MuSe-CarASTE: A comprehensive dataset for aspect sentiment triplet extraction in automotive review videos

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KEY CONTRIBUTIONS

- **A new benchmark for Aspect Sentiment Triplet Extraction.**
- **First ASTE Dataset in Automotive Domain.**
- **Largest ASTE Repository till date with annotations for over 28,295 sentences.**
- **Complex implicit non-verbatim labels.**
- **Domain: Aspect-based sentiment analysis, ASTE, Opinion Mining, Recommender System.**

DATASET PROPERTIES

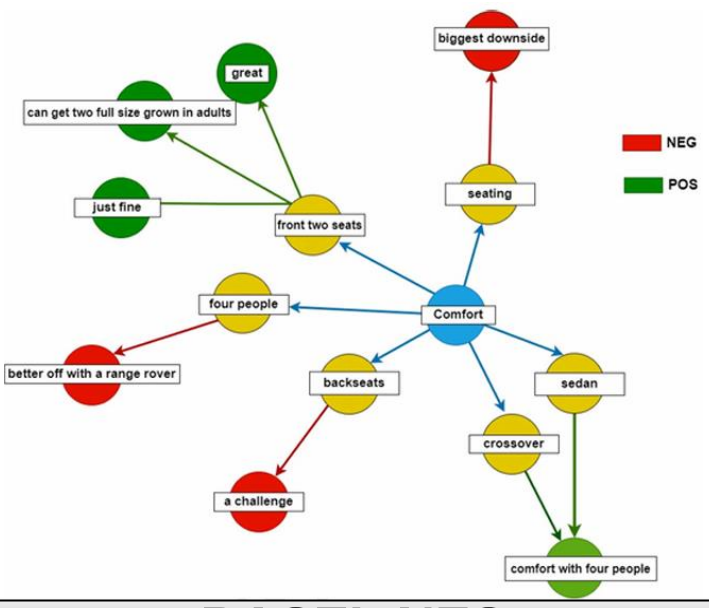
Characteristic	#Number
Segments	5.5k
Sentences	28,295 ~30k (x5 size benchmark)
Topics	10
Non-empty triples	9764~10k
Total Triples	15609~15.6k
Empty Segments	1442
Total Aspects annotated	14168
Total Opinion Annotated	14168
Unique Aspects	3048~3k
Unique Opinions	7875 ~7.8k
No. of Videos	303
No. of hours	6 hours
Vocab Size	13,138 (6k benchmark)
Implicit Aspects	2435 (0 benchmark)
Implicit Triples	3385 (0 benchmark)
Implicit Opinions	1403 (0 benchmark)
Max. Text Length	14280
Avg. Words per segment	113.50 (longer transcripts 16.43 benchmark)
Domain	Automotive (first)
Multiword Opinions	8688~8.6k
Multiword Aspects	4912~5k
Multiword Triples	10,603~10.6k (5k benchmark)

ASTE EXAMPLE

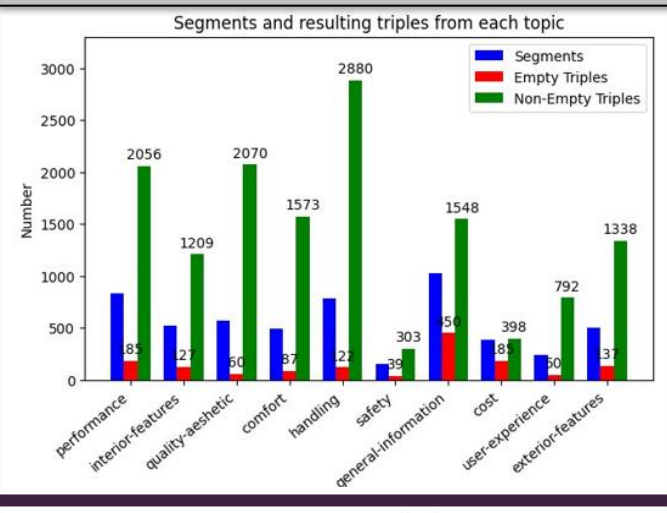
The gearbox is rubbish ... steering feels light

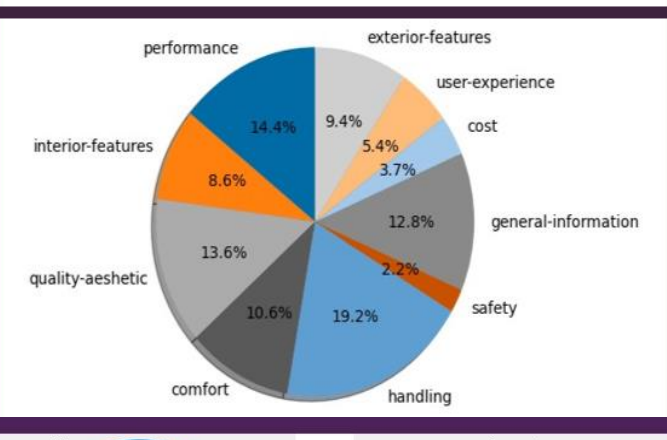
(gearbox, rubbish, NEG
steering, light, POS)

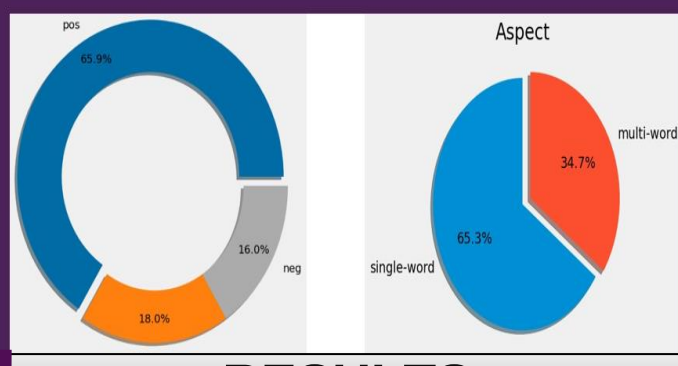
USECASE



DATA DISTRIBUTION





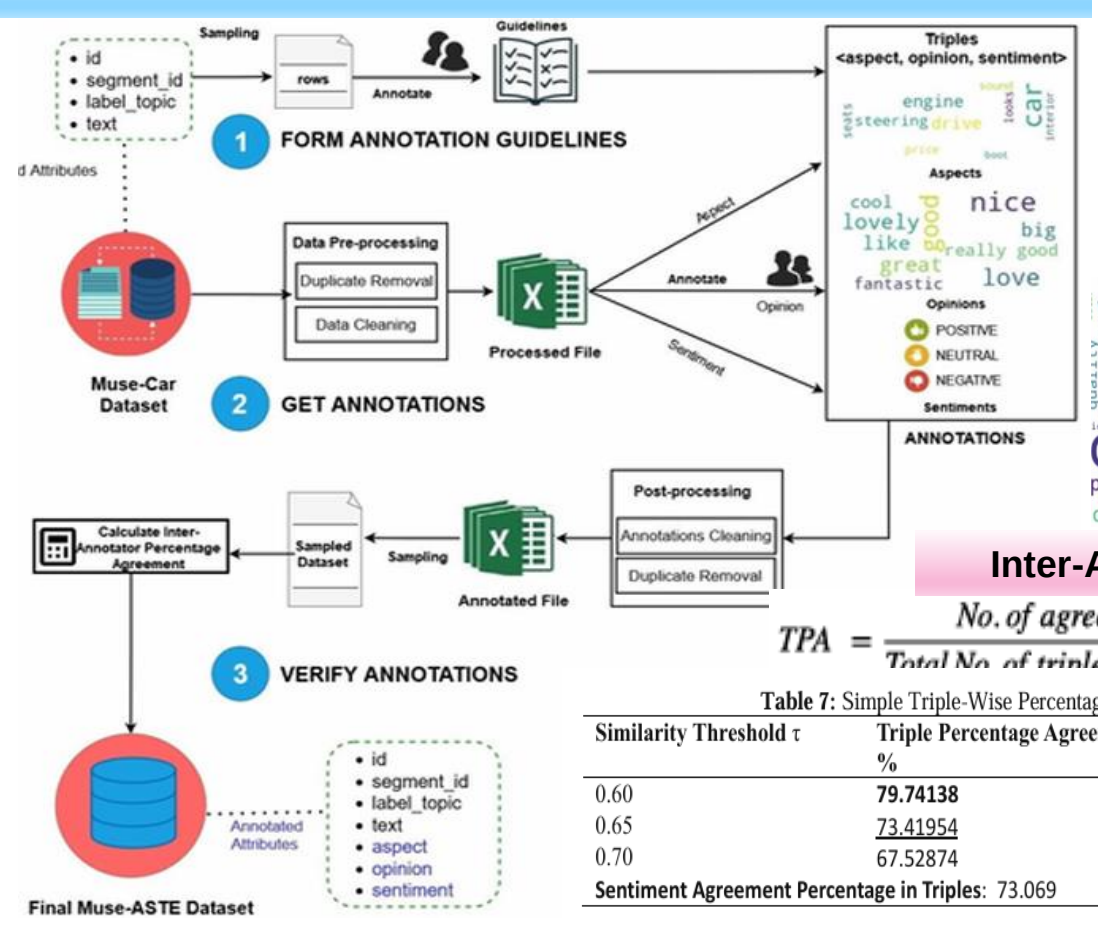


BASELINES

- **BARTABSA-** is a pointer-based indices generation method
- **BMRC**- Machine Comprehension based
- **GAS-** LLM (T5) based generation
- **Span-ASTE** Tagging-based span prediction method

DATASET ANNOTATION

WORKFLOW



LABELS

Inter-Annotator Agreement

$$TPA = \frac{No.\ of\ agreeing\ triples > \tau}{Total\ No.\ of\ triples\ in\ the\ dataset} * 100$$

Table 7: Simple Triple-Wise Percentage Agreement between annotators.

Similarity Threshold τ	Triple Percentage Agreement %	Aspect Opinion Pair Agreement %
0.60	**79.74138**	**79.74138**
0.65	73.41954	74.28161
0.70	67.52874	67.81609
Sentiment Agreement Percentage in Triples: 73.069		

RESULTS

Table 14: Detailed Result of baseline model (Zhang et al., 2021) on our dataset using precision, recall, a measures up to 4 decimal places on dev file of whole dataset corresponding to the original MuSe-Car da

	precision	recall	F1
Aspect	0.7143	0.7196	0.7169
Aspect-Sentiment Pair	0.7611	0.7667	0.7639
Opinion	0.9126	0.9193	0.9156
Aspect-Opinion Pair	0.9272	0.9341	0.9306
Triple	0.9300	0.9232	**0.9266**

9: Results of baseline models on on our dataset[1] and SemEval Datasets[2] using F1 scores.

Model	Dataset	Aspect (F1)	Opinion (F1)	Aspect Opinion Pair (F1)	Aspect Sentiment Pair (F1)	Triple (F1)
Generative-ABSA (Zhang et al., 2021)	14 lap	0.63	0.61	0.52	0.48	0.43
	14 res	0.66	0.71	0.69	0.63	0.65
	15res	0.66	0.71	0.60	0.61	0.56
	16res	0.67	0.75	0.67	0.62	0.63
	Muse-ASTE	**0.31**	**0.34**	**0.26**	**0.26**	**0.218**
BMRC (Chen et al., 2021)	14 lap	0.76	0.73	0.67	0.66	0.59
	14 res	0.82	0.84	0.76	0.76	0.71
	15res	0.72	0.78	0.66	0.658	0.61
	16res	0.82	0.83	0.76	0.73	0.68
	Muse-ASTE	**0.786**	**0.751**	**0.757**	**0.761**	**0.568**
BART-ABSA (Yan et al., 2021)	14 lap	0.79	0.84	0.68	0.69	0.60
	14 res	0.85	0.84	0.75	0.78	0.71
	15res	0.78	0.61	0.56	0.54	0.50
	16res	0.85	0.84	0.75	0.76	0.68
	Muse-ASTE	0.438	0.513	0.290	0.404	0.249

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