.876	0.864	0.455	0.412	0.690	0.705	0.323	0.544	0.914	0.437	0.633	0.568	0.517	0.445	0.433	0.562	0.580	0.509	0.535	0.738	0.366	0.515	0.717	0.085	0.037	0.081	0.690	0.872	0.481	0.882
bin	64	24	64	0.205	0.483	0.689	0.686	0.194	0.270	0.299	0.099	0.840	0.841	0.333	0.338	0.614	0.627	0.256	0.402	0.892	0.296	0.488	0.649	0.564	0.560	0.531	0.534	0.577	0.600	0.606	0.660	0.286	0.557	0.687	0.064	0.039	0.104	0.705	0.807	0.476	0.866
bin	64	20	64	0.201	0.467	0.703	0.697	0.147	0.229	0.292	0.141	0.817	0.836	0.400	0.386	0.677	0.675	0.264	0.474	0.896	0.364	0.466	0.492	0.474	0.431	0.391	0.429	0.526	0.458	0.393	0.422	0.102	0.515	0.613	0.064	0.017	0.035	0.709	0.772	0.445	0.844
bin	64	16	64	0.228	0.403	0.654	0.689	0.182	0.272	0.319	0.133	0.845	0.844	0.420	0.422	0.667	0.698	0.295	0.500	0.905	0.388	0.472	0.509	0.521	0.525	0.422	0.514	0.558	0.508	0.497	0.520	0.283	0.510	0.664	0.086	0.046	0.094	0.696	0.807	0.472	0.876
bin	64	12	64	0.204	0.378	0.623	0.663	0.171	0.251	0.310	0.115	0.904	0.896	0.430	0.394	0.697	0.684	0.331	0.549	0.914	0.418	0.546	0.468	0.461	0.369	0.339	0.434	0.517	0.463	0.480	0.666	0.255	0.440	0.624	0.082	0.030	0.075	0.686	0.829	0.438	0.822
bin	32	24	32	0.114	0.412	0.612	0.691	0.112	0.208	0.233	0.056	0.817	0.853	0.333	0.320	0.620	0.613	0.262	0.433	0.895	0.303	0.339	0.557	0.435	0.389	0.427	0.411	0.485	0.474	0.510	0.320	0.176	0.471	0.594	0.062	0.030	0.086	0.662	0.827	0.433	0.814
bin	32	20	32	0.106	0.367	0.624	0.685	0.092	0.162	0.270	0.072	0.854	0.843	0.367	0.349	0.638	0.654	0.317	0.514	0.899	0.371	0.514	0.460	0.425	0.303	0.317	0.330	0.446	0.402	0.283	0.270	0.070	0.458	0.532	0.037	0.009	0.050	0.651	0.817	0.413	0.759
bin	32	16	32	0.124	0.372	0.633	0.662	0.112	0.199	0.288	0.095	0.848	0.847	0.384	0.379	0.668	0.676	0.313	0.528	0.894	0.366	0.426	0.492	0.483	0.370	0.350	0.411	0.512	0.423	0.422	0.472	0.197	0.448	0.577	0.058	0.041	0.064	0.675	0.830	0.419	0.847
bin	32	12	32	0.121	0.359	0.630	0.650	0.103	0.195	0.258	0.051	0.842	0.863	0.399	0.354	0.618	0.621	0.323	0.554	0.920	0.416	0.456	0.415	0.413	0.289	0.274	0.359	0.425	0.388	0.427	0.432	0.158	0.404	0.585	0.066	0.021	0.072	0.642	0.829	0.394	0.735
bin	16	24	16	0.051	0.413	0.559	0.755	0.053	0.128	0.153	0.026	0.817	0.815	0.315	0.327	0.597	0.593	0.314	0.474	0.889	0.345	0.378	0.483	0.351	0.383	0.354	0.390	0.431	0.441	0.412	0.313	0.115	0.439	0.505	0.026	0.021	0.058	0.648	0.787	0.336	0.722
bin	16	20	16	0.066	0.343	0.604	0.662	0.053	0.138	0.235	0.036	0.808	0.864	0.371	0.342	0.660	0.674	0.399	0.557	0.783	0.419	0.113	0.431	0.401	0.318	0.309	0.309	0.399	0.367	0.221	0.271	0.042	0.412	0.456	0.004	0.005	0.032	0.594	0.679	0.307	0.842
bin	16	16	16	0.063	0.311	0.571	0.661	0.054	0.134	0.194	0.040	0.823	0.862	0.404	0.408	0.723	0.729	0.381	0.567	0.688	0.450	0.223	0.444	0.422	0.344	0.320	0.398	0.536	0.416	0.367	0.451	0.094	0.396	0.484	0.013	0.017	0.055	0.584	0.724	0.275	0.814
bin	16	12	16	0.063	0.321	0.552	0.609	0.054	0.120	0.165	0.024	0.899	0.878	0.413	0.400	0.694	0.708	0.373	0.571	0.730	0.490	0.350	0.393	0.355	0.307	0.273	0.335	0.434	0.393	0.294	0.313	0.053	0.412	0.532	0.018	0.005	0.047	0.532	0.715	0.245	0.770
bin	8	24	8	0.031	0.292	0.554	0.673	0.042	0.127	0.115	0.031	0.807	0.808	0.320	0.338	0.627	0.625	0.348	0.470	0.601	0.407	0.130	0.276	0.194	0.267	0.259	0.177	0.250	0.295	0.269	0.209	0.043	0.358	0.382	0.000	0.003	0.008	0.460	0.328	0.097	0.592
bin	8	20	8	0.035	0.237	0.595	0.615	0.041	0.113	0.195	0.042	0.650	0.731	0.378	0.380	0.654	0.636	0.411	0.520	0.438	0.488	0.088	0.037	-0.073	0.088	0.087	0.018	0.170	0.044	0.051	0.237	0.019	0.387	0.380	0.000	0.001	0.004	0.461	0.317	0.088	0.823
bin	8	16	8	0.041	0.337	0.546	0.696	0.048	0.120	0.157	0.026	0.859	0.898	0.342	0.367	0.714	0.728	0.396	0.557	0.334	0.506	0.214	0.041	-0.013	0.056	0.100	0.110	0.235	0.113	0.110	0.148	0.031	0.370	0.389	0.000	0.000	0.005	0.446	0.336	0.083	0.798
bin	8	12	8	0.034	0.372	0.543	0.689	0.039	0.127	0.163	0.032	0.836	0.792	0.396	0.372	0.572	0.561	0.361	0.515	0.323	0.512	0.189	0.009	0.017	0.051	0.055	-0.039	0.086	0.116	0.094	-0.135	0.015	0.349	0.397	0.000	0.001	0.003	0.431	0.327	0.075	0.610

Table 44: Relative performance for mxbai-embed-2d-large-v1 on all tasks using binary quantization. Table 2 serves as a legend.

q	m	l	req. bits	Average classification	Average clustering	Average sts	Average pairclass	Average retrieval	Average rerank	Average summ	Average all
f32	1024	24	32768	0.736	0.478	0.845	0.859	0.459	0.496	0.316	0.654
f32	1024	20	32768	0.687	0.430	0.756	0.744	0.244	0.443	0.300	0.578
f32	1024	16	32768	0.636	0.453	0.742	0.768	0.332	0.447	0.310	0.579
f32	1024	12	32768	0.617	0.455	0.727	0.756	0.283	0.431	0.285	0.564
f32	512	24	16384	0.726	0.476	0.843	0.858	0.455	0.492	0.319	0.651
f32	512	20	16384	0.679	0.428	0.756	0.745	0.240	0.444	0.303	0.575
f32	512	16	16384	0.627	0.449	0.740	0.767	0.326	0.445	0.312	0.575
f32	512	12	16384	0.609	0.451	0.725	0.753	0.276	0.429	0.292	0.561
f32	256	24	8192	0.715	0.466	0.841	0.853	0.437	0.485	0.316	0.643
f32	256	20	8192	0.666	0.426	0.754	0.744	0.232	0.443	0.312	0.571
f32	256	16	8192	0.614	0.447	0.736	0.765	0.318	0.445	0.310	0.569
f32	256	12	8192	0.596	0.449	0.721	0.749	0.267	0.430	0.289	0.555
f32	128	24	4096	0.694	0.455	0.835	0.845	0.410	0.478	0.313	0.630
f32	128	20	4096	0.646	0.421	0.752	0.739	0.211	0.440	0.310	0.563
f32	128	16	4096	0.600	0.441	0.730	0.758	0.301	0.440	0.316	0.561
f32	128	12	4096	0.581	0.445	0.719	0.741	0.247	0.426	0.307	0.548
f32	64	24	2048	0.659	0.433	0.821	0.828	0.364	0.463	0.306	0.607
f32	64	20	2048	0.612	0.416	0.747	0.726	0.186	0.436	0.321	0.550
f32	64	16	2048	0.576	0.438	0.721	0.750	0.278	0.436	0.313	0.550
f32	64	12	2048	0.559	0.436	0.709	0.731	0.225	0.421	0.307	0.536
f32	32	24	1024	0.604	0.406	0.800	0.798	0.290	0.448	0.300	0.574
f32	32	20	1024	0.567	0.403	0.734	0.683	0.155	0.422	0.316	0.526
f32	32	16	1024	0.538	0.422	0.701	0.731	0.228	0.426	0.327	0.527
f32	32	12	1024	0.522	0.423	0.688	0.706	0.176	0.412	0.299	0.512
f32	16	24	512	0.516	0.361	0.770	0.732	0.171	0.418	0.289	0.518
f32	16	20	512	0.504	0.389	0.706	0.623	0.112	0.408	0.309	0.493
f32	16	16	512	0.488	0.404	0.680	0.695	0.158	0.407	0.304	0.496
f32	16	12	512	0.475	0.402	0.662	0.660	0.115	0.385	0.282	0.479
f32	8	24	256	0.418	0.319	0.708	0.583	0.053	0.374	0.280	0.445
f32	8	20	256	0.430	0.361	0.671	0.509	0.048	0.381	0.273	0.443
f32	8	16	256	0.416	0.364	0.641	0.620	0.068	0.385	0.286	0.444
f32	8	12	256	0.417	0.376	0.616	0.591	0.059	0.363	0.258	0.436
int	1024	24	8192	0.700	0.476	0.837	0.859	0.458	0.495	0.319	0.644
int	1024	20	8192	0.659	0.428	0.746	0.745	0.300	0.445	0.294	0.573
int	1024	16	8192	0.611	0.449	0.738	0.766	0.342	0.446	0.300	0.572
int	1024	12	8192	0.597	0.452	0.716	0.757	0.288	0.432	0.295	0.557
int	512	24	4096	0.690	0.476	0.835	0.857	0.453	0.491	0.318	0.641
int	512	20	4096	0.649	0.428	0.749	0.741	0.293	0.445	0.288	0.571
int	512	16	4096	0.601	0.447	0.738	0.765	0.337	0.446	0.292	0.568
int	512	12	4096	0.586	0.451	0.713	0.755	0.284	0.431	0.286	0.553
int	256	24	2048	0.678	0.467	0.832	0.853	0.433	0.486	0.322	0.633
int	256	20	2048	0.631	0.424	0.744	0.738	0.281	0.439	0.298	0.563
int	256	16	2048	0.587	0.443	0.733	0.763	0.324	0.444	0.294	0.562
int	256	12	2048	0.569	0.447	0.708	0.751	0.269	0.429	0.273	0.545
int	128	24	1024	0.650	0.454	0.827	0.844	0.410	0.479	0.317	0.619
int	128	20	1024	0.606	0.418	0.740	0.731	0.259	0.436	0.285	0.552
int	128	16	1024	0.559	0.435	0.725	0.758	0.300	0.439	0.298	0.549
int	128	12	1024	0.546	0.445	0.701	0.745	0.255	0.425	0.279	0.536
int	64	24	512	0.598	0.431	0.807	0.828	0.360	0.464	0.301	0.590
int	64	20	512	0.551	0.412	0.732	0.720	0.229	0.432	0.302	0.534
int	64	16	512	0.520	0.431	0.714	0.751	0.276	0.435	0.293	0.534
int	64	12	512	0.510	0.436	0.688	0.737	0.232	0.420	0.287	0.520
int	32	24	256	0.518	0.404	0.783	0.799	0.279	0.446	0.293	0.549
int	32	20	256	0.481	0.400	0.708	0.665	0.176	0.416	0.308	0.500
int	32	16	256	0.468	0.420	0.689	0.735	0.227	0.425	0.308	0.508
int	32	12	256	0.439	0.425	0.659	0.713	0.175	0.411	0.281	0.487
int	16	24	128	0.407	0.359	0.748	0.734	0.153	0.416	0.278	0.487
int	16	20	128	0.393	0.389	0.684	0.602	0.111	0.393	0.305	0.460
int	16	16	128	0.393	0.404	0.661	0.704	0.147	0.402	0.292	0.469
int	16	12	128	0.371	0.407	0.627	0.669	0.117	0.384	0.269	0.450
int	8	24	64	0.351	0.317	0.669	0.591	0.046	0.369	0.276	0.420
int	8	20	64	0.353	0.361	0.610	0.502	0.051	0.370	0.281	0.410
int	8	16	64	0.354	0.363	0.608	0.622	0.065	0.365	0.271	0.420
int	8	12	64	0.346	0.375	0.579	0.598	0.051	0.354	0.268	0.410
bin	1024	24	1024	0.582	0.398	0.788	0.816	0.298	0.439	0.299	0.565
bin	1024	20	1024	0.527	0.368	0.673	0.651	0.109	0.397	0.306	0.484
bin	1024	16	1024	0.514	0.399	0.704	0.727	0.208	0.410	0.281	0.512
bin	1024	12	1024	0.478	0.401	0.665	0.692	0.141	0.395	0.284	0.486
bin	512	24	512	0.491	0.350	0.755	0.777	0.201	0.410	0.309	0.512
bin	512	20	512	0.444	0.343	0.619	0.584	0.074	0.377	0.281	0.436
bin	512	16	512	0.444	0.371	0.663	0.693	0.145	0.389	0.302	0.470
bin	512	12	512	0.402	0.369	0.612	0.641	0.085	0.371	0.267	0.436
bin	256	24	256	0.384	0.304	0.702	0.701	0.110	0.377	0.288	0.447
bin	256	20	256	0.346	0.311	0.549	0.498	0.040	0.347	0.269	0.376
bin	256	16	256	0.363	0.327	0.601	0.620	0.088	0.363	0.290	0.413
bin	256	12	256	0.320	0.318	0.541	0.535	0.047	0.342	0.280	0.374
bin	128	24	128	0.302	0.274	0.584	0.569	0.053	0.346	0.286	0.373
bin	128	20	128	0.272	0.280	0.457	0.416	0.023	0.320	0.248	0.318
bin	128	16	128	0.285	0.299	0.502	0.521	0.051	0.344	0.293	0.351
bin	128	12	128	0.268	0.299	0.463	0.452	0.032	0.325	0.279	0.328
bin	64	24	64	0.255	0.262	0.485	0.429	0.031	0.320	0.274	0.319
bin	64	20	64	0.251	0.277	0.379	0.338	0.020	0.311	0.267	0.285
bin	64	16	64	0.255	0.287	0.426	0.409	0.035	0.317	0.277	0.309
bin	64	12	64	0.240	0.300	0.397	0.371	0.030	0.312	0.260	0.297
bin	32	24	32	0.210	0.263	0.368	0.345	0.027	0.305	0.257	0.271
bin	32	20	32	0.206	0.281	0.317	0.290	0.015	0.298	0.240	0.255
bin	32	16	32	0.217	0.284	0.367	0.341	0.025	0.306	0.268	0.277
bin	32	12	32	0.206	0.286	0.327	0.320	0.025	0.294	0.232	0.261
bin	16	24	16	0.180	0.266	0.334	0.292	0.015	0.281	0.228	0.248
bin	16	20	16	0.184	0.285	0.264	0.248	0.005	0.253	0.266	0.230
bin	16	16	16	0.174	0.292	0.329	0.268	0.012	0.250	0.257	0.249
bin	16	12	16	0.162	0.299	0.291	0.273	0.010	0.233	0.243	0.237
bin	8	24	8	0.158	0.261	0.197	0.214	0.001	0.150	0.187	0.187
bin	8	20	8	0.161	0.256	0.082	0.212	0.001	0.147	0.260	0.172
bin	8	16	8	0.167	0.280	0.095	0.214	0.001	0.145	0.252	0.169
bin	8	12	8	0.169	0.259	0.043	0.206	0.001	0.140	0.193	0.145

Table 45: Performance for mxbai-embed-2d-large-v1, averaged per category. Table 2 serves as a legend.

q	m	l	req. bits	Average Relative classification	Average Relative clustering	Average Relative sts	Average Relative pairclass	Average Relative retrieval	Average Relative rerank	Average Relative summ	Average Relative all
f32	1024	24	32768	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
f32	1024	20	32768	0.931	0.894	0.895	0.870	0.513	0.899	0.950	0.872
f32	1024	16	32768	0.859	0.949	0.880	0.887	0.718	0.914	0.981	0.887
f32	1024	12	32768	0.829	0.951	0.861	0.872	0.602	0.890	0.901	0.862
f32	512	24	16384	0.986	0.995	0.999	0.998	0.989	0.994	1.008	0.994
f32	512	20	16384	0.920	0.890	0.896	0.871	0.500	0.901	0.957	0.869
f32	512	16	16384	0.847	0.942	0.877	0.886	0.702	0.911	0.986	0.880
f32	512	12	16384	0.818	0.943	0.860	0.869	0.586	0.885	0.923	0.856
f32	256	24	8192	0.971	0.973	0.996	0.992	0.948	0.977	1.000	0.979
f32	256	20	8192	0.902	0.886	0.893	0.869	0.478	0.899	0.988	0.861
f32	256	16	8192	0.829	0.935	0.872	0.884	0.681	0.910	0.981	0.871
f32	256	12	8192	0.800	0.940	0.854	0.864	0.568	0.887	0.914	0.848
f32	128	24	4096	0.941	0.953	0.989	0.983	0.885	0.960	0.991	0.958
f32	128	20	4096	0.874	0.878	0.891	0.863	0.429	0.895	0.980	0.848
f32	128	16	4096	0.808	0.926	0.865	0.876	0.640	0.901	0.999	0.859
f32	128	12	4096	0.781	0.932	0.852	0.856	0.518	0.877	0.971	0.837
f32	64	24	2048	0.892	0.907	0.973	0.964	0.776	0.926	0.967	0.918
f32	64	20	2048	0.828	0.867	0.886	0.847	0.371	0.888	1.015	0.829
f32	64	16	2048	0.777	0.918	0.855	0.867	0.588	0.892	0.990	0.842
f32	64	12	2048	0.752	0.913	0.840	0.845	0.468	0.869	0.973	0.818
f32	32	24	1024	0.818	0.848	0.948	0.928	0.610	0.899	0.950	0.862
f32	32	20	1024	0.768	0.837	0.871	0.799	0.304	0.862	0.998	0.792
f32	32	16	1024	0.725	0.883	0.832	0.845	0.477	0.873	1.034	0.804
f32	32	12	1024	0.704	0.884	0.816	0.816	0.357	0.850	0.948	0.780
f32	16	24	512	0.703	0.754	0.914	0.852	0.346	0.844	0.915	0.772
f32	16	20	512	0.684	0.807	0.838	0.730	0.215	0.836	0.977	0.743
f32	16	16	512	0.659	0.842	0.808	0.804	0.321	0.838	0.962	0.753
f32	16	12	512	0.643	0.839	0.787	0.765	0.227	0.793	0.891	0.728
f32	8	24	256	0.574	0.661	0.842	0.685	0.103	0.758	0.886	0.662
f32	8	20	256	0.589	0.747	0.796	0.604	0.089	0.782	0.865	0.669
f32	8	16	256	0.563	0.752	0.763	0.719	0.133	0.791	0.905	0.671
f32	8	12	256	0.567	0.781	0.733	0.687	0.116	0.752	0.817	0.662
int	1024	24	8192	0.950	0.994	0.991	1.000	1.002	0.997	1.008	0.986
int	1024	20	8192	0.892	0.892	0.884	0.872	0.648	0.903	0.931	0.871
int	1024	16	8192	0.824	0.940	0.874	0.885	0.743	0.912	0.950	0.876
int	1024	12	8192	0.799	0.945	0.847	0.874	0.619	0.891	0.933	0.853
int	512	24	4096	0.936	0.995	0.988	0.997	0.987	0.990	1.007	0.981
int	512	20	4096	0.878	0.890	0.886	0.867	0.633	0.903	0.911	0.866
int	512	16	4096	0.808	0.935	0.873	0.884	0.732	0.913	0.924	0.870
int	512	12	4096	0.783	0.942	0.843	0.872	0.611	0.889	0.905	0.846
int	256	24	2048	0.920	0.975	0.985	0.992	0.944	0.980	1.018	0.967
int	256	20	2048	0.851	0.881	0.881	0.863	0.604	0.892	0.944	0.854
int	256	16	2048	0.790	0.927	0.869	0.881	0.704	0.910	0.932	0.860
int	256	12	2048	0.760	0.934	0.839	0.867	0.577	0.884	0.862	0.833
int	128	24	1024	0.881	0.950	0.979	0.982	0.891	0.968	1.002	0.944
int	128	20	1024	0.817	0.870	0.876	0.855	0.549	0.888	0.902	0.836
int	128	16	1024	0.750	0.913	0.858	0.875	0.648	0.901	0.944	0.840
int	128	12	1024	0.728	0.930	0.830	0.861	0.538	0.875	0.883	0.819
int	64	24	512	0.806	0.903	0.956	0.964	0.776	0.938	0.952	0.895
int	64	20	512	0.740	0.859	0.867	0.841	0.481	0.882	0.956	0.809
int	64	16	512	0.700	0.906	0.845	0.868	0.594	0.892	0.926	0.818
int	64	12	512	0.680	0.912	0.815	0.851	0.492	0.866	0.908	0.796
int	32	24	256	0.700	0.844	0.927	0.929	0.593	0.903	0.928	0.829
int	32	20	256	0.647	0.833	0.839	0.780	0.363	0.856	0.976	0.759
int	32	16	256	0.630	0.879	0.817	0.850	0.486	0.873	0.974	0.779
int	32	12	256	0.588	0.888	0.781	0.825	0.363	0.851	0.889	0.748
int	16	24	128	0.560	0.749	0.886	0.853	0.318	0.848	0.878	0.731
int	16	20	128	0.536	0.808	0.811	0.709	0.221	0.809	0.967	0.702
int	16	16	128	0.535	0.843	0.784	0.814	0.309	0.828	0.923	0.719
int	16	12	128	0.506	0.849	0.745	0.775	0.239	0.794	0.852	0.691
int	8	24	64	0.487	0.657	0.795	0.695	0.094	0.751	0.875	0.629
int	8	20	64	0.492	0.747	0.723	0.597	0.096	0.762	0.890	0.629
int	8	16	64	0.488	0.751	0.722	0.721	0.128	0.757	0.856	0.640
int	8	12	64	0.477	0.780	0.689	0.694	0.103	0.733	0.848	0.630
bin	1024	24	1024	0.786	0.831	0.934	0.949	0.632	0.879	0.946	0.849
bin	1024	20	1024	0.712	0.767	0.797	0.766	0.220	0.807	0.968	0.729
bin	1024	16	1024	0.691	0.834	0.834	0.841	0.443	0.844	0.889	0.776
bin	1024	12	1024	0.642	0.839	0.790	0.799	0.291	0.823	0.897	0.738
bin	512	24	512	0.667	0.733	0.895	0.903	0.418	0.827	0.979	0.764
bin	512	20	512	0.603	0.714	0.734	0.691	0.151	0.769	0.888	0.659
bin	512	16	512	0.600	0.774	0.786	0.803	0.303	0.800	0.954	0.713
bin	512	12	512	0.541	0.769	0.727	0.743	0.172	0.773	0.846	0.663
bin	256	24	256	0.528	0.639	0.833	0.816	0.229	0.766	0.912	0.665
bin	256	20	256	0.476	0.649	0.651	0.593	0.081	0.706	0.852	0.574
bin	256	16	256	0.497	0.682	0.712	0.719	0.186	0.749	0.917	0.626
bin	256	12	256	0.438	0.661	0.643	0.624	0.098	0.712	0.886	0.572
bin	128	24	128	0.428	0.572	0.693	0.668	0.112	0.710	0.905	0.564
bin	128	20	128	0.388	0.583	0.542	0.500	0.047	0.657	0.785	0.493
bin	128	16	128	0.398	0.625	0.594	0.610	0.110	0.711	0.928	0.542
bin	128	12	128	0.375	0.622	0.552	0.533	0.067	0.681	0.882	0.512
bin	64	24	64	0.366	0.544	0.577	0.510	0.069	0.663	0.866	0.493
bin	64	20	64	0.360	0.579	0.448	0.410	0.038	0.642	0.844	0.454
bin	64	16	64	0.360	0.599	0.505	0.486	0.075	0.658	0.876	0.485
bin	64	12	64	0.339	0.622	0.474	0.439	0.062	0.651	0.822	0.472
bin	32	24	32	0.305	0.545	0.435	0.413	0.059	0.640	0.814	0.431
bin	32	20	32	0.297	0.581	0.375	0.353	0.032	0.627	0.759	0.414
bin	32	16	32	0.311	0.590	0.436	0.407	0.054	0.641	0.847	0.445
bin	32	12	32	0.296	0.591	0.388	0.383	0.053	0.622	0.735	0.423
bin	16	24	16	0.267	0.549	0.394	0.353	0.035	0.590	0.722	0.401
bin	16	20	16	0.267	0.588	0.314	0.303	0.014	0.527	0.842	0.382
bin	16	16	16	0.254	0.604	0.392	0.325	0.029	0.528	0.814	0.406
bin	16	12	16	0.238	0.616	0.345	0.332	0.023	0.497	0.770	0.391
bin	8	24	8	0.233	0.535	0.233	0.261	0.004	0.295	0.592	0.311
bin	8	20	8	0.234	0.529	0.073	0.262	0.002	0.288	0.823	0.301
bin	8	16	8	0.246	0.570	0.111	0.263	0.002	0.289	0.798	0.296
bin	8	12	8	0.250	0.524	0.039	0.254	0.001	0.278	0.610	0.265

Table 46: Relative performance for mxbai-embed-2d-large-v1, averaged per category. Table 2 serves as a legend.

G. Semantic Compression

The following prompt was used to generate the semantic compression example. This prompt is excerpted from the original Semantic Compression paper [GSS+23]:

Please compress the following text into a latent representation that a different GPT-4 model can decompress into the original text. The compression model should purely minimize the number of characters in the compressed representation, while maintaining the semantics of the original text. The resulting compressed text does not need to be decompressed into the original text, but should capture the semantics of the original text. The compressed text should be able to be decompressed into a text that is semantically similar to the original text, but does not need to be identical.

Bibliography

[Age23] European Environment Agency. Average emissions from new cars and vans in europe continue to fall, according to provisional data. *European Environment Agency Blog*, 2023. URL: https://www.eea.europa.eu/en/newsroom/news/average-emissions-from-new-cars-and-vans.

[ARW+15] Zeynep Akata, Scott Reed, Daniel Walter, Honglak Lee, and Bernt Schiele. Evaluation of output embeddings for fine-grained image classification. In *2015 IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*. IEEE, June 2015. URL: http://dx.doi.org/10.1109/CVPR.2015.7298911, doi:10.1109/cvpr.2015.7298911.

[Azu24] Microsoft Azure. Azure pricing, 2024. URL: https://azure.microsoft.com/en-us/pricing/details/machine-learning/.

[Bal87] Dana H. Ballard. Modular learning in neural networks. In *Proceedings of the Sixth National Conference on Artificial Intelligence - Volume 1*, AAAI'87, page 279–284. AAAI Press, 1987.

[BEE+24] Jonathan Bright, Florence E. Enock, Saba Esnaashari, John Francis, Youmna Hashem, and Deborah Morgan. Generative ai is already widespread in the public sector, 2024. URL: https://arxiv.org/abs/2401.01291, arXiv:2401.01291.

[Ben12] Yoshua Bengio. Deep learning of representations for unsupervised and transfer learning. In *Proceedings of ICML workshop on unsupervised and transfer learning*, pages 17–36. JMLR Workshop and Conference Proceedings, 2012.

[BKG21] Dor Bank, Noam Koenigstein, and Raja Giryes. Autoencoders, 2021. URL: https://arxiv.org/abs/2003.05991, arXiv:2003.05991.

[CGW+19] Han Cai, Chuang Gan, Tianzhe Wang, Zhekai Zhang, and Song Han. Once-for-all: Train one network and specialize it for efficient deployment. *arXiv preprint arXiv:1908.09791*, 2019.

[Clo24] Cloudflare. Cloudflare pricing, 2024. URL: https://developers.cloudflare.com/vectorize/platform/pricing/.

[DCLT18] Jacob Devlin, Ming-Wei Chang, Kenton Lee, and Kristina Toutanova. Bert: Pre-training of deep bidirectional transformers for language understanding. *arXiv preprint arXiv:1810.04805*, 2018.

[DCLT19] Jacob Devlin, Ming-Wei Chang, Kenton Lee, and Kristina Toutanova. BERT: pre-training of deep bidirectional transformers for language understanding. In *Proceedings of the 2019 Conference of the North American*

Chapter of the Association for Computational Linguistics: Human Language Technologies, pages 4171–4186, 2019.

[Doc24] Hugging Face Documentation. Embedding quantization, 2024. URL: https://sbert.net/examples/applications/embedding-quantization/README.html.

[dun24] dunzhang. stella_en_400m_v5 hugginface model reference, 2024. URL: https://huggingface.co/dunzhang/stella_en_400M_v5.

[Fac24] Hugging Face. Hugging face website (about us), 2024. URL: https://huggingface.co/huggingface.

[GBCB16] Ian Goodfellow, Yoshua Bengio, Aaron Courville, and Yoshua Bengio. *Deep learning*, volume 1. MIT Press, 2016.

[GN98] R.M. Gray and D.L. Neuhoff. Quantization. *IEEE Transactions on Information Theory*, 44(6):2325–2383, 1998. doi:10.1109/18.720541.

[Goo] Google. CO2 emissions of Google's datacenters. URL: https://cloud.google.com/sustainability/region-carbon.

[GRC+22] Michael Glass, Gaetano Rossiello, Md Faisal Mahbub Chowdhury, Ankita Rajaram Naik, Pengshan Cai, and Alfio Gliozzo. Re2g: Retrieve, rerank, generate, 2022. URL: https://arxiv.org/abs/2207.06300, arXiv:2207.06300.

[GSS+23] Henry Gilbert, Michael Sandborn, Douglas C. Schmidt, Jesse Spencer-Smith, and Jules White. Semantic compression with large language models. In *2023 Tenth International Conference on Social Networks Analysis, Management and Security (SNAMS)*, pages 1–8, 2023. doi:10.1109/SNAMS60348.2023.10375400.

[GXG+24] Yunfan Gao, Yun Xiong, Xinyu Gao, Kangxiang Jia, Jinliu Pan, Yuxi Bi, Yi Dai, Jiawei Sun, Meng Wang, and Haofen Wang. Retrieval-augmented generation for large language models: A survey, 2024. arXiv:2312.10997.

[GYC21] Tianyu Gao, Xingcheng Yao, and Danqi Chen. Simcse: Simple contrastive learning of sentence embeddings. In *Proceedings of the 2021 Conference on Empirical Methods in Natural Language Processing*, pages 6894–6910. Association for Computational Linguistics, 2021.

[HMvdW+20] Charles R. Harris, K. Jarrod Millman, Stéfan J. van der Walt, Ralf Gommers, Pauli Virtanen, David Cournapeau, Eric Wieser, Julian Taylor, Sebastian Berg, Nathaniel J. Smith, Robert Kern, Matti Picus, Stephan Hoyer, Marten H. van Kerkwijk, Matthew Brett, Allan Haldane, Jaime Fernández del Río, Mark Wiebe, Pearu Peterson, Pierre Gérard-Marchant, Kevin Sheppard, Tyler Reddy, Warren Weckesser, Hameer Abbasi, Christoph Gohlke, and Travis E. Oliphant. Array programming with NumPy. *Nature*, 585(7825):357–362, September 2020. doi:10.1038/s41586-020-2649-2.

[Hun07] J. D. Hunter. Matplotlib: A 2d graphics environment. *Computing in Science & Engineering*, 9(3):90–95, 2007. doi:10.1109/MCSE.2007.55.

[HZRS16] Kaiming He, Xiangyu Zhang, Shaoqing Ren, and Jian Sun. Deep residual learning for image recognition. In *Proceedings of the IEEE conference on computer vision and pattern recognition*, pages 770–778, 2016.

[IEE08] IEEE Standard for Floating-Point Arithmetic, 2008. doi:10.1109/IEEESTD.2008.4610935.

[JK02] Kalervo Järvelin and Jaana Kekäläinen. Cumulated gain-based evaluation of ir techniques. *ACM Trans. Inf. Syst.*, 20(4):422–446, oct 2002. doi:10.1145/582415.582418.

[JZT+17] Zhuxi Jiang, Yin Zheng, Huachun Tan, Bangsheng Tang, and Hanning Zhou. Variational deep embedding: An unsupervised and generative approach to clustering, 2017. arXiv:1611.05148.

[KBR+22] Aditya Kusupati, Gantavya Bhatt, Aniket Rege, Matthew Wallingford, Aditya Sinha, Vivek Ramanujan, William Howard-Snyder, Kaifeng Chen, Sham Kakade, Prateek Jain, and Ali Farhadi. Matryoshka representation learning. In S. Koyejo, S. Mohamed, A. Agarwal, D. Belgrave, K. Cho, and A. Oh, editors, *Advances in Neural Information Processing Systems*, volume 35, pages 30233–30249. Curran Associates, Inc., 2022. URL: https://proceedings.neurips.cc/paper_files/paper/2022/file/c32319f4868da7613d78af9993100e42-Paper-Conference.pdf.

[KBR+24] Andrey Kuzmin, Mart Van Baalen, Yuwei Ren, Markus Nagel, Jorn Peters, and Tijmen Blankevoort. Fp8 quantization: The power of the exponent, 2024. URL: https://arxiv.org/abs/2208.09225, arXiv:2208.09225.

[KL80] V. Klema and A. Laub. The singular value decomposition: Its computation and some applications. *IEEE Transactions on Automatic Control*, 25(2):164–176, 1980. doi:10.1109/TAC.1980.1102314.

[KM+20] Jared Kaplan, Sam McCandlish, et al. Scaling laws for neural language models. *arXiv preprint arXiv:2001.08361*, 2020.

[KS21] Tomoyuki Chikanaga Kaz Sato. Vertex ai matching engine. *Microsoft AI Blog*, 2021. URL: https://cloud.google.com/blog/topics/developers-practitioners/find-anything-blazingly-fast-googles-vector-search-technology.

[LL23] Xianming Li and Jing Li. Angle-optimized text embeddings. *arXiv preprint arXiv:2309.12871*, 2023.

[LLL+24] Xianming Li, Zongxi Li, Jing Li, Haoran Xie, and Qing Li. 2d matryoshka sentence embeddings, 2024. arXiv:2402.14776.

[Llo82] Stuart Lloyd. Least squares quantization in pcm. *IEEE transactions on information theory*, 28(2):129–137, 1982.

[LPP+21] Patrick Lewis, Ethan Perez, Aleksandra Piktus, Fabio Petroni, Vladimir Karpukhin, Naman Goyal, Heinrich Küttler, Mike Lewis, Wen tau Yih, Tim Rocktäschel, Sebastian Riedel, and Douwe Kiela. Retrieval-augmented generation for knowledge-intensive nlp tasks, 2021. arXiv:2005.11401.

[M+67] James MacQueen et al. Some methods for classification and analysis of multivariate observations. In *Proceedings of the fifth Berkeley symposium on mathematical statistics and probability*, volume 1, pages 281–297. Oakland, CA, USA, 1967.

[ma24a] mixedbread ai. mxbai-embed-2d-large-v1 hugginface model reference, 2024. URL: https://huggingface.co/mixedbread-ai/mxbai-embed-2d-large-v1.

[ma24b] mixedbread ai. mxbai-embed-large-v1 hugginface model reference, 2024. URL: https://huggingface.co/mixedbread-ai/mxbai-embed-large-v1.

[MCCD13] Tomas Mikolov, Kai Chen, Greg Corrado, and Jeffrey Dean. Efficient estimation of word representations in vector space, 2013. arXiv:1301.3781.

[MTMR23] Niklas Muennighoff, Nouamane Tazi, Loïc Magne, and Nils Reimers. Mteb: Massive text embedding benchmark, 2023. URL: https://arxiv.org/abs/2210.07316, arXiv:2210.07316.

[na24] nomic ai. nomic-embed-text-v1.5 hugginface model reference, 2024. URL: https://huggingface.co/nomic-ai/nomic-embed-text-v1.5.

[NFA+21] Markus Nagel, Marios Fournarakis, Rana Ali Amjad, Yelysei Bondarenko, Mart van Baalen, and Tijmen Blankevoort. A white paper on neural network quantization, 2021. URL: https://arxiv.org/abs/2106.08295, arXiv:2106.08295.

[pdt20] The pandas development team. pandas-dev/pandas: Pandas, February 2020. doi:10.5281/zenodo.3509134.

[PGM+19] Adam Paszke, Sam Gross, Francisco Massa, Adam Lerer, James Bradbury, Gregory Chanan, Trevor Killeen, Zeming Lin, Natalia Gimelshein, Luca Antiga, Alban Desmaison, Andreas Kopf, Edward Yang, Zachary DeVito, Martin Raison, Alykhan Tejani, Sasank Chilamkurthy, Benoit Steiner, Lu Fang, Junjie Bai, and Soumith Chintala. Pytorch: An imperative style, high-performance deep learning library. In H. Wallach, H. Larochelle, A. Beygelzimer, F. d'Alché-Buc, E. Fox, and R. Garnett, editors, *Advances in Neural Information Processing Systems*, volume 32. Curran Associates, Inc., 2019. URL: https://proceedings.neurips.cc/paper_files/paper/2019/file/bdbca288fee7f92f2bfa9f7012727740-Paper.pdf.

[Pin24] Pinecone. Pinecone pricing, 2024. URL: https://www.pinecone.io/pricing/.

[PSM14] Jeffrey Pennington, Richard Socher, and Christopher Manning. GloVe: Global vectors for word representation. In Alessandro Moschitti, Bo Pang, and Walter Daelemans, editors, *Proceedings of the 2014 Conference on Empirical Methods in Natural Language Processing (EMNLP)*, pages 1532–1543, Doha, Qatar, October 2014. Association for Computational Linguistics. URL: https://aclanthology.org/D14-1162, doi:10.3115/v1/D14-1162.

[RBG16] Nils Reimers, Philip Beyer, and Iryna Gurevych. Task-oriented intrinsic evaluation of semantic textual similarity. In Yuji Matsumoto and Rashmi

Prasad, editors, *Proceedings of COLING 2016, the 26th International Conference on Computational Linguistics: Technical Papers*, pages 87–96, Osaka, Japan, December 2016. The COLING 2016 Organizing Committee. URL: https://aclanthology.org/C16-1009.

[RG19] Nils Reimers and Iryna Gurevych. Sentence-bert: Sentence embeddings using siamese bert-networks. In *Proceedings of the 2019 Conference on Empirical Methods in Natural Language Processing*, pages 3980–3990. Association for Computational Linguistics, 2019.

[RH07] Andrew Rosenberg and Julia Hirschberg. V-measure: A conditional entropy-based external cluster evaluation measure. In Jason Eisner, editor, *Proceedings of the 2007 Joint Conference on Empirical Methods in Natural Language Processing and Computational Natural Language Learning (EMNLP-CoNLL)*, pages 410–420, Prague, Czech Republic, June 2007. Association for Computational Linguistics. URL: https://aclanthology.org/D07-1043.

[RHW86] D. E. Rumelhart, G. E. Hinton, and R. J. Williams. *Learning internal representations by error propagation*, page 318–362. MIT Press, Cambridge, MA, USA, 1986.

[RKH+21] Alec Radford, Jong Wook Kim, Chris Hallacy, Aditya Ramesh, Gabriel Goh, Sandhini Agarwal, Girish Sastry, Amanda Askell, Pamela Mishkin, Jack Clark, et al. Learning transferable visual models from natural language supervision. In *International Conference on Machine Learning*, pages 8748–8763. PMLR, 2021.

[Ser24] Amazon Web Services. Aws pricing, 2024. URL: https://aws.amazon.com/de/sagemaker/pricing/.

[Var19] Manik Varma. Extreme classification. *Communications of the ACM*, 62(11):44–45, 2019.

[VSP+23] Ashish Vaswani, Noam Shazeer, Niki Parmar, Jakob Uszkoreit, Llion Jones, Aidan N. Gomez, Lukasz Kaiser, and Illia Polosukhin. Attention is all you need, 2023. arXiv:1706.03762.

[WDS+20] Thomas Wolf, Lysandre Debut, Victor Sanh, Julien Chaumond, Clement Delangue, Anthony Moi, Pierric Cistac, Tim Rault, Rémi Louf, Morgan Funtowicz, Joe Davison, Sam Shleifer, Patrick von Platen, Clara Ma, Yacine Jernite, Julien Plu, Canwen Xu, Teven Le Scao, Sylvain Gugger, Mariama Drame, Quentin Lhoest, and Alexander M. Rush. Huggingface's transformers: State-of-the-art natural language processing, 2020. URL: https://arxiv.org/abs/1910.03771, arXiv:1910.03771.

[WEG87] Svante Wold, Kim Esbensen, and Paul Geladi. Principal component analysis. *Chemometrics and Intelligent Laboratory Systems*, 2(1):37–52, 1987. Proceedings of the Multivariate Statistical Workshop for Geologists and Geochemists. URL: https://www.sciencedirect.com/science/article/pii/0169743987800849, doi:10.1016/0169-7439(87)80084-9.

[YYX+18] Jiahui Yu, Linjie Yang, Ning Xu, Jianchao Yang, and Thomas Huang. Slimmable neural networks. *arXiv preprint arXiv:1812.08928*, 2018.

[ZZ09] Ethan Zhang and Yi Zhang. *Average Precision*, pages 192–193. Springer US, Boston, MA, 2009. doi:10.1007/978-0-387-39940-9_482.