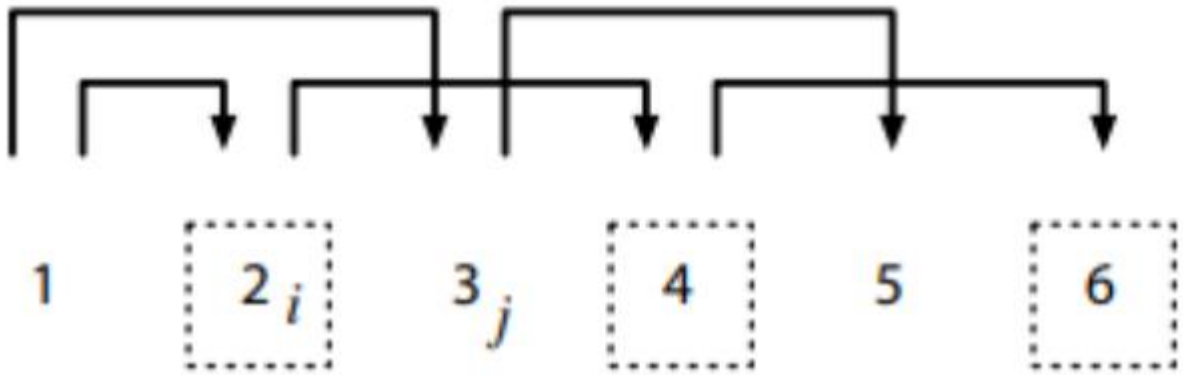
# Gap Degree

- `gd(tree) = max(gd(token) for token in tree)`
- How to compute `gd(token)` by hand?

# Gap degree




0 1 0 1 0 1

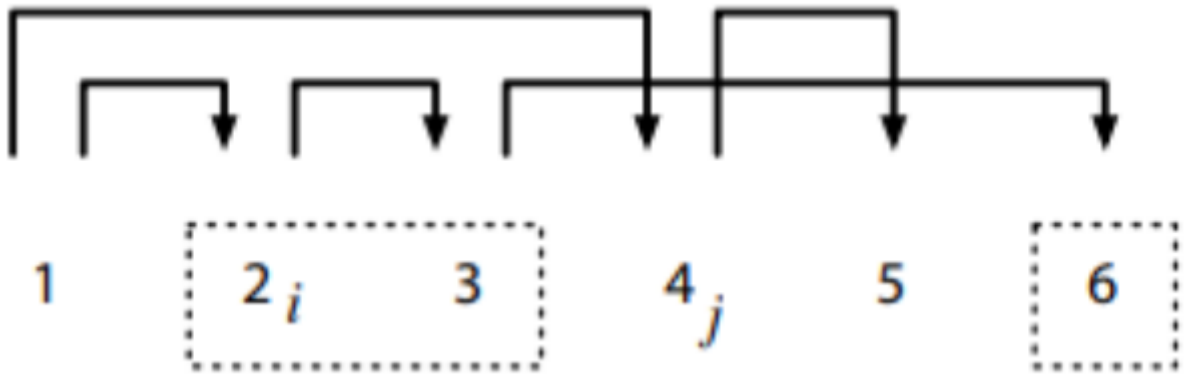
Gap! Gap!

For `gd(t2)`:

1. Put every `t2`'s dependent (`t4, t6`) in boxes
2. Create a mask (1 for the boxed tokens, 0 for the unboxed tokens)
3. Count the gaps!

Answer: `gd(t2) = 2`

# Gap degree




- The size of the gap doesn't matter.
- More than one consecutive zeros: 1 gap.

0 1 1 0 0 1

One gap!

Answer: `gd(t2) = 1`

# Course Content Survey

- Don’t forget to submit before reading week: https://forms.gle/AeT3QFGnT8CLdZF77
- Basically free 1% bonus mark.

# Most common topics and feedbacks

- Transformers:
  - Word embedding not thoroughly covered in class
  - How NLP application is built from beginning to end (like train.py)
  - Still, not clear enough after the second lecture
- LLM:
  - Just LLM in general
  - ChatGPT o1
    - Chain-of-thought
  - Why LLMs work?
  - Why LLMs don’t work?
    - Hallucination
- LLM + Linguistics:
  - Multilingual

# Now to Reading Week

- Lexical Semantics
- → WSD
  - Define the task
  - Classics: Lesk & Yarowsky
- → Vector Semantics
  - word embedding
  - language modelling
- → BERT & LLM
- → Interpretability
  - Why LLMs work
  - Why LLMs don't work

A2:
From WSD to Interpretability

After reading week:
(order may change)

- Fancy parsing
  - Parsing with features
  - Statistical parsing
  - Unsupervised parsing
- Question answering
- Information Extraction
- Ambiguity & anaphora

# Other suggestions and topics

- Things we will not cover:
  As we mentioned in the first lecture:
  - Speech (CSC401/2511)
  - Ethics (CSC401/2511)

  } Self-study resources
- Multi-modal LM, CLIP,…
  - General idea → in BERT & LLM lecture
  - Details
    - Background knowledge from computer vision and computer graphics
    - Self-study resources

General feedback

- More ways of self-study
- More concrete examples
- Clear definition of terms and concepts