EDEN: A Dataset for Event Detection in Norwegian News

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Lubos Steskal, Lilja Charlotte Storset, Huiling You, Lilja Øvrelid

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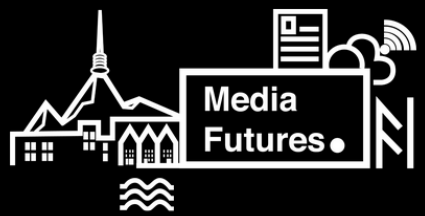

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  - edited news articles,
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- We adapt ACE (Automatic Content Extraction) guidelines (Doddington, 2005) to the Norwegian news domain.
- EDEN contains a total of 630 documents, annotated for 5,805 events and 9,299 arguments.

EDEN – data sources

News Text

TV News Transcripts

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Transcripts produced between 2021 and 2023, but focused on a single broadcast per day (8:00 PM).
Manual inspection and rectification.

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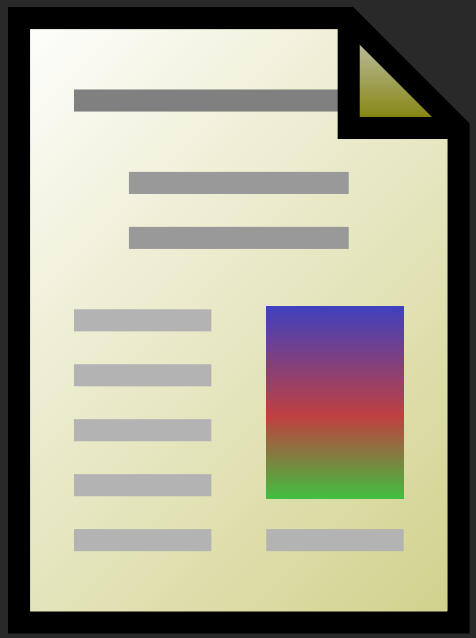
- Interested in locating noun phrases that are potential event arguments.
- Pre-annotated markables are only suggestions.

Annotation guidelines

English ACE guidelines



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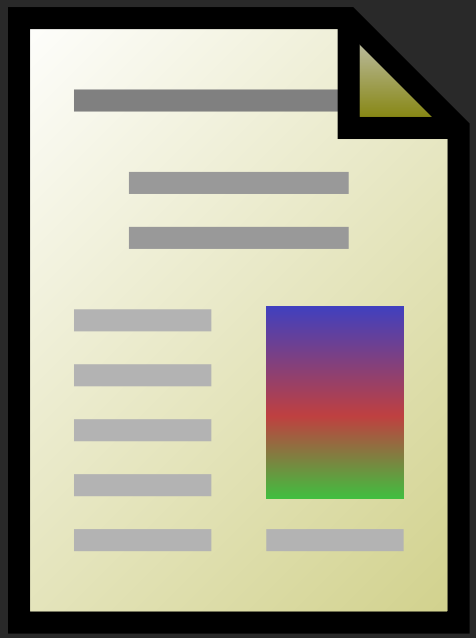
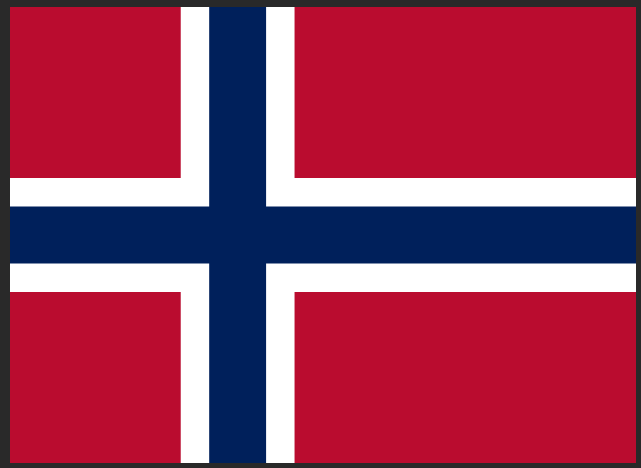
English ACE guidelines

Adaptation





Event types

LIFE

CONTACT

JUSTICE

TRANSACTION

MOVEMENT

CONFLICT

PERSONNEL

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- ARREST-JAIL
- SENTENCE
- PARDON
- EXECUTE
- FINE
- TRIAL-HEARING
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- APPEAL
- SUE
- CONVICT
- AQUIT
- EXTRADITE

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- Event types have a set of argument roles.

Event arguments

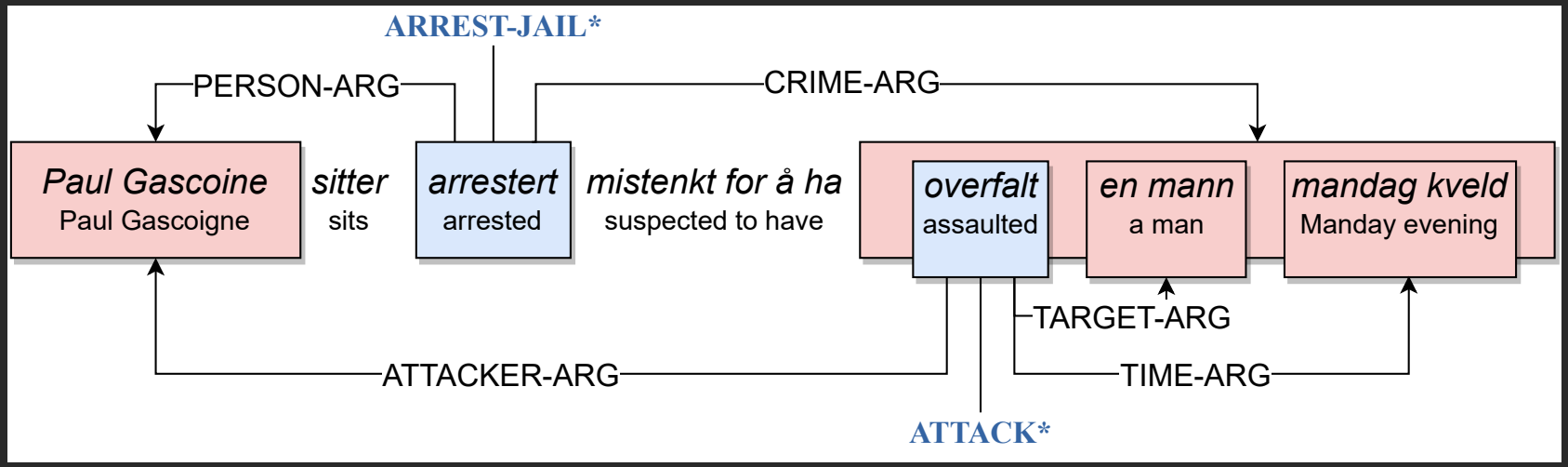

Figure: EDEN annotation showing an example of multiple events within a scope, that share an argument entity.

Event modality

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Event modality

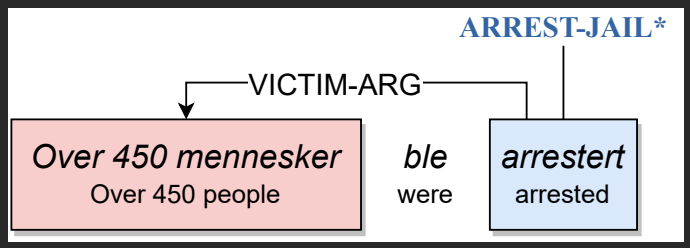

Figure: Modality asserted event annotation (indicated by asterisk).

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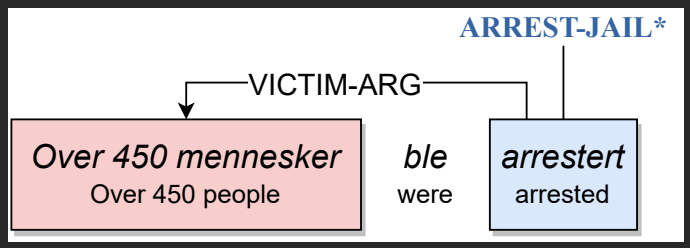

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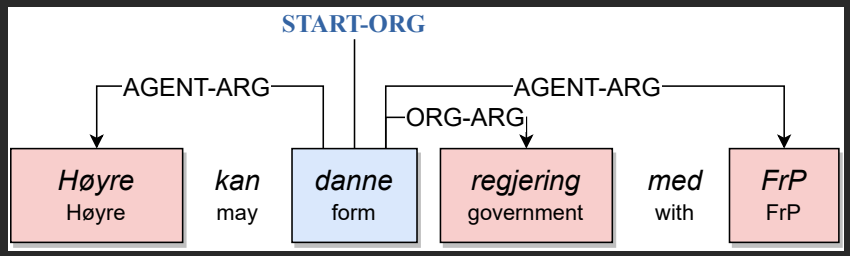

Figure: Un-asserted modality annotation.

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- Marked with MODAL-ASSERT.
- Un-asserted events include generic and negated events.

Adaptations of ACE guidelines

1. Clarify parts of the ACE annotation guidelines that were unclear,
2. Limit the task so as to make it manageable and provide consistent annotations, and
3. Adapt the guidelines to Norwegian language and society.

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- **Particle verbs as triggers**: added in EDEN (*e.g.*, *støte på*, run into which can trigger MEET-events).

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Annotation procedure

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- Four students with a background in NLP and linguistics.
- Annotations in four phases:
  1. annotation of a small subset of the data,
  2. round of discussion and updates to the guidelines,
  3. individual annotations,
  4. overlapping annotations of the last subset of EDEN.
- Inter-annotator agreement calculations on the final part.

Inter-annotator agreement

Inter-annotator scores for event identification was performed at the token level, while trigger label and argument label IAA scores were calculated given that both annotators agreed on an event span.

Dataset	Event trigger κ	Label κ	Arg κ
TV 2	0.95	0.99	0.94
NDT	0.80	0.91	0.83
Total	0.83	0.93	0.86

Table: Inter-annotator agreement scores for the two final IAA datasets.

Dataset statistics

	#Docs	#Sent	#Tokens	#Events	#Arguments	#Attributes
NDT Train	273	12,916	197,540	2,476	4,012	1,416
TV 2 Train	234	8,052	164,605	2,108	3,404	1,155
Total Train	*507*	*20.968*	*362.145*	*4.584*	*7.416*	*2.571*
NDT Dev	30	1,155	19,641	206	359	133
TV 2 Dev	21	764	16,027	181	267	109
Total Dev	*51*	*1.919*	*35.668*	*387*	*626*	*242*
NDT Test	33	1,981	29,431	302	565	170
TV 2 Test	39	1,384	27,982	532	692	234
Total Test	*72*	*3.365*	*57.413*	*834*	*1.257*	*404*
EDEN in total	630	26,252	455,226	5,805	9,299	3,217

Table: Statistics of the EDEN dataset in terms of total number of documents, sentences, tokens, events (total number of occurrences of event types), arguments, and attributes in both the NDT and the TV 2 datasets.

Data statistics

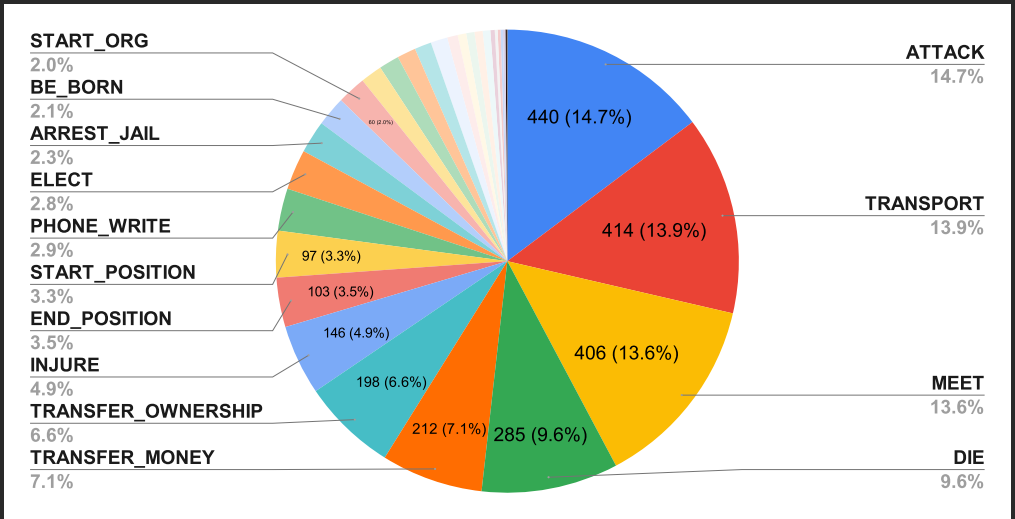

Figure: Event types in the NDT data (all splits).

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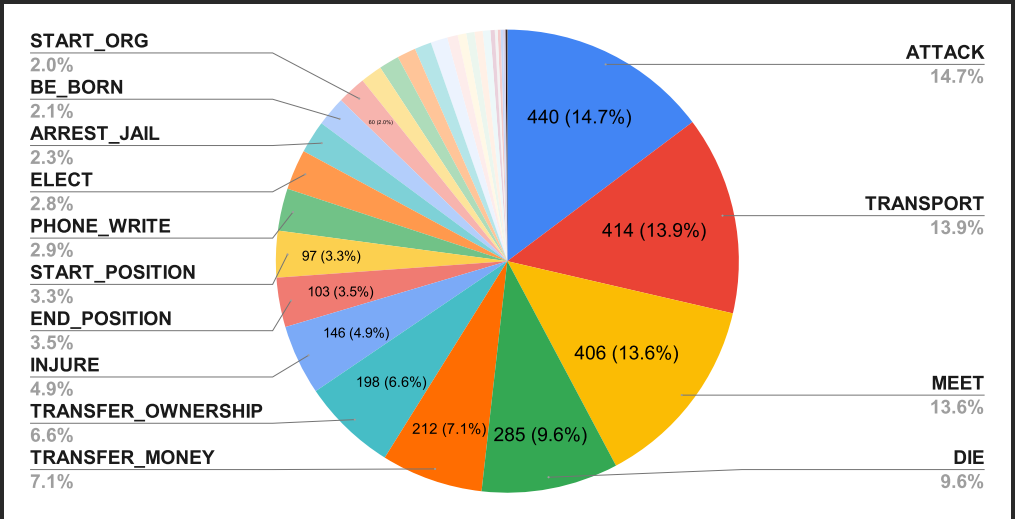

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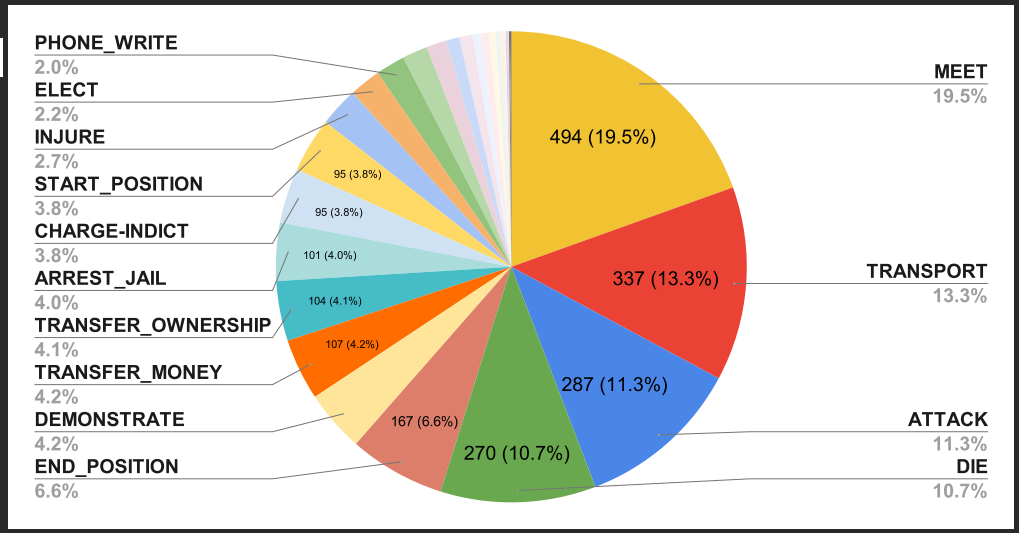

Figure: Event types and their occurrences in the TV 2 data (all splits).

Experiments

Model adapted from JSEEGraph (You et al., 2023), a graph-based model for joint structured event extraction. Each sentence is transformed into a graph representation, with event triggers and arguments as nodes.

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- **Trigger**: an event trigger is correctly identified (Trg-I) if its offsets match a reference trigger, and correctly classified (Trg-C) if the event type also matches a reference trigger.
- **Argument**: an event argument is correctly identified (Arg-I) if its offsets and event type match a reference argument, and correctly classified (Arg-C) if its argument role also matches that of a reference argument.

Experiments

	Trg-I	Trg-C	Arg-I	Arg-C
	F1	**F1**	**F1**	**F1**
NDT	62.3	61.0	51.3	50.1
TV2	76.1	75.2	53.7	52.3
EDEN	69.1	68.0	52.4	51.5

Table: Experimental results on EDEN. "I" corresponds to "Identification", and "C" corresponds to "Classification".

Conclusion

- EDEN: first data for event extraction for the Norwegian language.
- Conventional news outlets and transcribed speech from a national news broadcasting company.
- Annotations grounded in ACE, alongside rigorous adaptations to the Norwegian language and society.
- EDEN is freely available on our github[1].

[1] https://github.com/ltgoslo/Event-Detection-for-Norwegian-EDEN-