

# Story Highlight Generation

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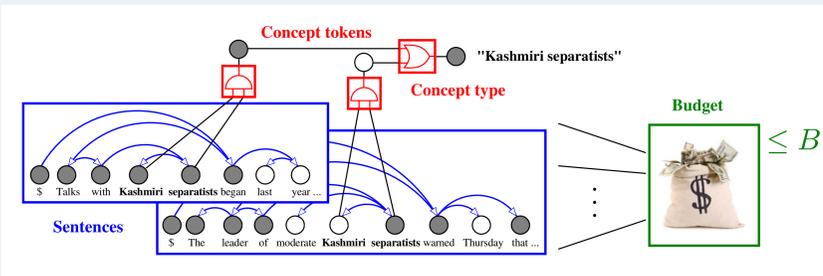
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## Goals

- To synthesise a coherent summary of all events that occur in the story.
- To enable a person monitoring the media to see a global picture and evolution of a story.

## Coverage-based Extractive Summarisation

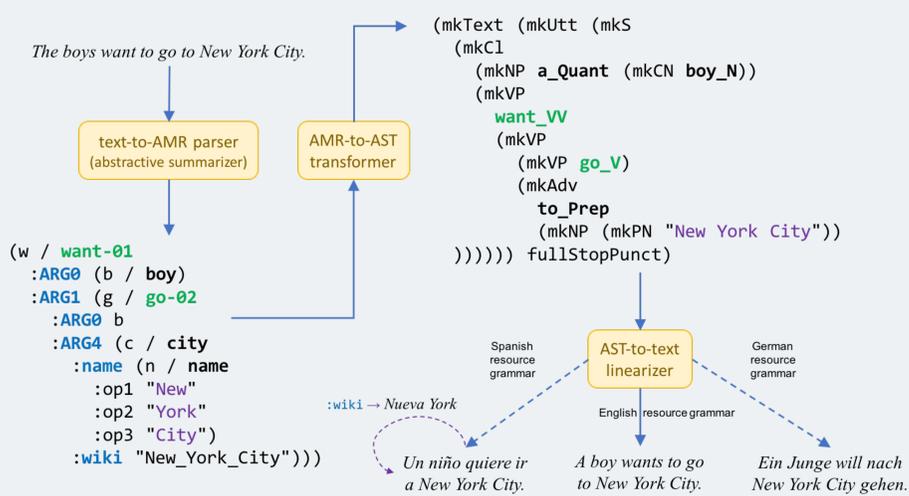


- The goal is to maximise the score of the summary given the constraints for concept coverage and maximum number of words allowed (budget).
- Uses an integer linear programming (ILP) solver.
- Concepts may be scored with standard frequency features or with semantic graph features.

Summariser	R1	R2	RL
Cov-based Extractive	36.43	9.9	32.4
Cov-based Extractive + Feat.	37.0	10.6	33.0
Cov-based Extractive + Sem.Feat	<b>37.1</b>	<b>10.7</b>	<b>33.1</b>

ROUGE score (recall) for multi-document summarisation with 100 words in TAC 2008 corpus.

## Summarisation using AMR-to-text Generation

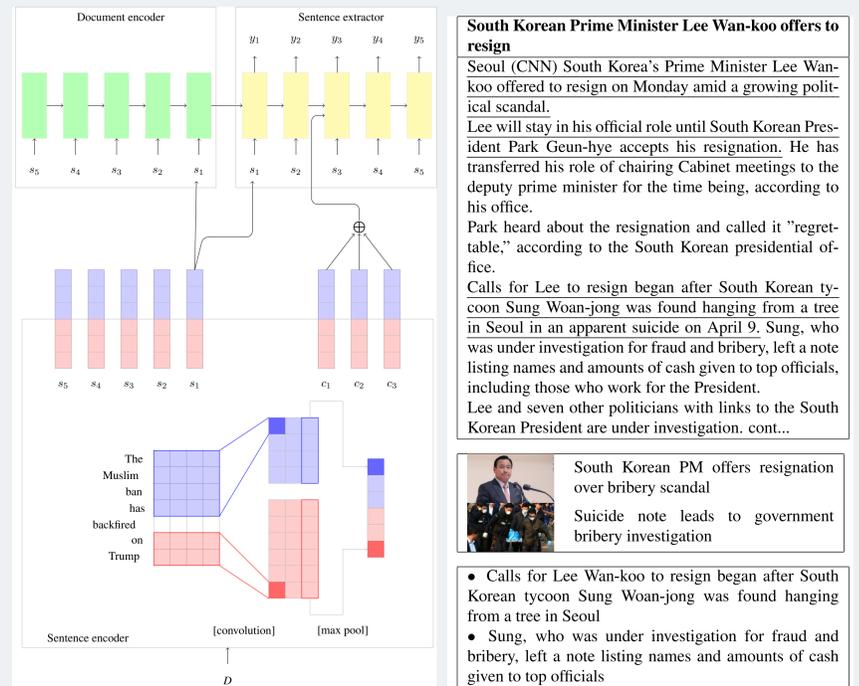


- An NLG component for an abstractive AMR-based summariser.
- Transforms AMR graphs (story highlights) into abstract syntax trees (AST), leaving the linearization of the ASTs to the existing English resource grammar and lexicon.
- Can be extended for multilingual generation of story highlights.

## What are the Challenges?

- Leverage summarisation with semantic information.
- Extend neural approaches to multi-document summarisation.

## Neural Extractive Summarisation with Side Information



- We explore the side information of the document, such as title and image captions, where gist of the document often lies.
- Model includes a neural network-based hierarchical document encoder and a hierarchical attention-based sentence extractor.
- We report state-of-the-art results without using any human-engineered features.

MODELS	R1	R2	R3	R4	RL
LEAD	49.3	19.5	10.7	6.9	43.8
POINTERNET	51.7	19.7	10.6	6.6	45.7
SIDENET	<b>54.2</b>	<b>21.6</b>	<b>12.0</b>	<b>7.9</b>	<b>48.1</b>

Rouge score (recall) for the full length summaries on the CNN test set. POINTERNET is the sentence extraction system of Cheng and Lapata.

## Coverage-based Extractive + Seq2seq Abstractive

- First step extracts the most relevant sentences (extractive).
- Second step performs a sequence-to-sequence neural network to convert each sentence into a highlight (abstractive).

Model	R1	R2	RL	Avg. size
Extractive	30.90	10.46	26.82	50
Nallapati et al. (2016)	35.46	13.30	32.65	-
Our Method	<b>35.97</b>	<b>14.26</b>	<b>33.40</b>	44.63

Performance on CNN/Daily Mail test set using full-length Rouge-F1 metric.

## Demo

### SIDENET - AN EXTRACTIVE DOCUMENT SUMMARIZER

#### DEMO

Newstype:

URL of article:

URL: <http://edition.cnn.com/2014/06/12/health/virus-chikungunya/>

**SIDENET SUMMARY**

- A debilitating, mosquito-borne virus called chikungunya has made its way to North Carolina, health officials say.
- Chikungunya is primarily found in Africa, East Asia and the Caribbean islands, but the Centers for Disease Control and Prevention has been watching the virus, + for fear that it could take hold in the United States -- much like West Nile did more than a decade ago.
- About 25 to 28 infected travelers bring it to the United States each year, said Roger Nasci, chief of the CDC's Arboviral Disease Branch in the Division of Vector-Borne Diseases.

SideNet summariser: [http://kinloch.inf.ed.ac.uk/public/direct/sandbox/\\_site-20170628/sidenet.html](http://kinloch.inf.ed.ac.uk/public/direct/sandbox/_site-20170628/sidenet.html)