

Research at the CLIP Lab

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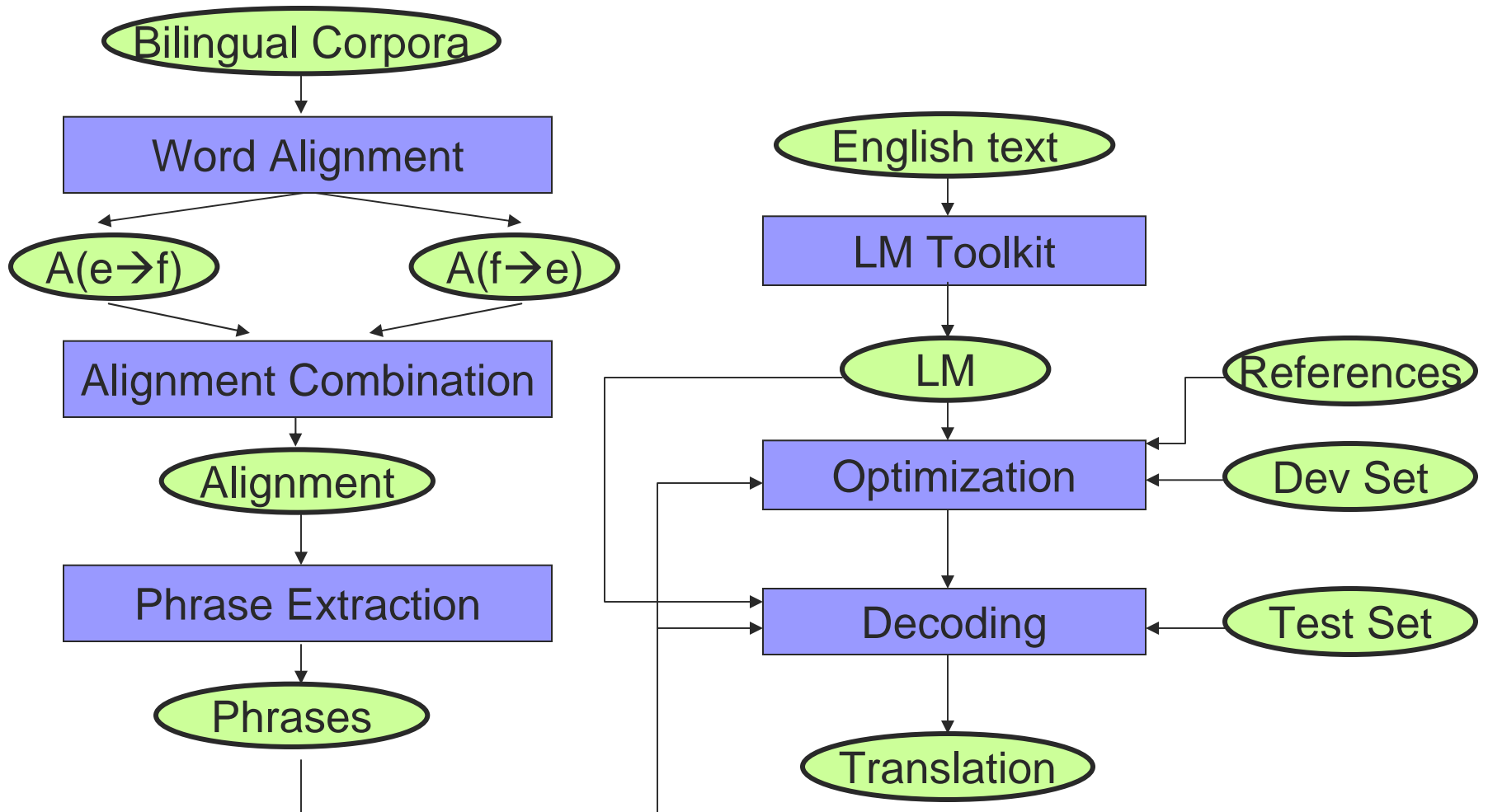
[Research Topics]

- Machine Translation
- Paraphrasing
- Summarization
- Cross-lingual Information Retrieval
- Information Distillation
- Question Answering
- and much more!!!

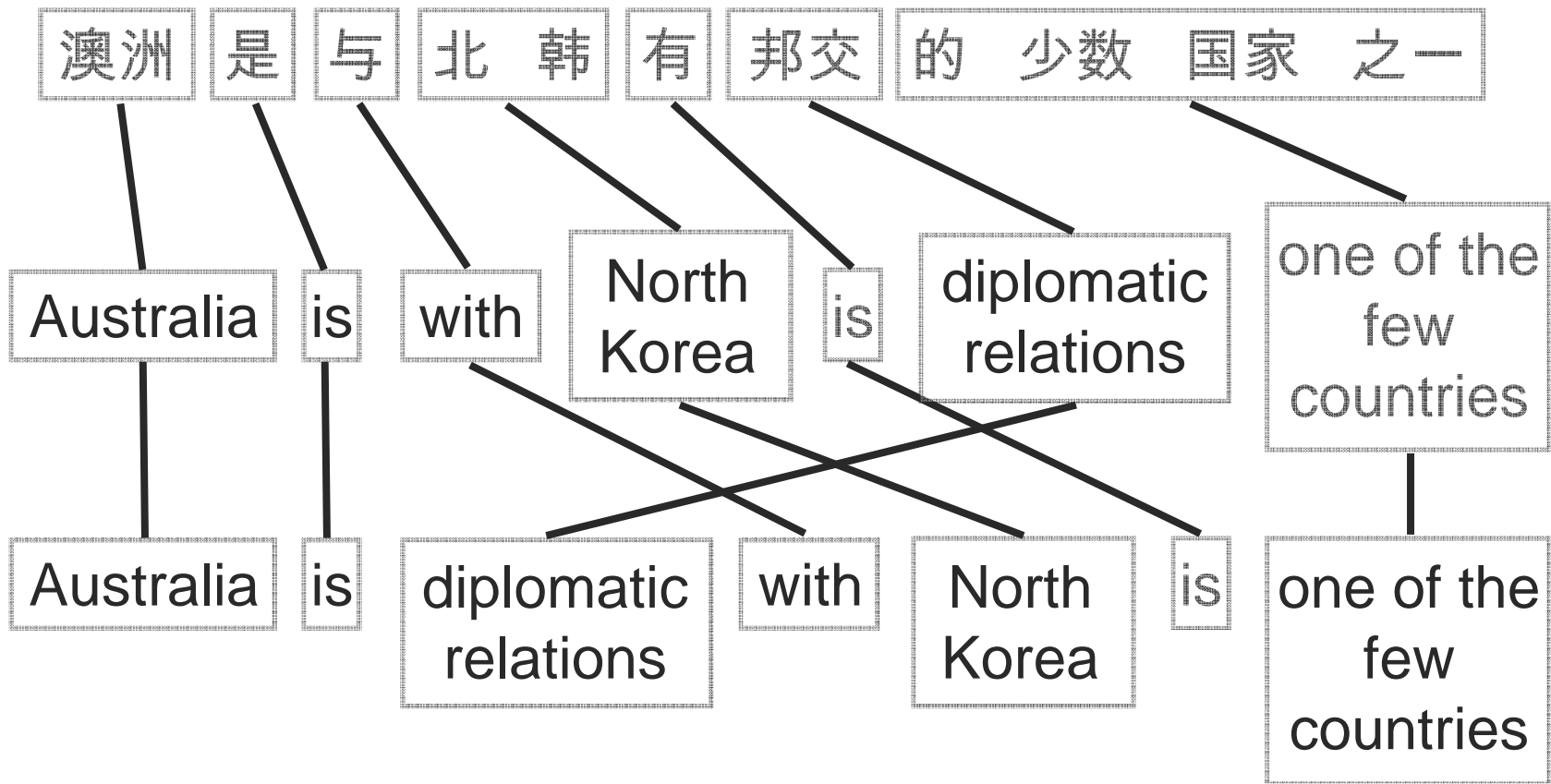
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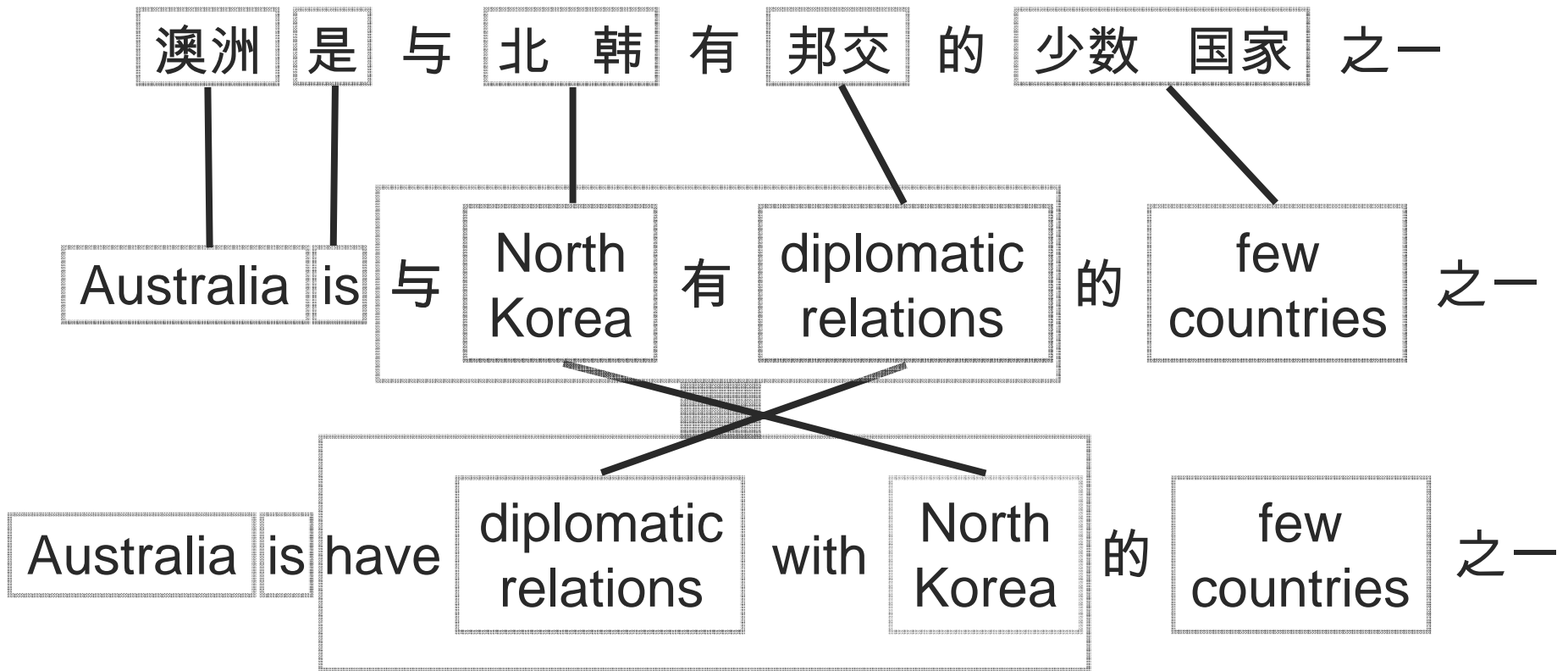
General SMT Framework



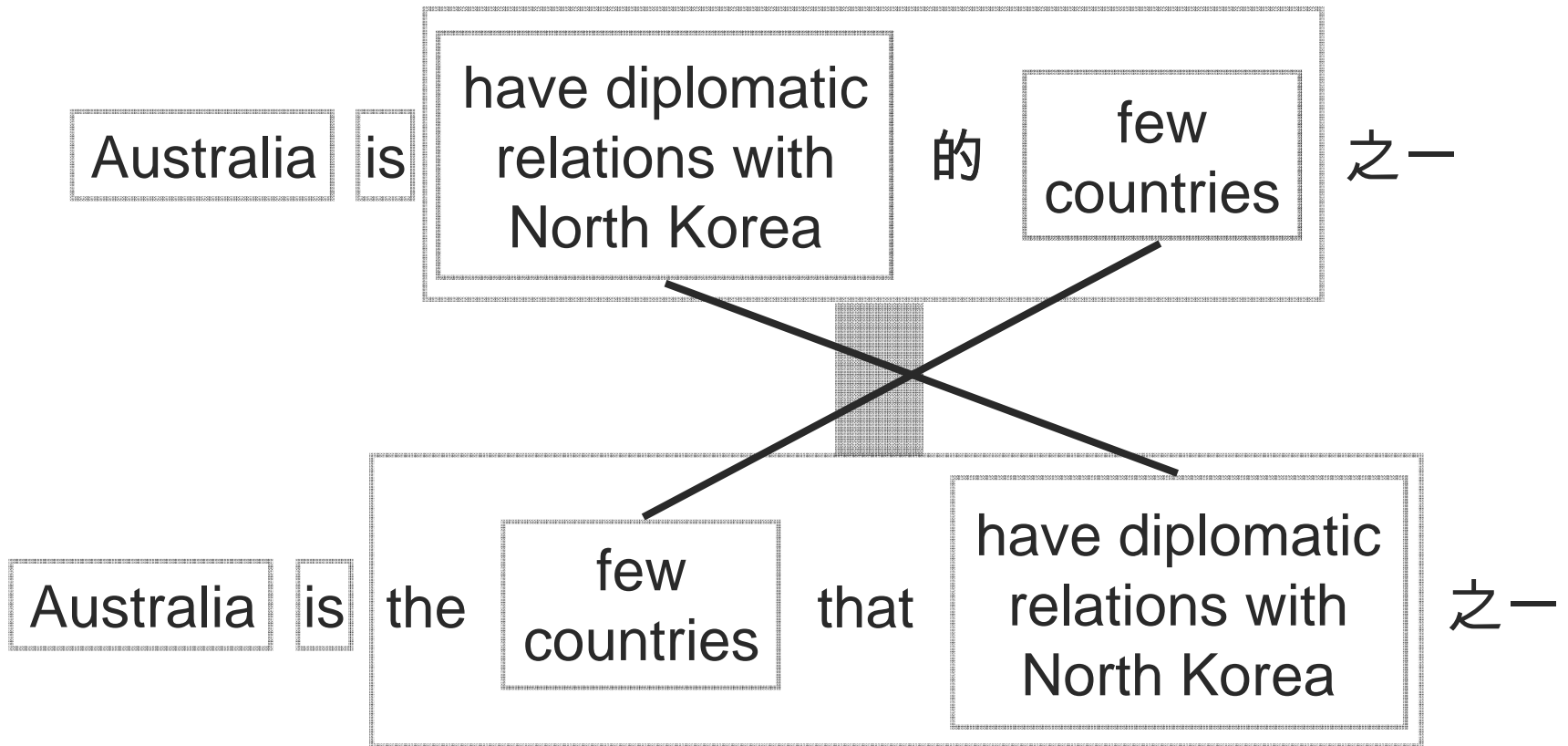
[Phrase-based MT]



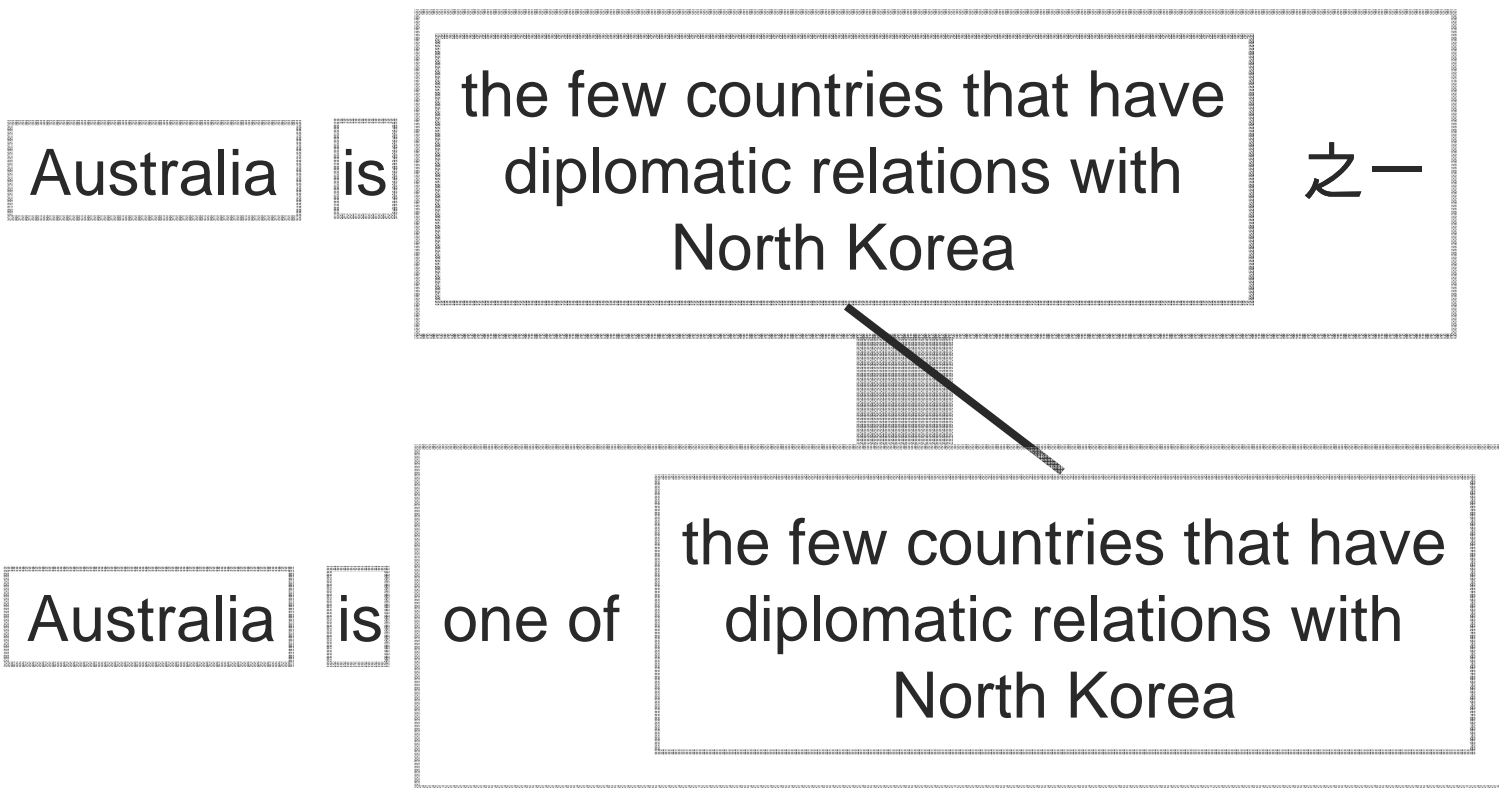
[Hierarchical Phrase-based MT]



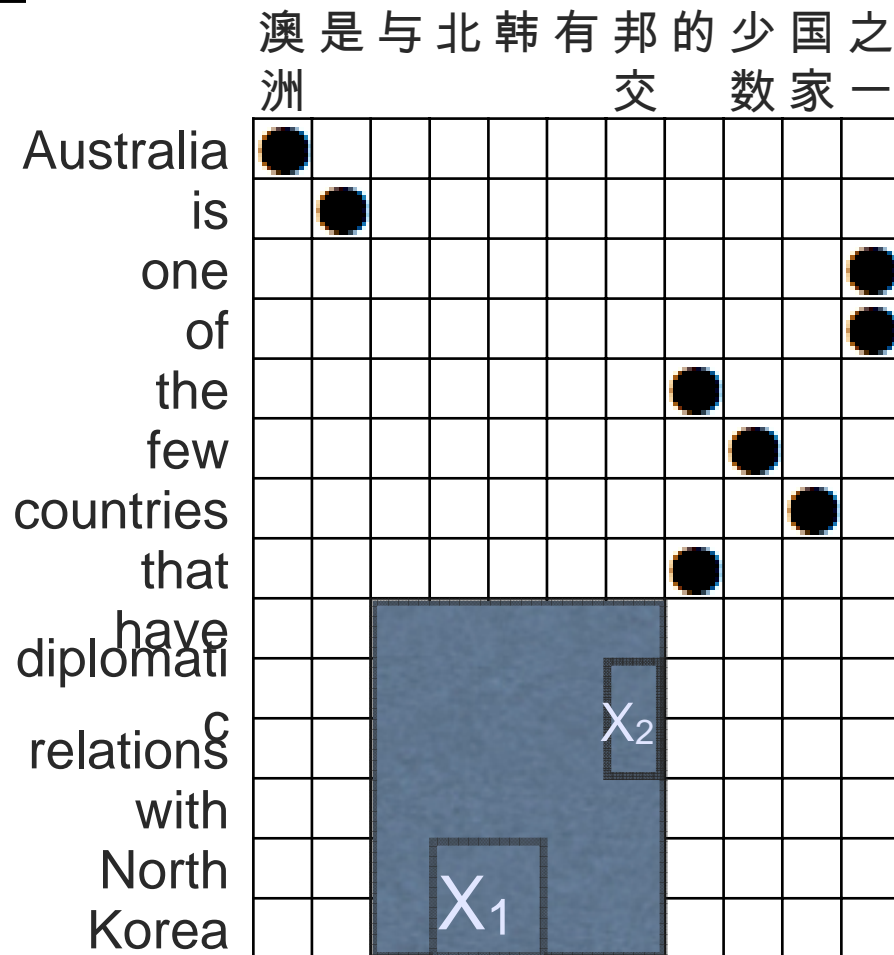
[Hierarchical Phrase-based MT]



[Hierarchical Phrase-based MT]



[How do we learn these rules?]



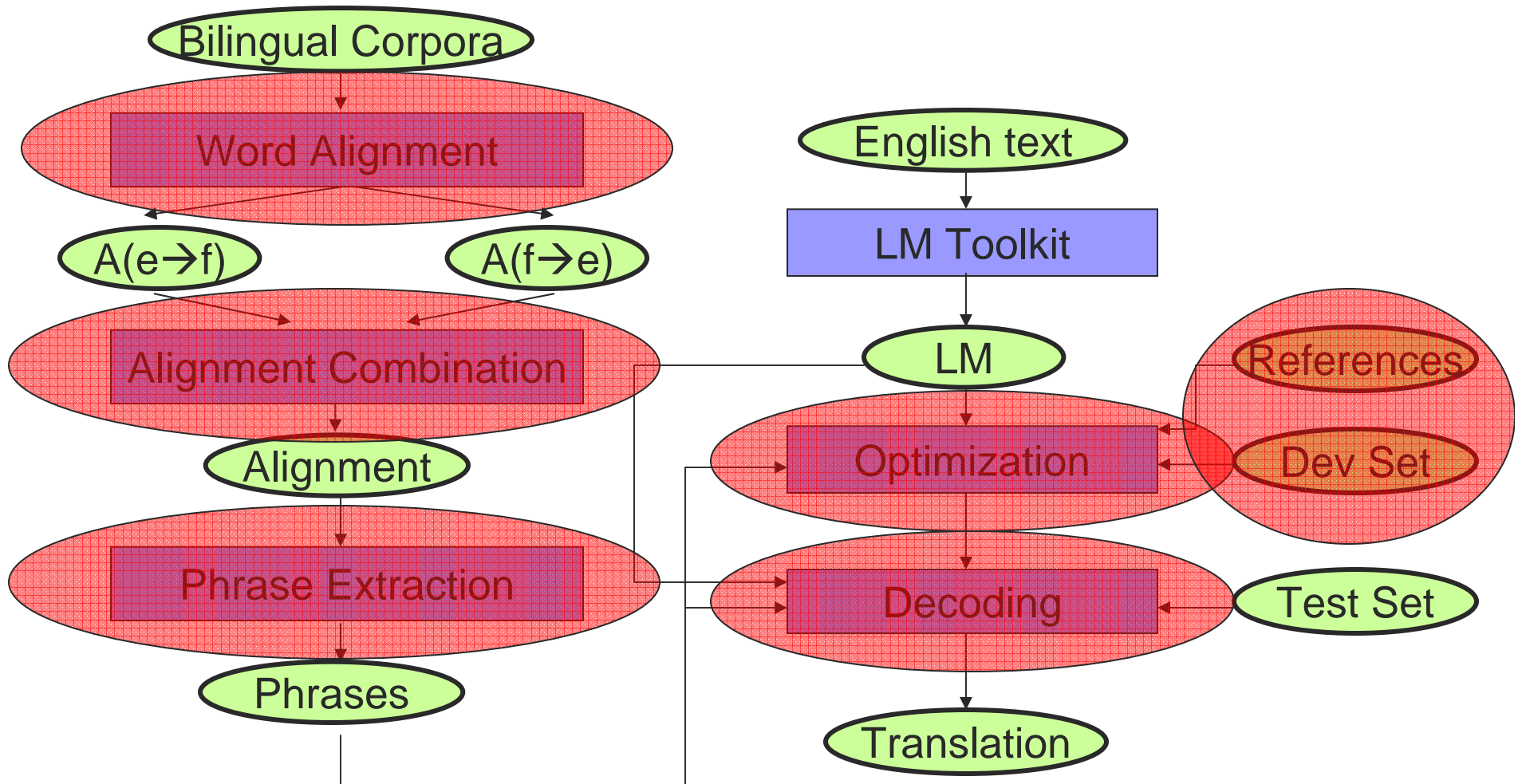
($X \rightarrow$ 与北韩有邦交,
 $X \rightarrow$ have diplomatic
relations with North
Korea)

($X \rightarrow$ 邦交,
 $X \rightarrow$ diplomatic relations)

($X \rightarrow$ 北韩,
 $X \rightarrow$ North Korea)

($X \rightarrow$ 与 X_1 有 X_2 ,
 $X \rightarrow$ have X_2 with X_1)

Current Research Directions in MT at the CLIP Lab



[Example Translation]

澳洲外长指北韩行为恶劣将无法取得更多援助

(法新社雪梨二日电)澳洲已呼吁国际间共同努力让北韩相信,藐视禁止核子扩散协定或其他「恶劣行为」,将无法取得更多援助或其他让步。

澳洲外长唐纳今天表示,平壤决定重新启动一处引人争议的核子设施,并驱逐联合国监测人员,显然旨在迫使国际间在援助和贸易上让步。澳洲是与北韩有邦交的少数国家之一。

唐纳说:「我们认为,北韩所想要做的是,以违背一九九四年协定的已协议架构,从全球其他国家,包括美国,取得让步、援助和贸易等。」

Australian Foreign Minister Said That North Korea Bad Behavior Would be Unable to Get More Aid

(Agence France-Presse, Sydney, Australia has called for concerted international efforts to believe that North Korea, defied the ban on nuclear proliferation or other "bad", will be unable to obtain more aid and other concessions.

Australian Foreign Minister Alexander Downer said today that Pyongyang has decided to re-start a debate nuclear facilities and expel the United Nations Monitoring, in the apparently aimed at forcing international aid and trade concessions. Australia is one of the few countries that have diplomatic relations with North Korea.

Downer said: "We believe that North Korea wants to do is to violate the 1994 agreed framework, concessions from other countries, including the United States, in the world, aid and trade."

Example Translation

Manual vs. Automatic

Australian Foreign Minister Says North Korea's Bad Behaviors Will not Gain More Aid

(AFP, Sydney, January 2) Australia has called on the international community to work together to convince North Korea that holding Nuclear Non-Proliferation Treaty in contempt or other "bad behaviors" will not gain it more aid or other concessions.

Australian Foreign Minister Downer noted today that Pyongyang's decisions to reactivate a controversial nuclear facility and to expel UN monitors are obviously aimed at forcing the international community into making aid and trade concessions. Australia is one of the few countries that have diplomatic relations with North Korea.

Australian Foreign Minister Said That North Korea Bad Behavior Would be Unable to Get More Aid

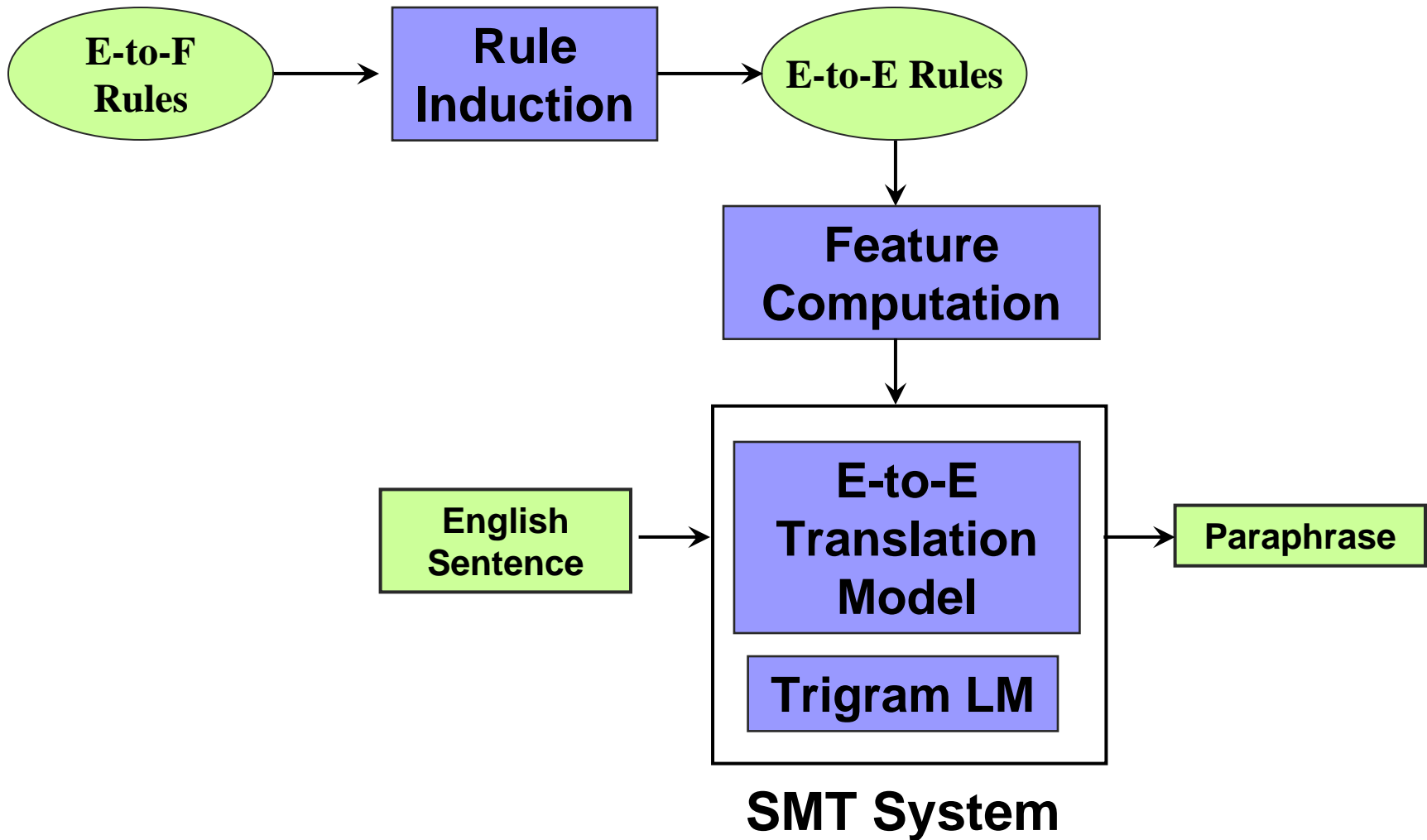
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[Paraphrasing]

- Feature weights in SMT are tuned using optimization based on n-gram overlap (e.g., Minimum Error Rate Training)
- Optimization is most useful with multiple distinct reference translations
- But creating additional (human) references is labor intensive and expensive
- **Solution:** Use artificial means to create new and distinct references

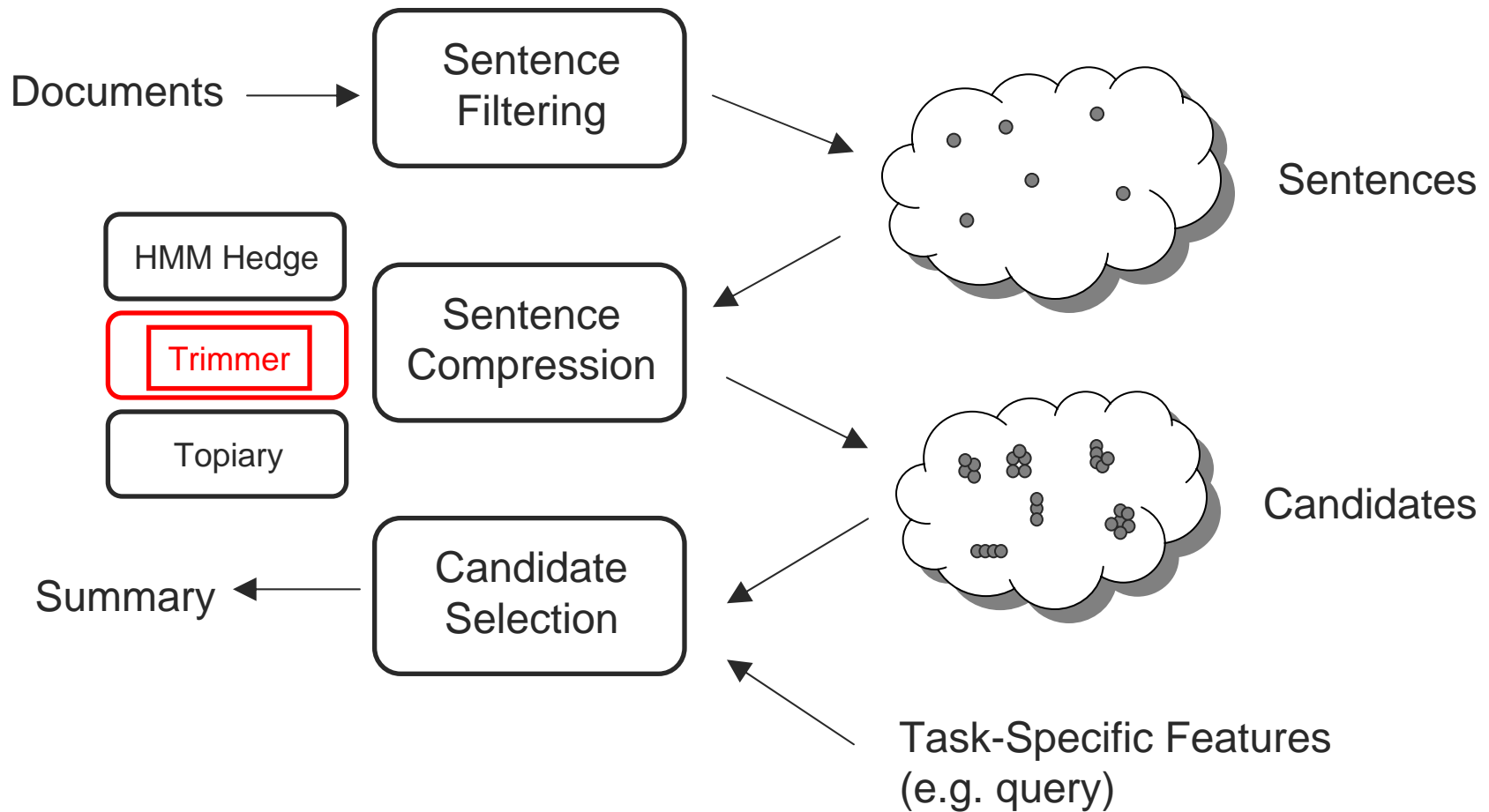
Paraphrasing Overview



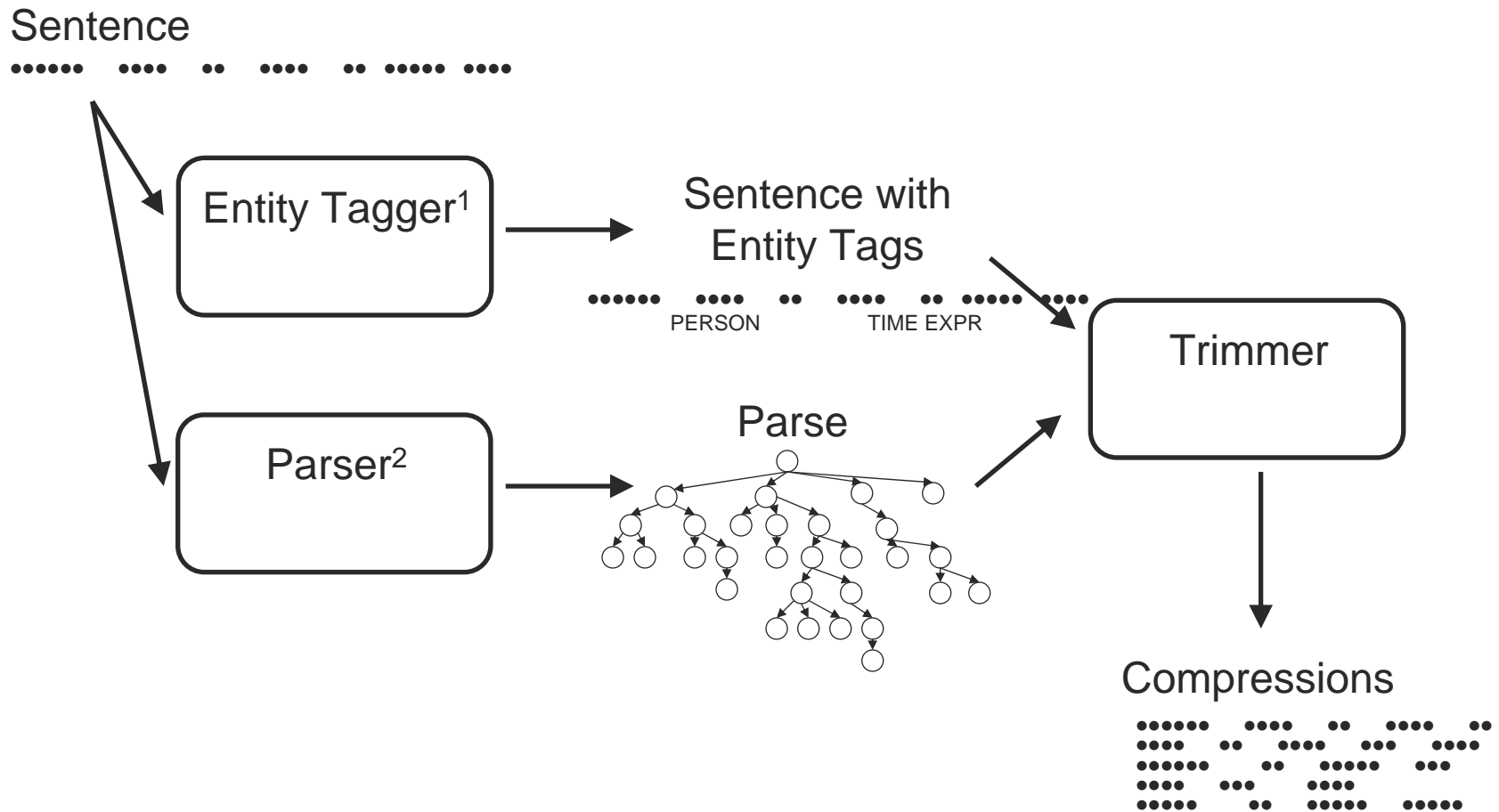
[Paraphrasing Examples]

- **we must bear in mind the community as a whole .**
 - *we must remember the wider community .*
- **tibet has entered an excellent phase of political stability, ethnic unity and people living in peace .**
 - *tibetans have come to cordial political stability, national unity and lived in harmony .*
- **alcatel added that the company's whole year earnings would be announced on february 4 .**
 - *alcatel said that the company's total annual revenues would be released on february 4 .*

Summarization Architecture



Trimmer Architecture

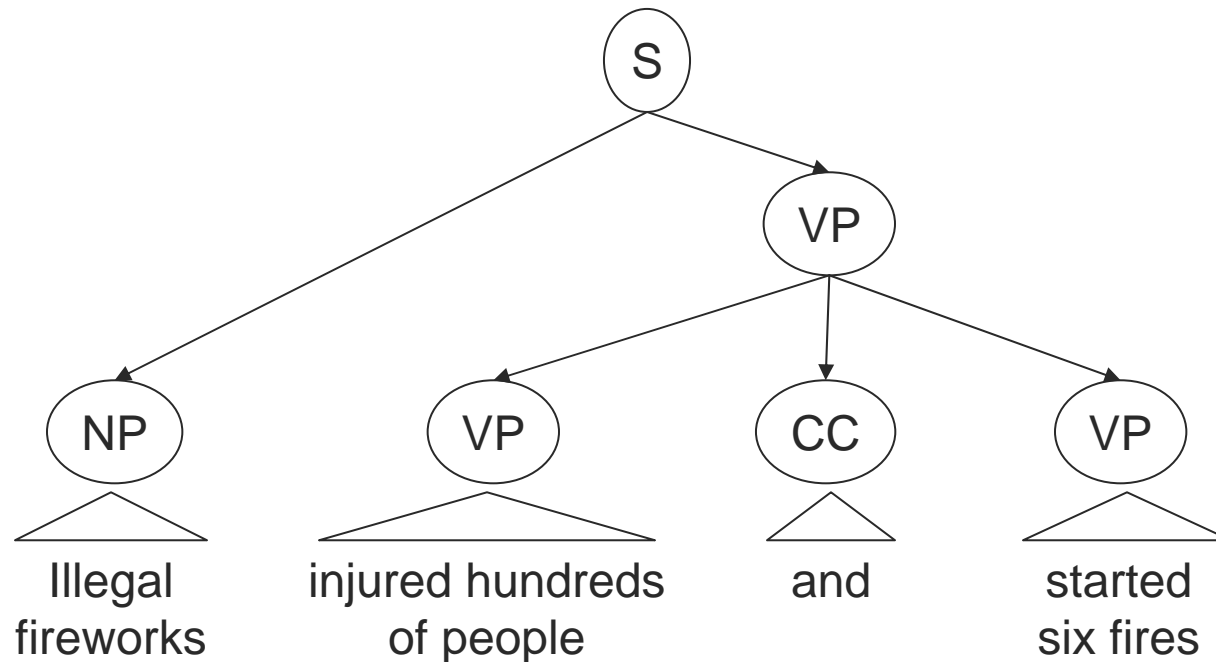


¹BBN Identifinder (Bikel et al., 1999)

²Charniak Parser (Charniak, 2000)

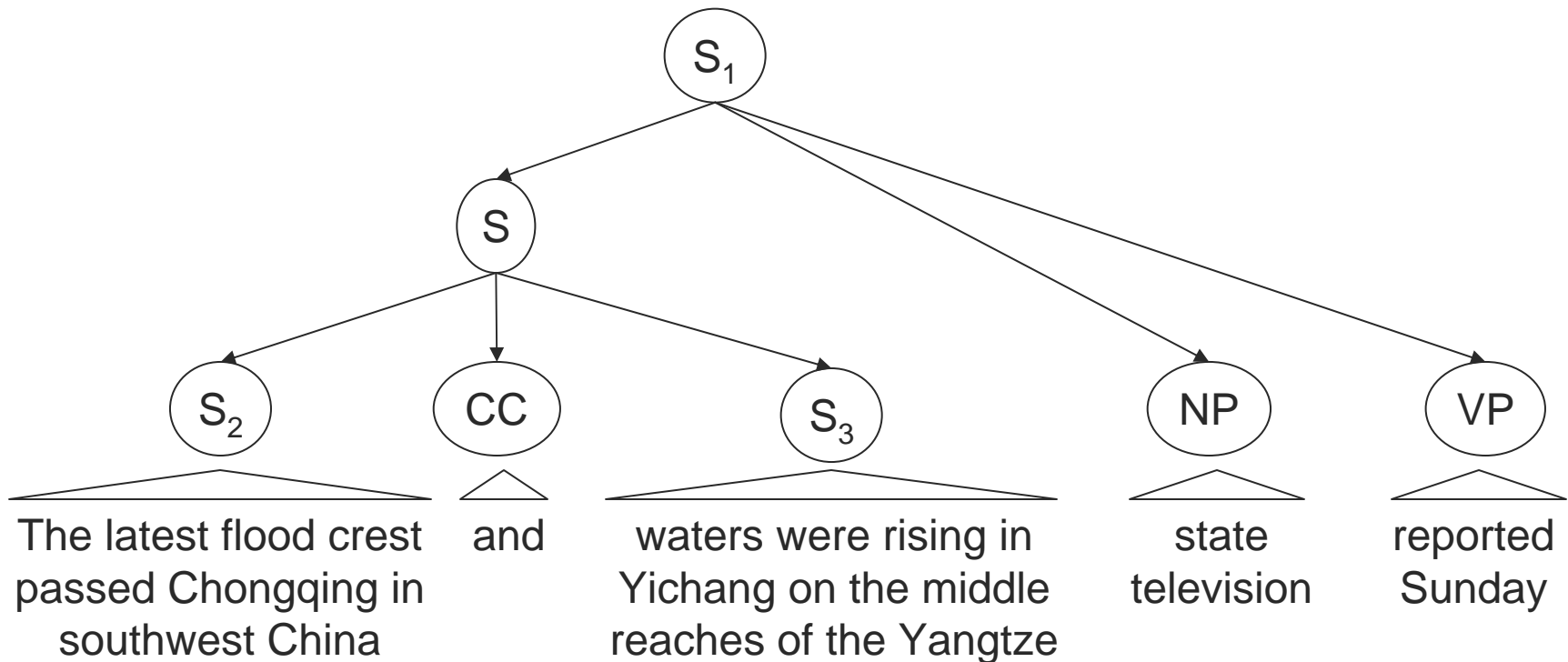
Trimmer Rule: Conjunction

- Conjunction rule removes right, left or neither child.



Trimmer Rule: Root-S

- Select node to be root of compression
- Consider any S node with NP, VP children



[Trimmer Example]

Source: A North Korean man arrived in Seoul Wednesday and sought asylum after escaping his hunger-stricken homeland, government officials said.

Trimmer: North Korean man sought asylum after escaping hunger-stricken homeland