



# Österreichisches Forschungsinstitut für Artificial Intelligence (OFAI)

Brigitte Krenn  
Freyung 6, 1010 Wien  
brigitte.krenn@ofai.at

**OFAI Headquarters**  
Vienna, Austria

# Why is natural language difficult for machines?

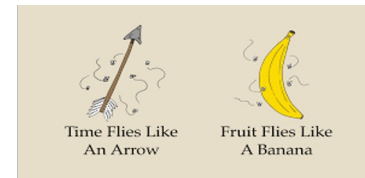
- Ambiguities all over the place!

e.g.,

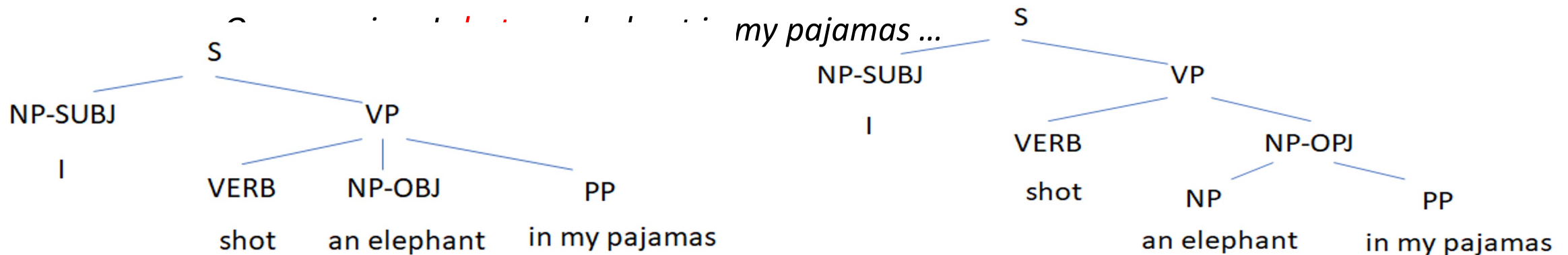
- @Word level (morphology)
  - *Time* (NOUN) *flies* (VERB) *like* (ADP) *an* (DET) *arrow* (NOUN).
  - *Fruit* (NOUN) *flies* (NOUN) *like* (VERB) *a* (DET) *banana* (NOUN).



<https://www.biography.com/actors/groucho-marx>



- @Phrase level (syntax) and @word meaning

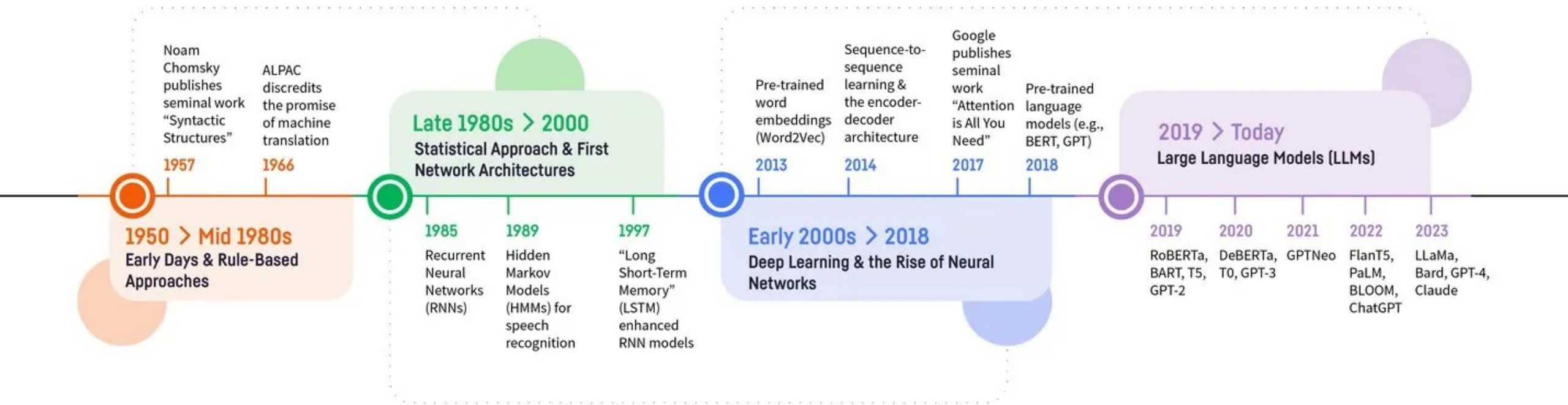


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# Why is natural language difficult for machines?

- Discrepancies between competence grammar and language use
  - Text: spelling errors, typos, sloppyness in punctuation, mixing of languages (e.g. a mix of German and English), characteristics of spoken language in written text, ...
  - Speech: omissions, hesitations, fresh starts, (dialectal) varieties, ...
- **MEANING!!!**
  - Lexical and morpho-syntactic ambiguities
  - Pragmatics
  - Literal versus metaphoric readings
  - Language grounding

# The History of NLP



<https://medium.com/@jeevanchiru17/the-evolution-of-natural-language-processing-ad214cb9f6ca>

# Interaction / Communication

