Understanding Mention Detector-Linker Interaction in Neural Coreference Resolution

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AI2

Neural Coreference Resolution

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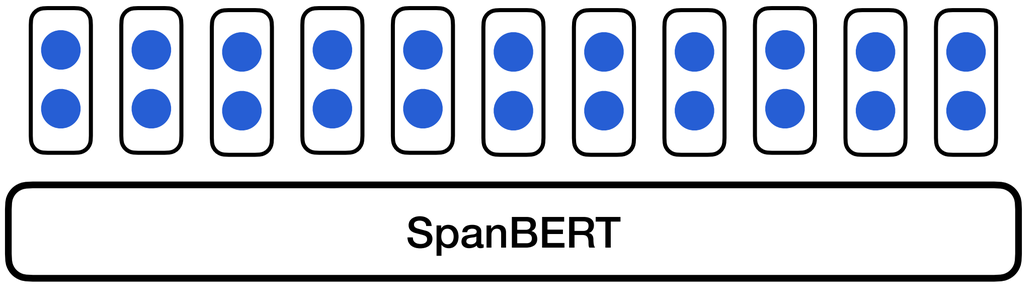
He and I laughed at my dog who bit himself.

Neural Coreference Resolution



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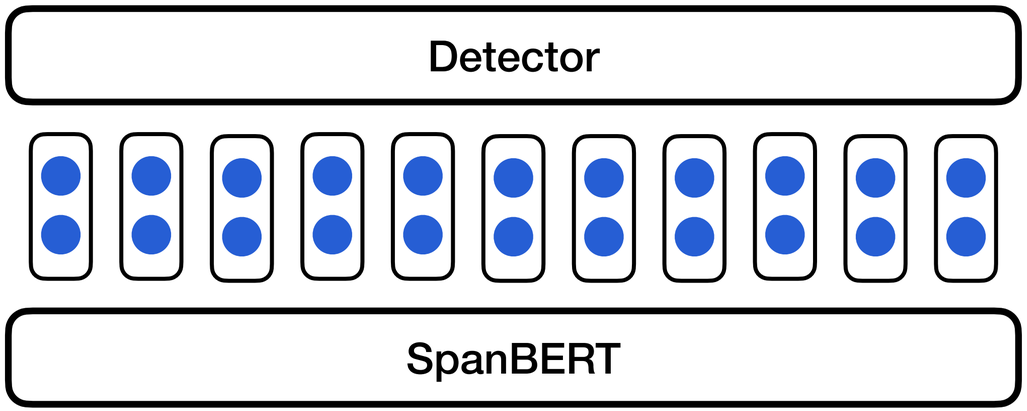

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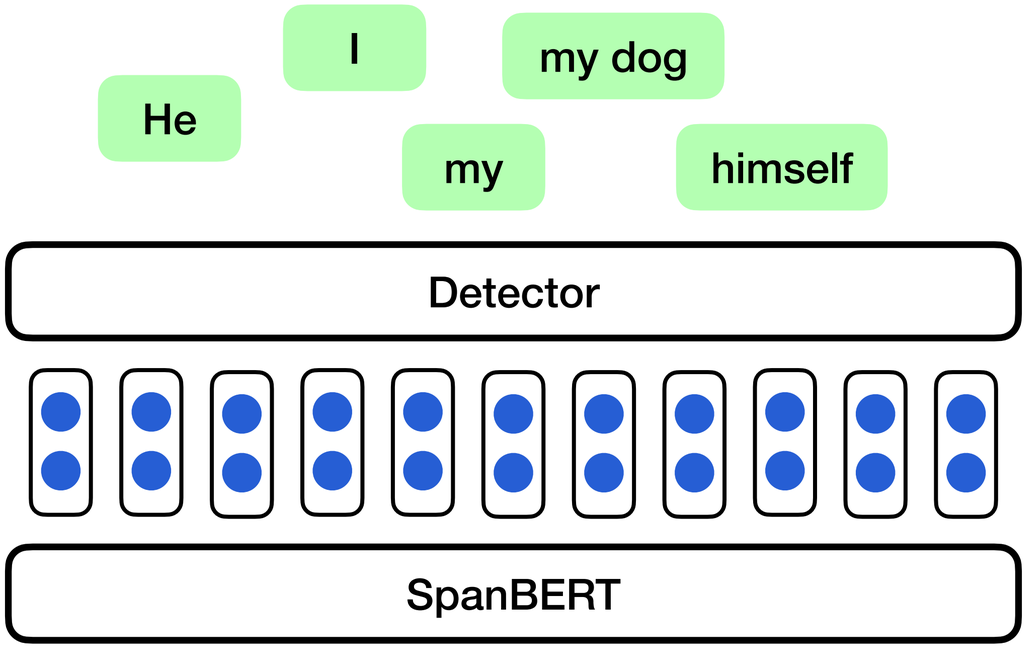

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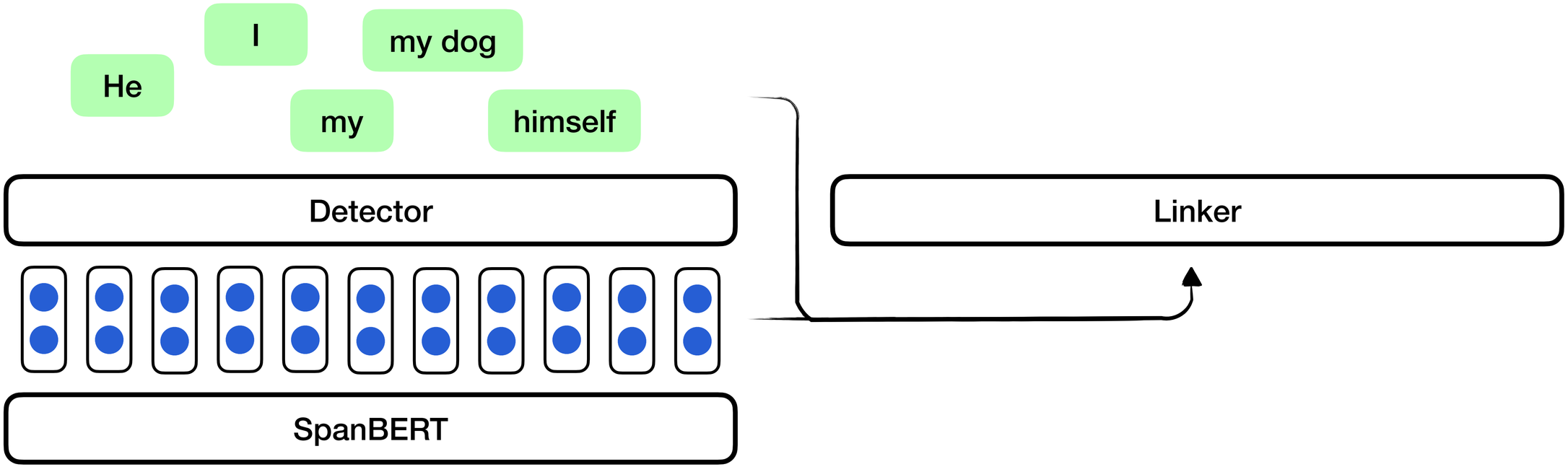

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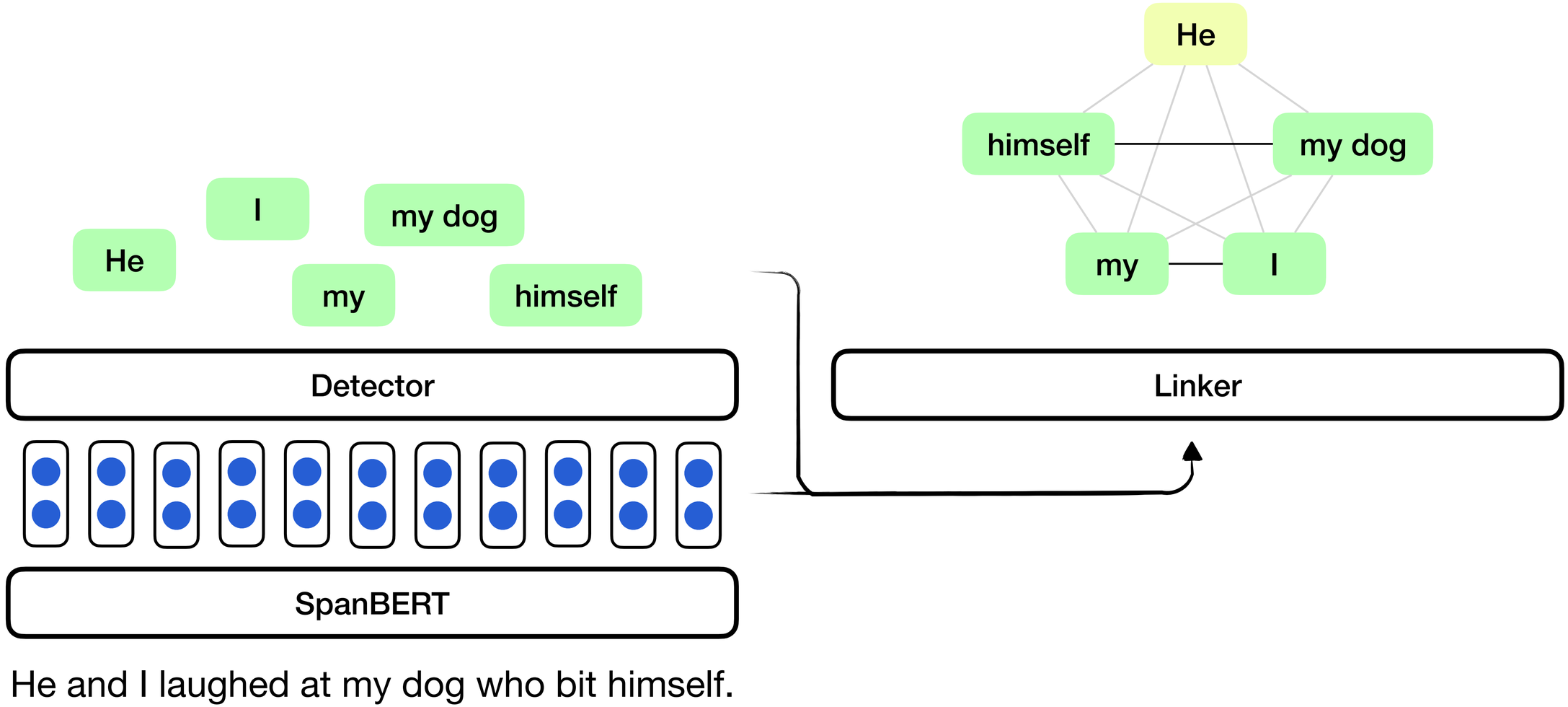

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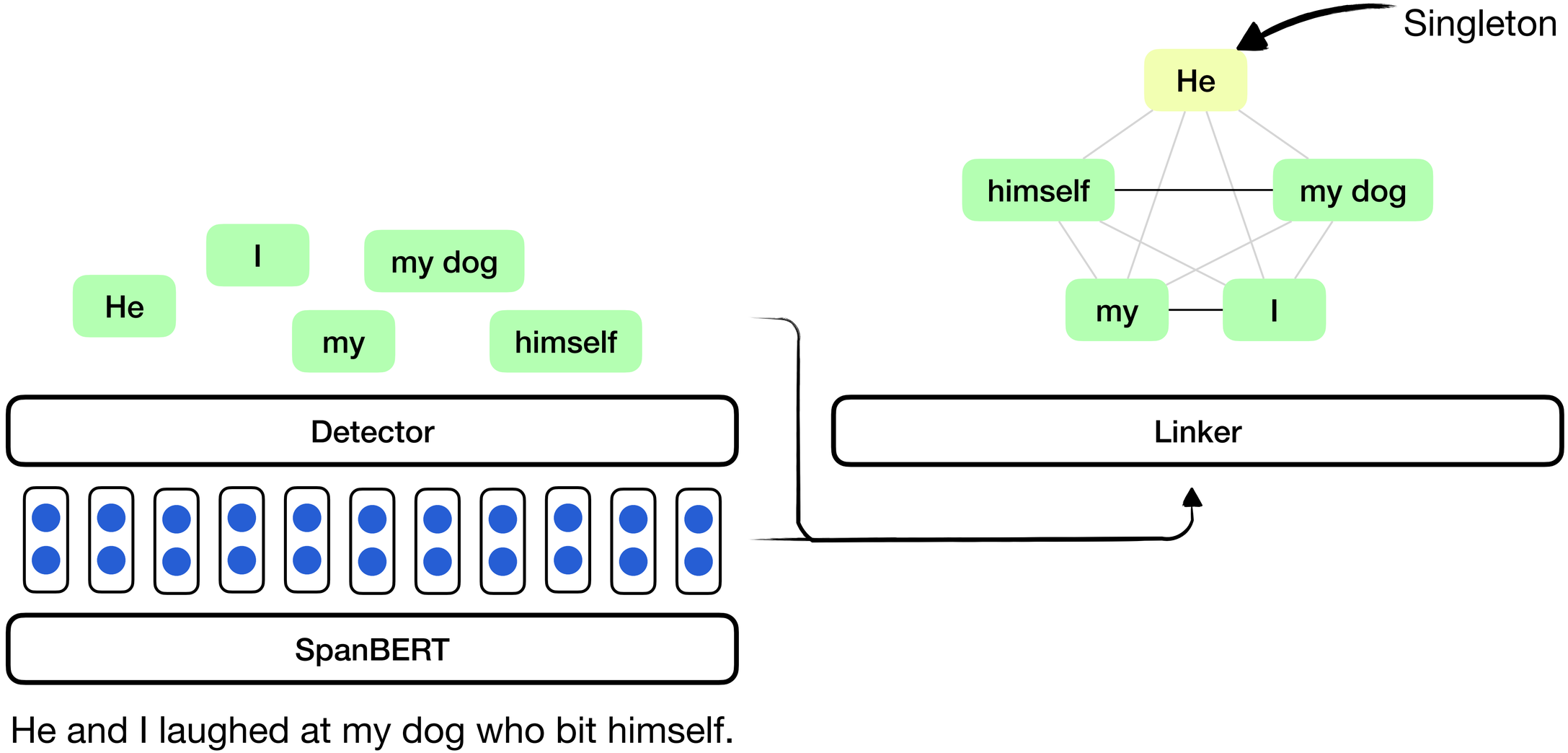

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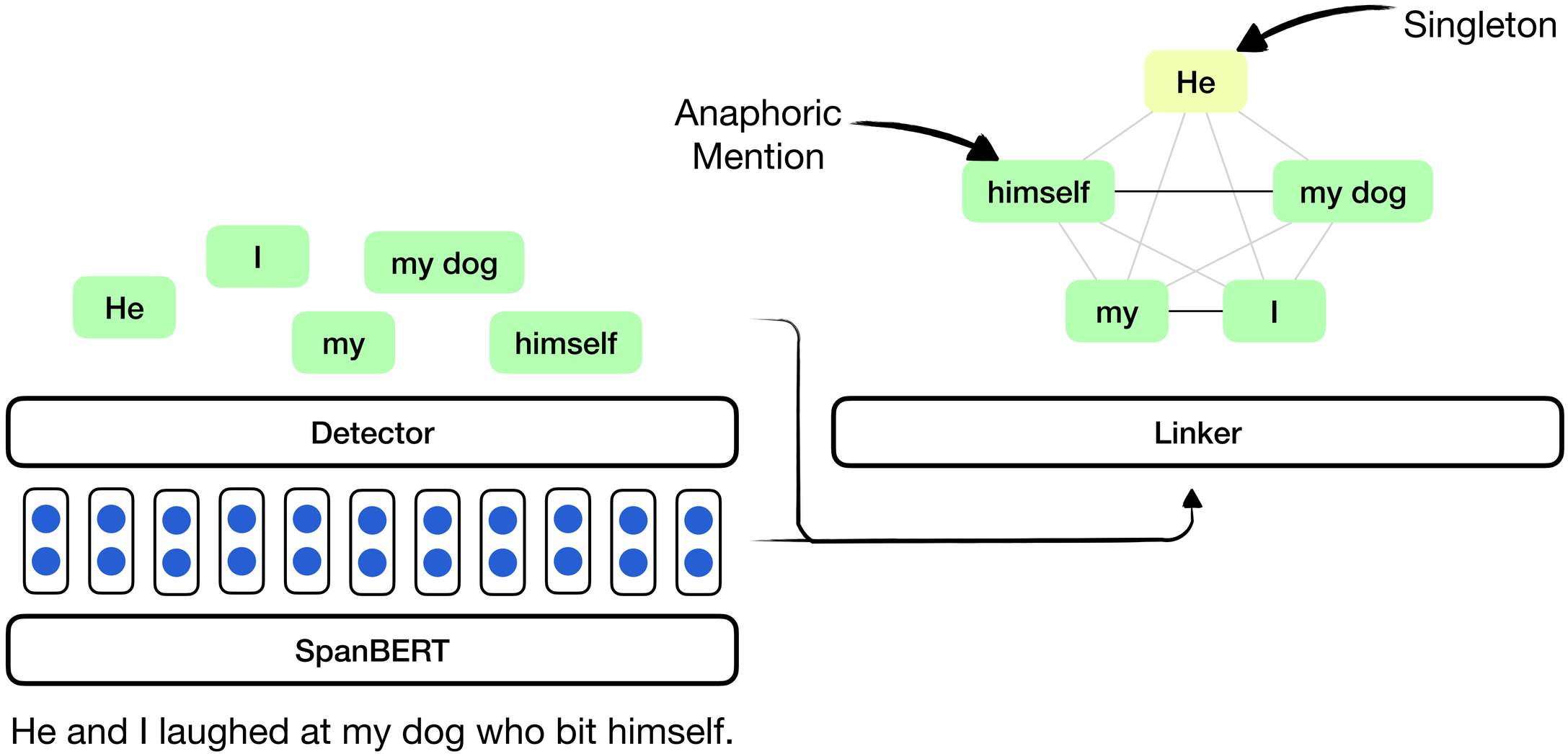

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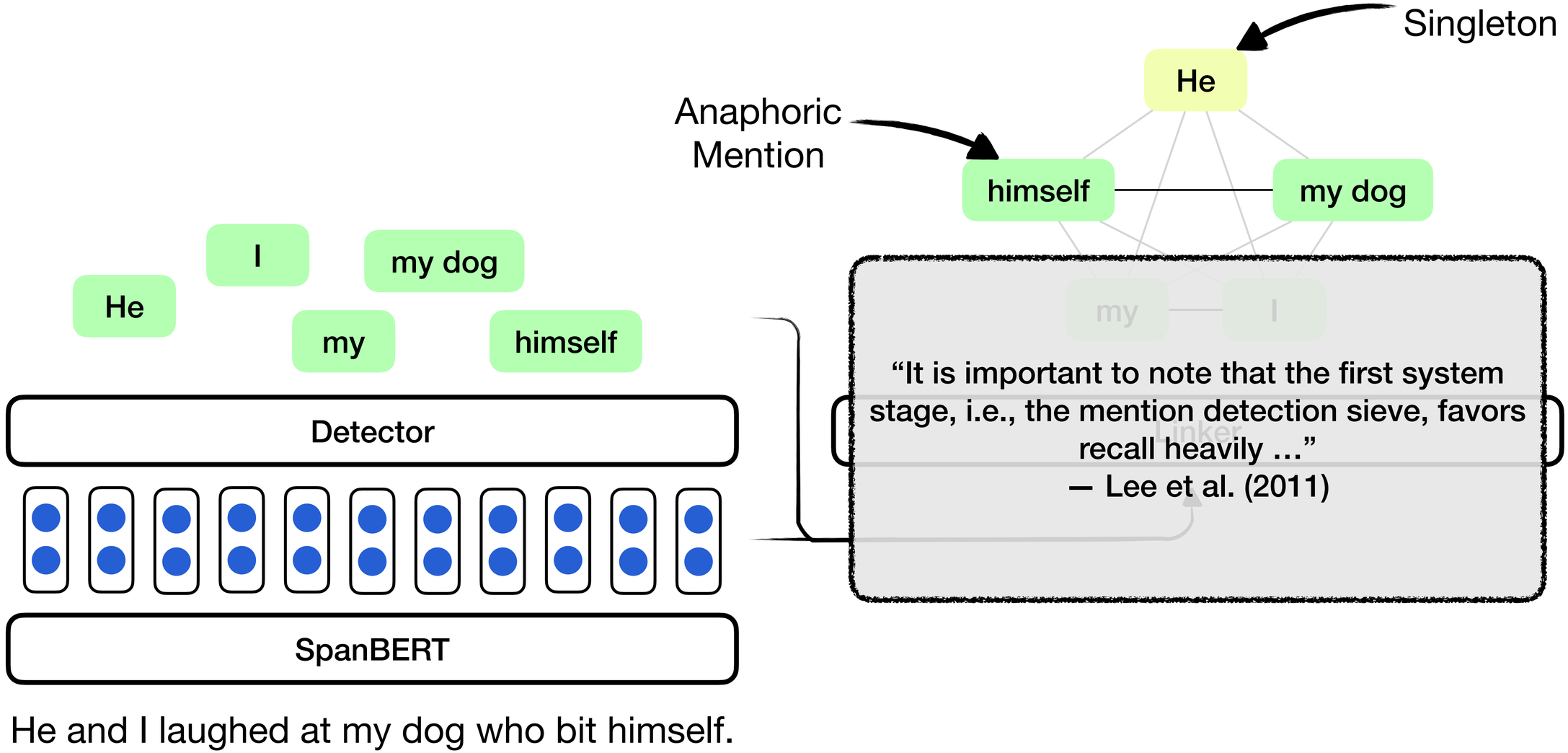
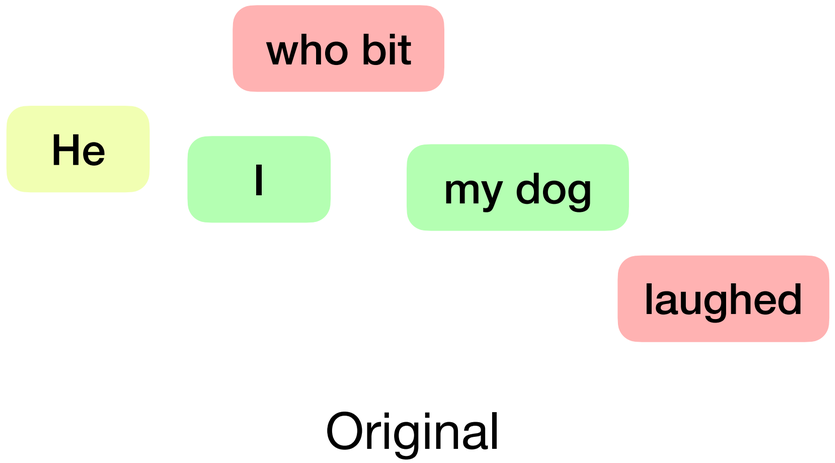


Is Detector Recall Always More Important Than Precision?

Oracle Detectors

Oracle Detectors



Original

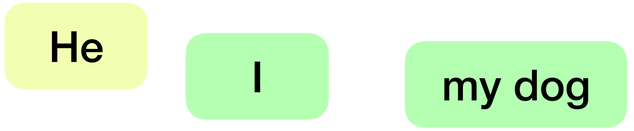
Oracle Detectors

Original

Perfect Recall

Oracle Detectors

Original



Perfect Precision

Perfect Recall

Oracle Detectors

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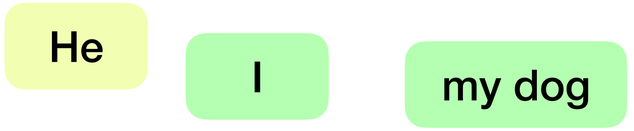

Perfect Precision

Perfect Recall

Perfect Recall & Precision

Datasets & Model Settings

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- Ontonotes (English)

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- Embedder: SpanBERT-large

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- Embedder: SpanBERT-large
- Experimental configuration
  - https://github.com/allenai/allennlp-models/blob/main/training_config/coref/coref_spanbert_large.jsonnet

Importance of Precision

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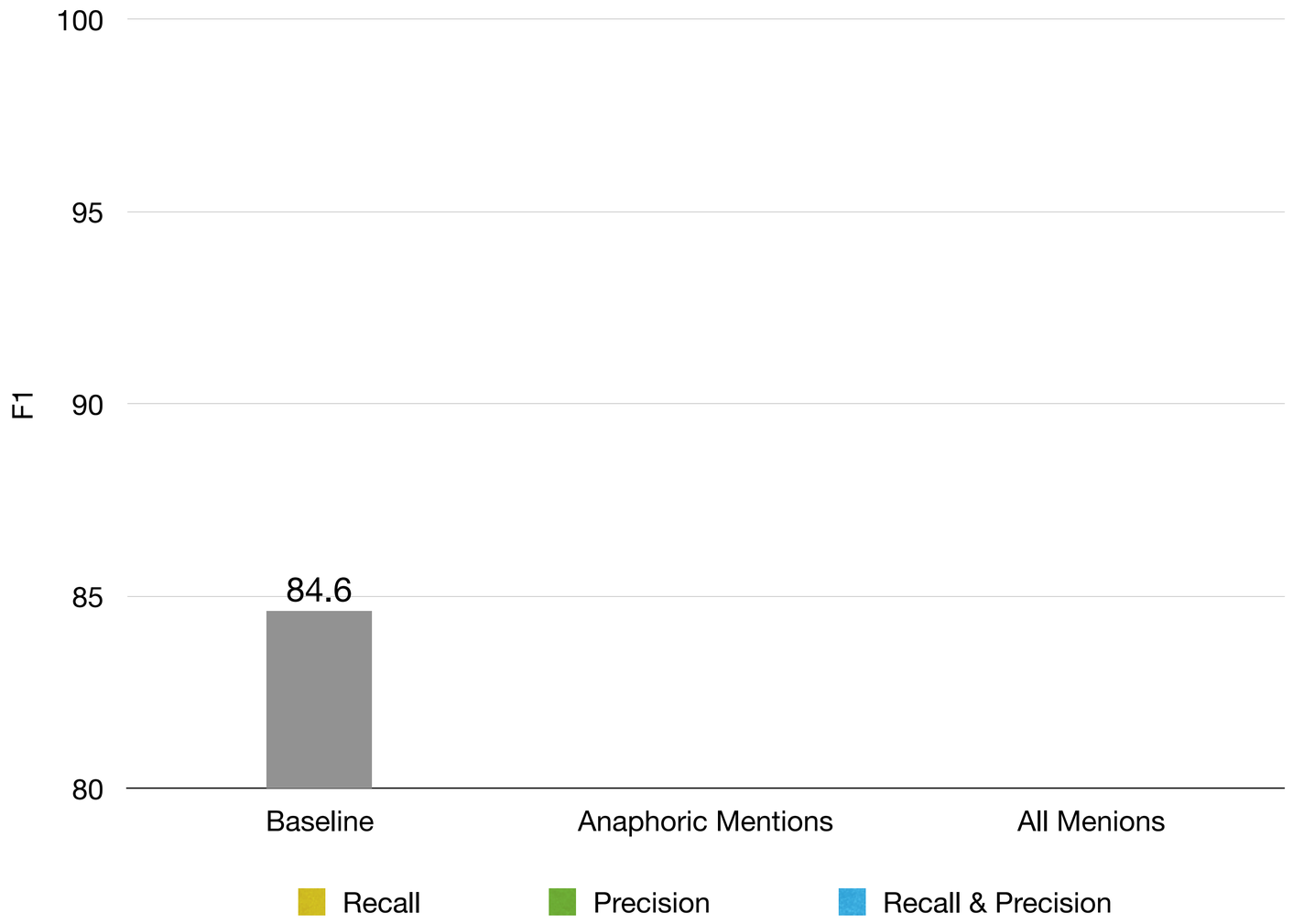

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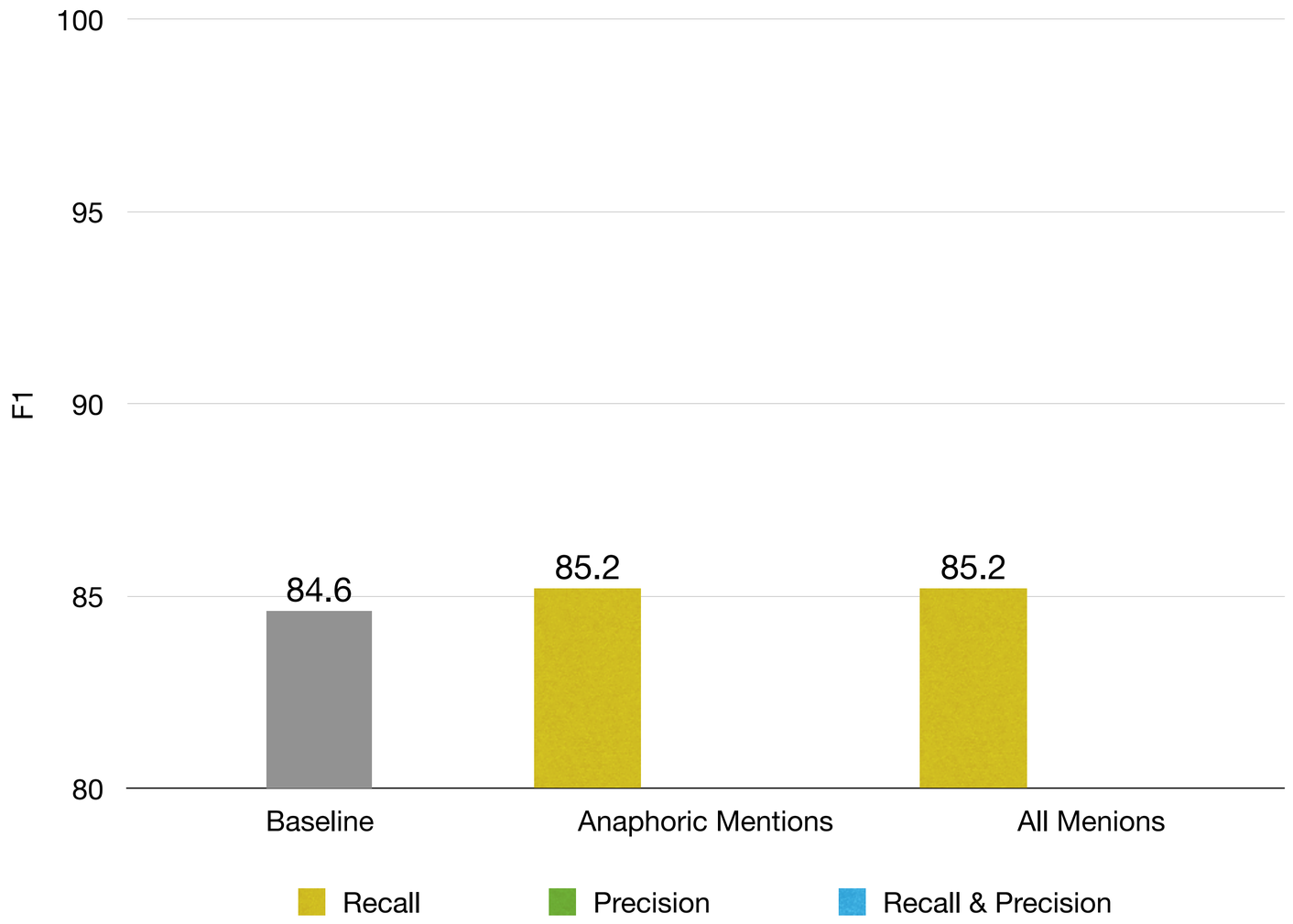

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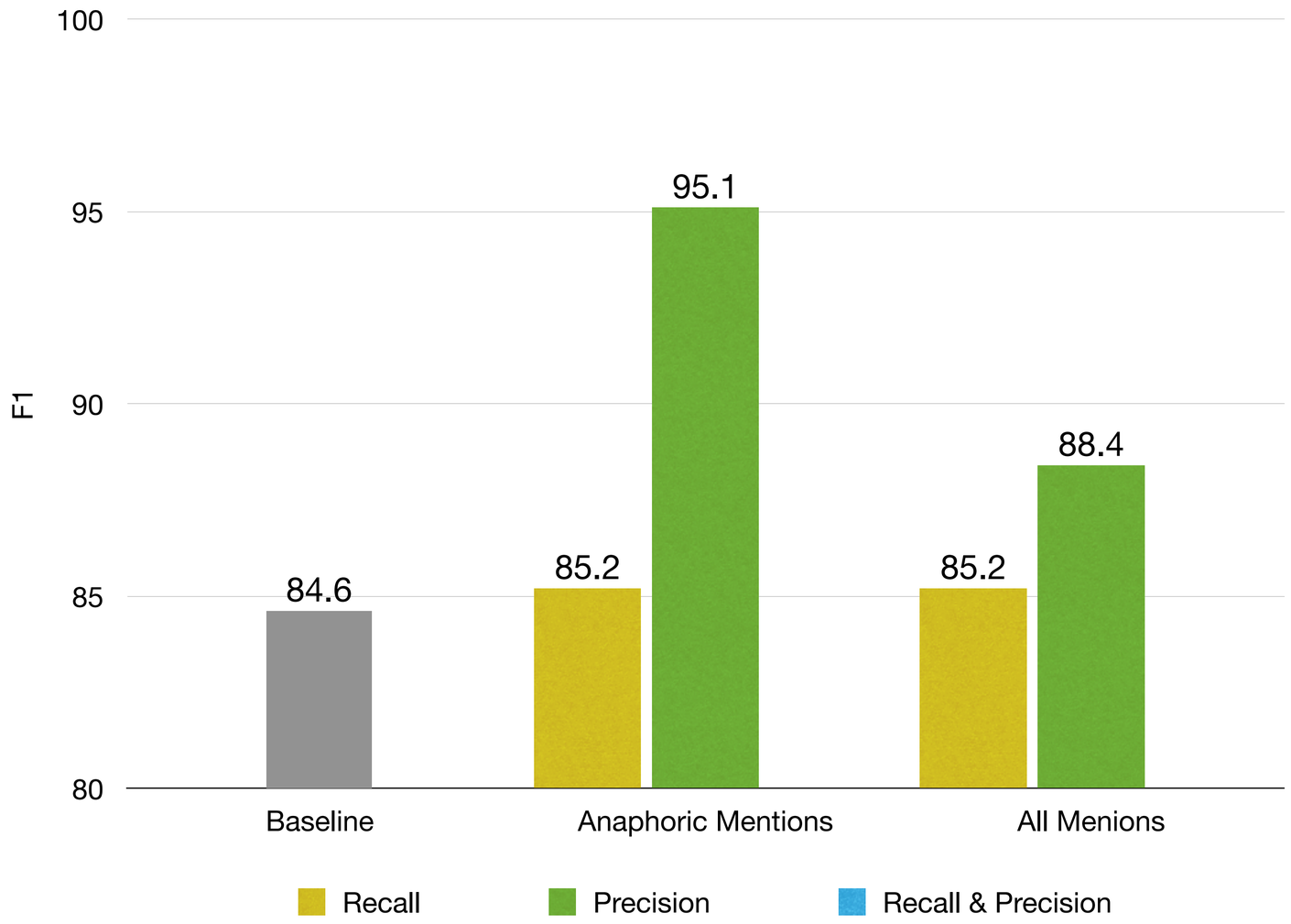

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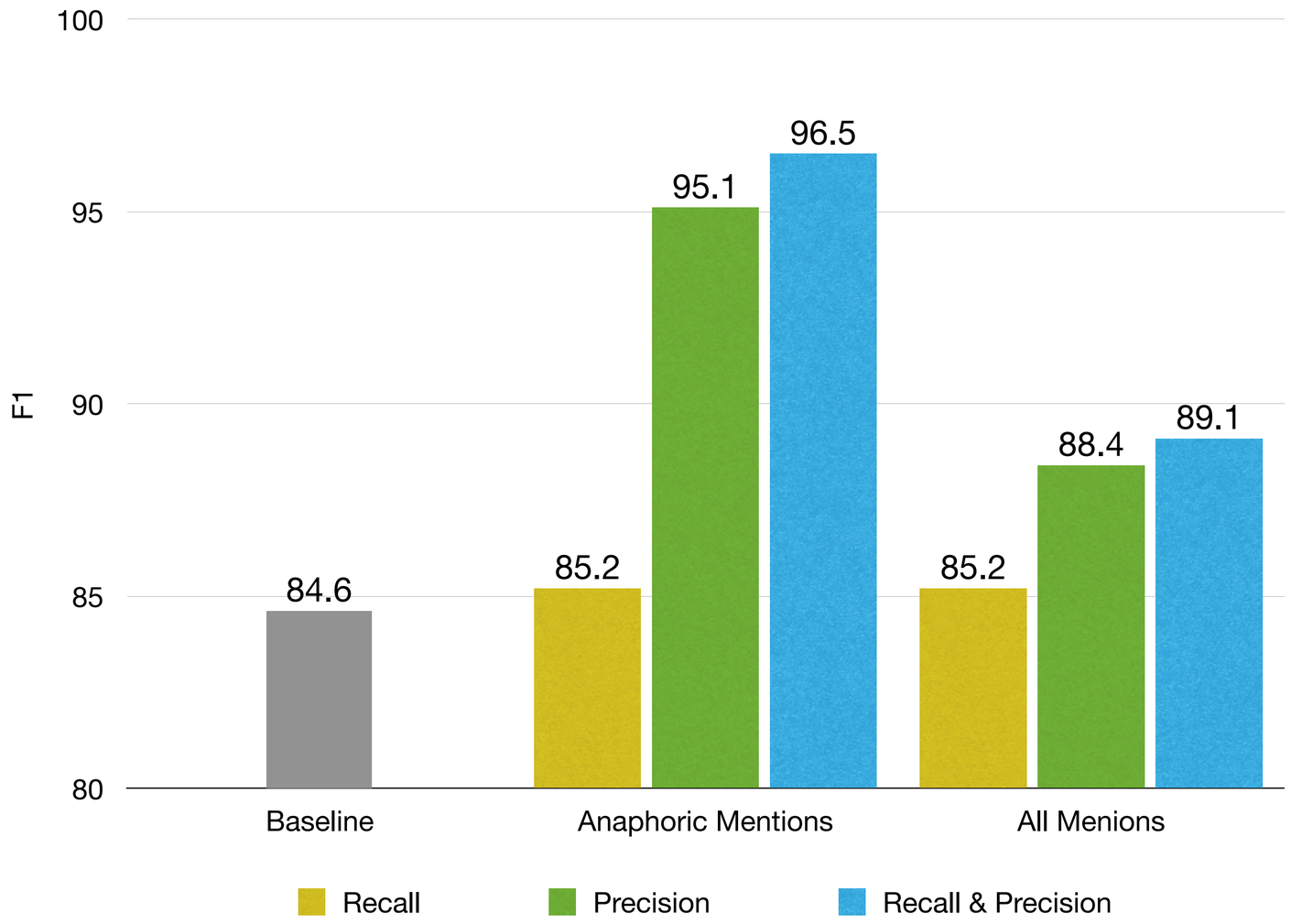

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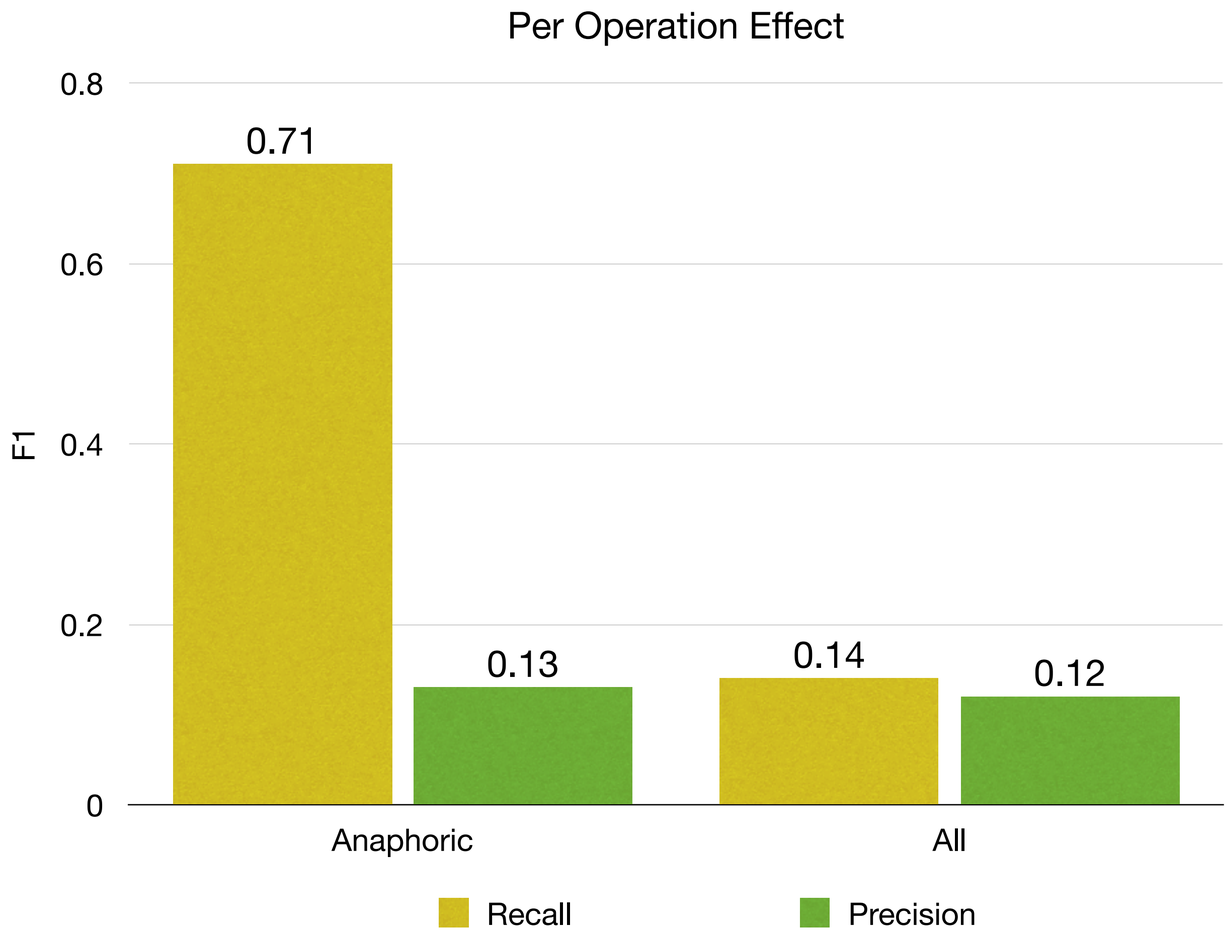
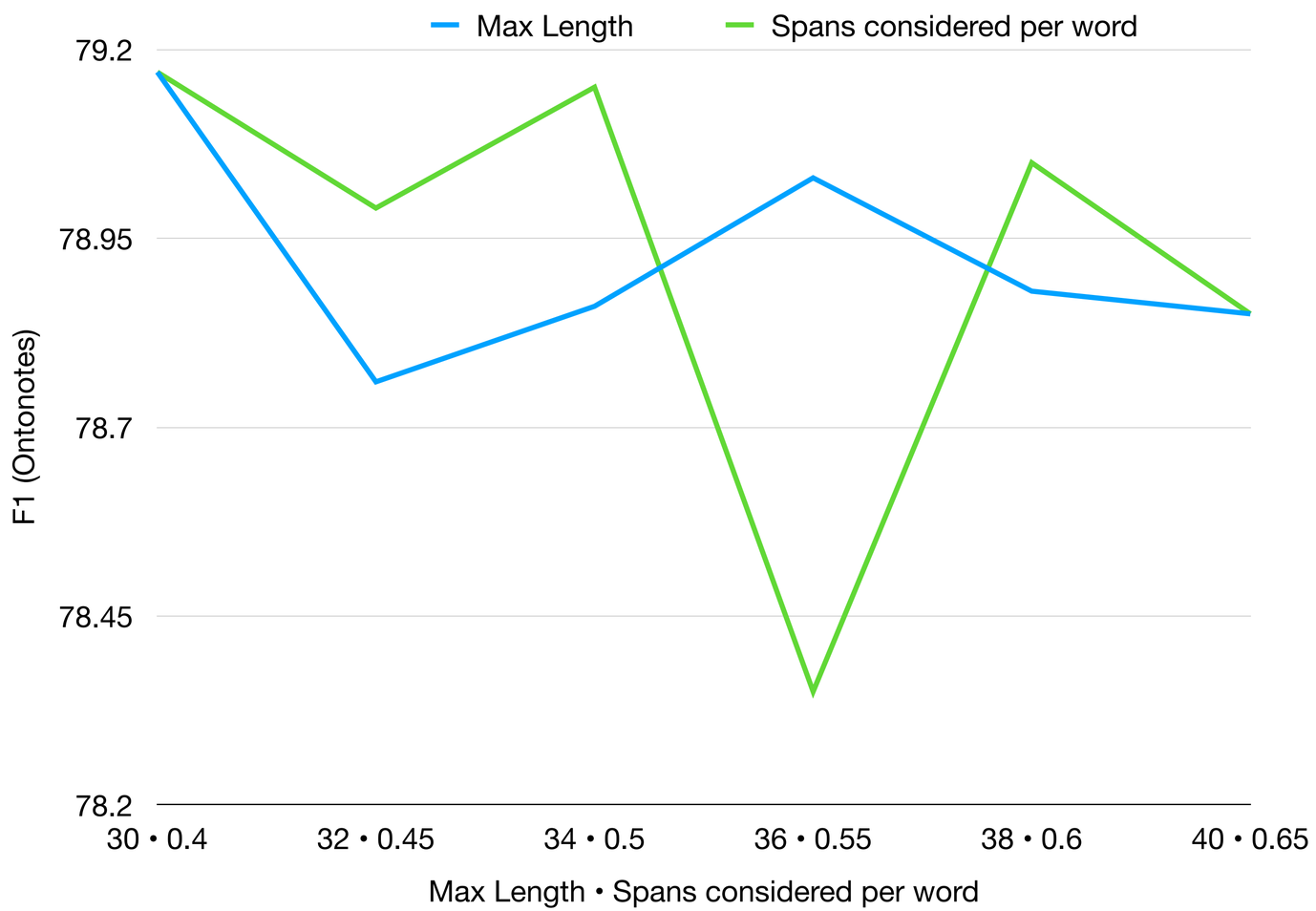
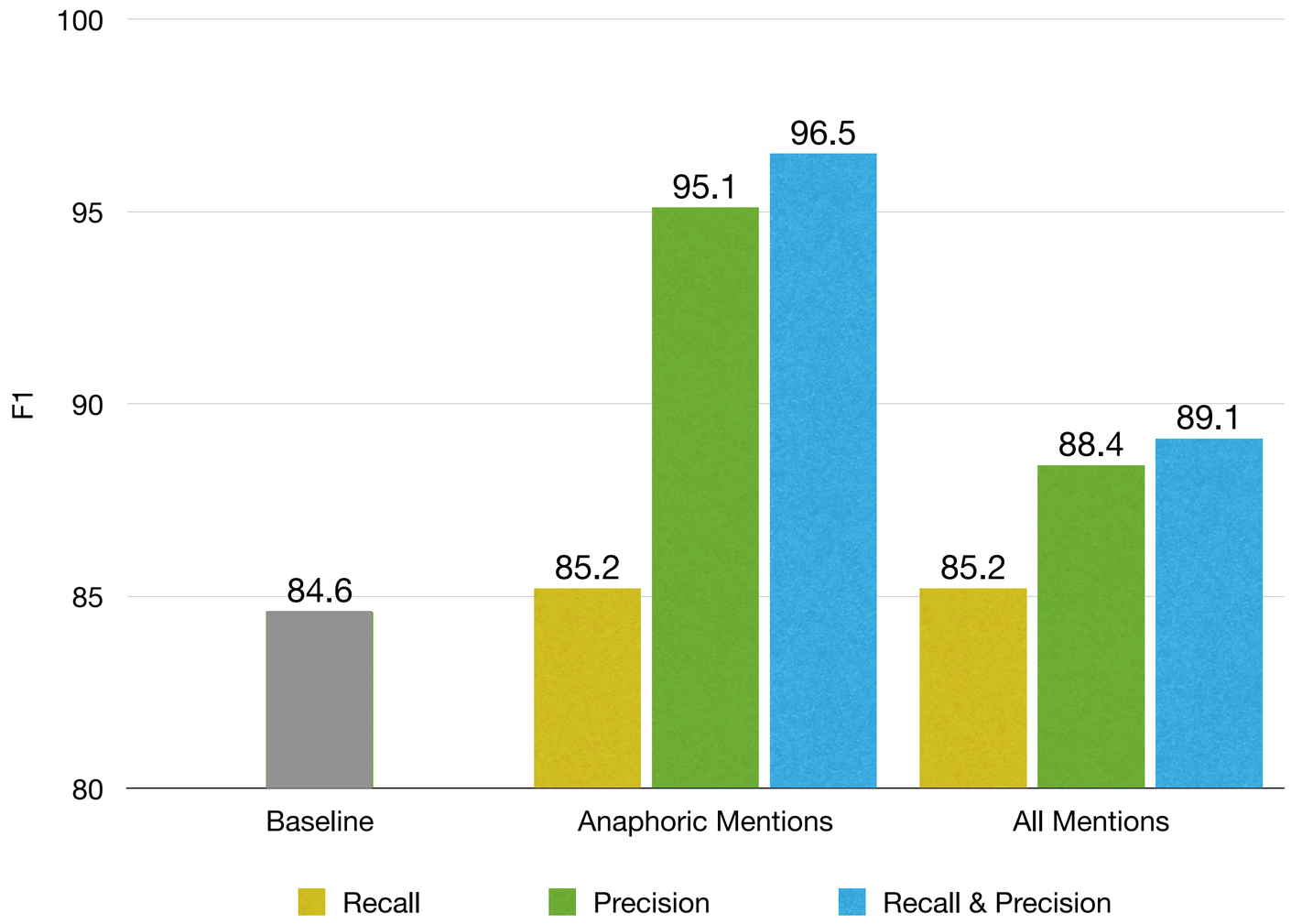


Precision-Recall Trade-Off



Previously …


100
95
90
85
80
F1
84.6
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Baseline
Anaphoric Mentions
All Mentions
Recall
Precision
Recall & Precision

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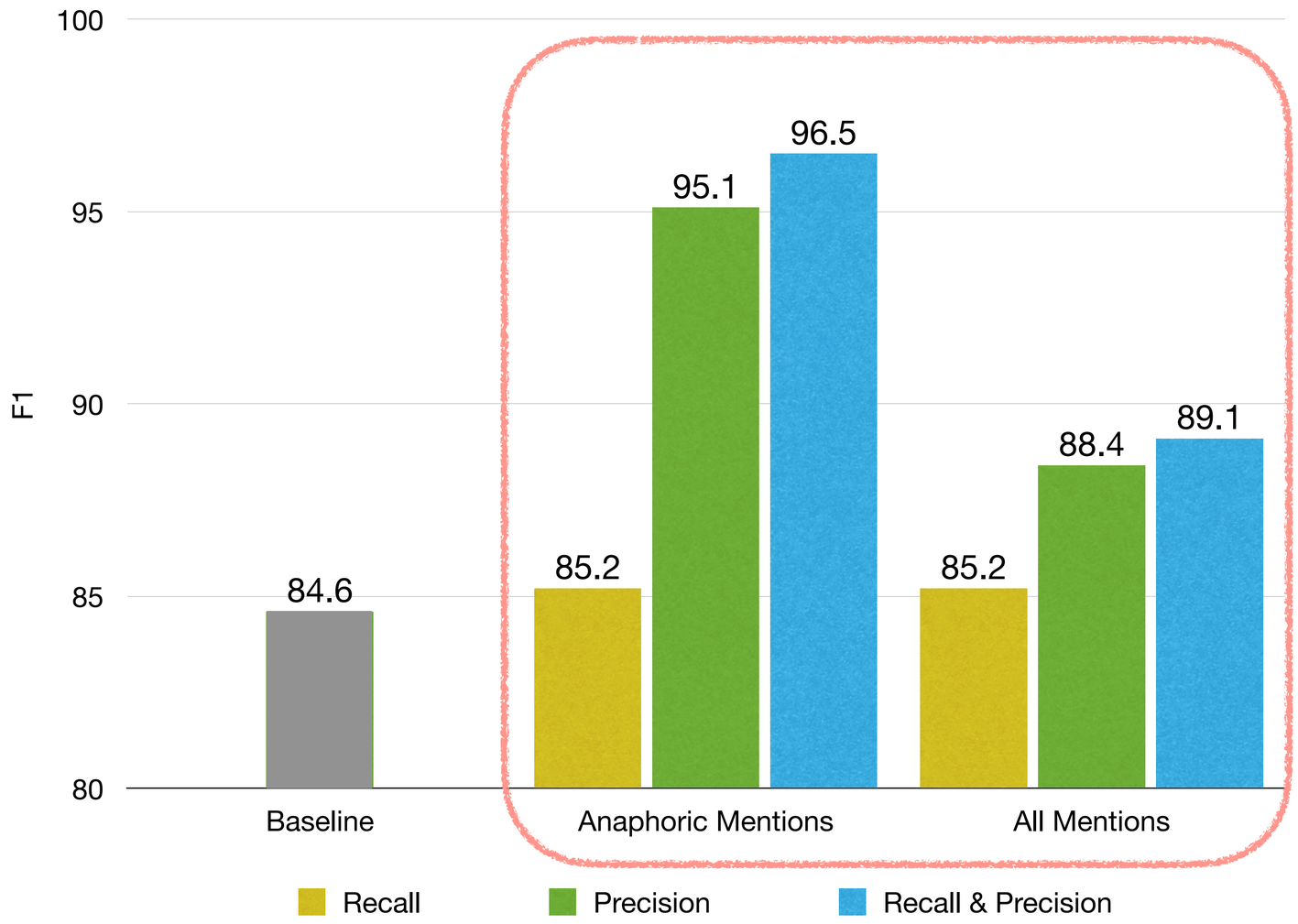
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How Well Can the Detector Make Anaphoricity Decisions?

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  - has 0.81 CI
    - Degrades to 0.997 CI with text appearing as both mention types

What About the Linker?

Linker Errors

	Sentence A	Sentence B
Pronoun (109)	Tom lives in **Seattle**.	**It** was successfully launched.
Exact Match (6)	**Disney** is a global brand.	The subway to **Disney** has been constructed.
Head Match (11)	**Those landmark buildings** are tall.	He has not seen **these small buildings**.
Other Match (7)	**Dr. Henry** notices something else.	**Dr. Mann** is a successful researcher.
Semantic Proximity (12)	**Hong Kong cinema** has nurtured many directors.	It memorializes **Hong Kong's film history**.
Others (5)	**Paul Kelly** and **Steve Sodbury** have no idea.	

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arxiv.org/abs/2009.09363

Experimental Config