

# Analyzing "Arrival" Through the Lens of NLP

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# Arrival (2016)

Arrival is a 2016 American science fiction drama film. Its main plot is that when giant alien spacecraft unexpectedly land on Earth, linguist Louise Banks is recruited to decipher their complex language to understand their purpose and avert potential global conflict.

## Themes in Arrival Related to NLP

- *Language as a Tool for Understanding:* In the movie, Louise Banks, is learning a new language, and while doing this, her perception of reality is reshaping, as well as time.
- *The Complexity of Translation:* Louise struggles to translate Heptapod language because it's circular, non-verbal, and full of context-dependent meaning, similar to how NLP systems struggle with idioms, ambiguity, and intent.
- *Communication vs. Interpretation:* The movie highlights how communication isn't just decoding symbols; it's also about understanding the intention, emotion, and cultural context behind them.
- *Language Shapes Thought:* While Louise learns the alien language, her mind begins to process time non-linearly, reflecting the idea that language affects cognition.





# NLP Challenges in *Arrival*

Movie Example	NLP Challenge	Real-Life Example
<ul style="list-style-type: none"><li>❖ <i>Heptapod Writing</i>: Louise studies their weird circular symbols that don't have a clear beginning or end.</li><li>❖ <i>Bad Translations</i>: When they try to turn alien words into English, they get stuff like “weapon” when it might really mean “tool” or “gift.”</li><li>❖ <i>What is your purpose on Earth?</i> The aliens give a confusing reply that could mean help or a threat.</li></ul>	<ul style="list-style-type: none"><li>○ <i>Weird Structure</i>: One symbol can mean lots of things at once. A word can mean something completely different.</li><li>○ <i>Cultural Differences</i>: Words don't always mean the same thing in different languages.</li><li>○ <i>Figuring out the purpose</i>: Hard to tell what someone means.</li></ul>	<ul style="list-style-type: none"><li>❖ A word like “bank” can mean money place or river edge.</li><li>❖ British people say “lift,” Americans say “elevator.”</li><li>❖ Nice job...” can be serious or sarcastic.</li></ul>



# Communication Methods in the Movie

- In the movie Arrival, the aliens have a totally different way of communication. They have their own language, very visual and symbolic.
- At the same time, linguist Louise Banks communicated using human intuition and cognitive models.





# NLP Approaches in the Arrivals

Louise decodes symbols by hand.

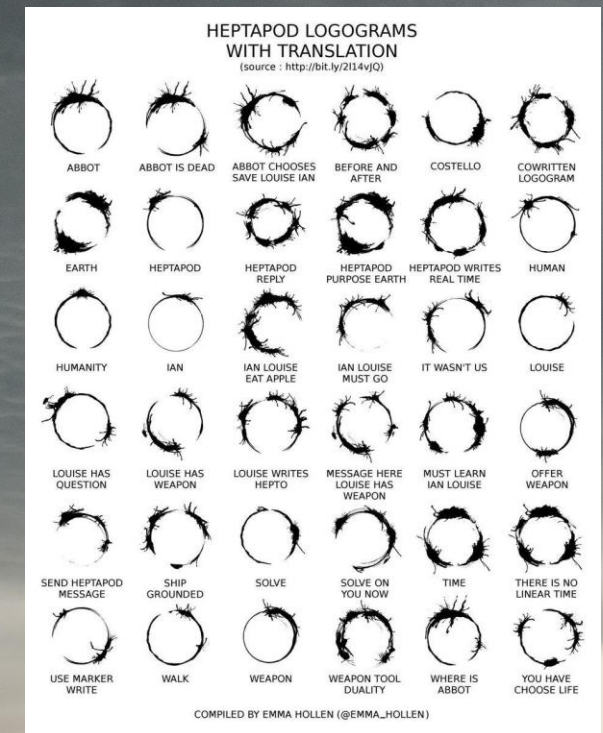
- This represents the *Rule-Based Natural Language Processing*.

They collect a bunch of symbol examples and look for patterns.

- This represents *Statistical natural language processing*.

Louise starts understanding the language.

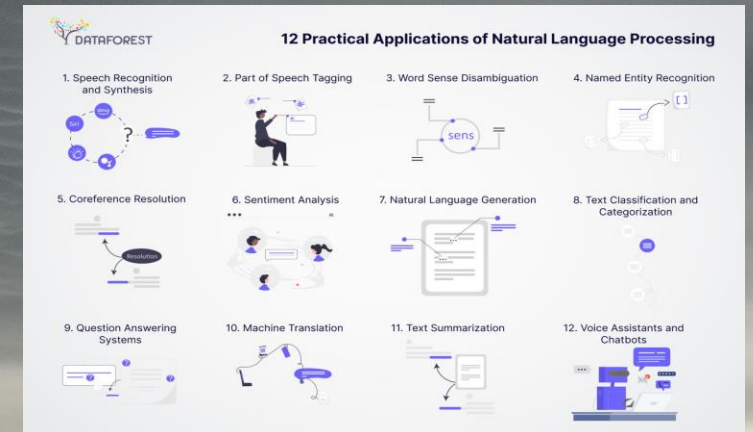
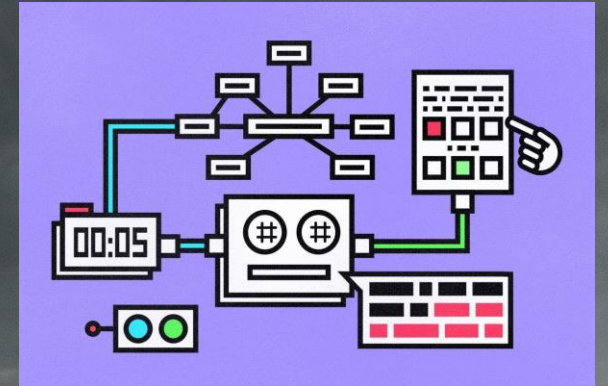
- This represents *Deep Natural Language Processing*.





# What *Arrival* Teaches Us About NLP

- Language isn't just about words—it's about meaning.
  - The Heptapods' language reflects how they think and see time. Just like in real life, how we speak is connected to how we understand the world.
- Translation is not enough.  
You can't just swap words between languages. The movie shows how context, culture, and intent matter just as much.
- Louise learns by experiencing and connecting.  
Could future NLP work like this? Instead of just reading text, what if AI could learn by living in situations, like humans do?





# Citations

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