AI: NLP: Dialogues & GCP Dialogflow CX

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AI Deep learning (Source: mindovermachines.com)

Natural Language Processing
What is It?

Natural Language Processing is a set of techniques and tools based on artificial intelligence (AI) technologies, especially deep learning, to teach computers to **understand** and **use** any forms of **daily-used** human languages in various applications.
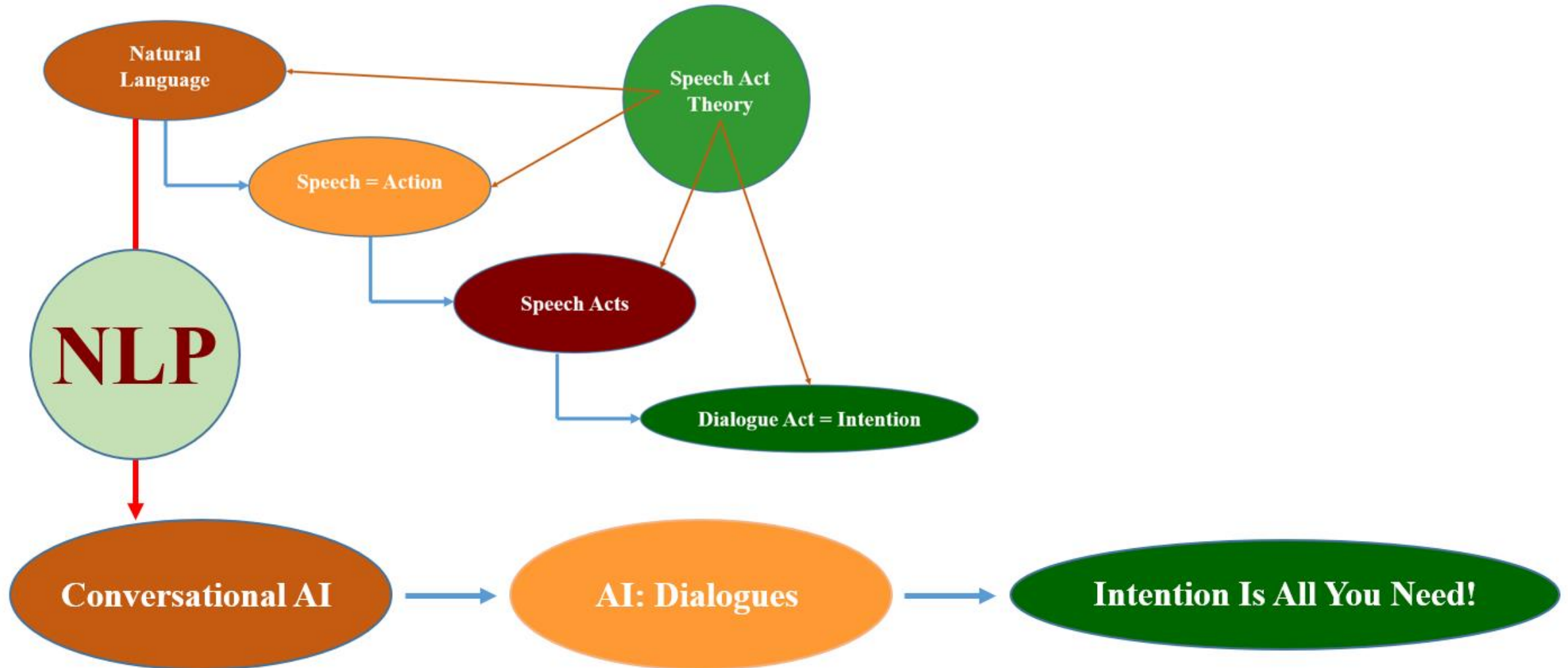
Natural Language Processing
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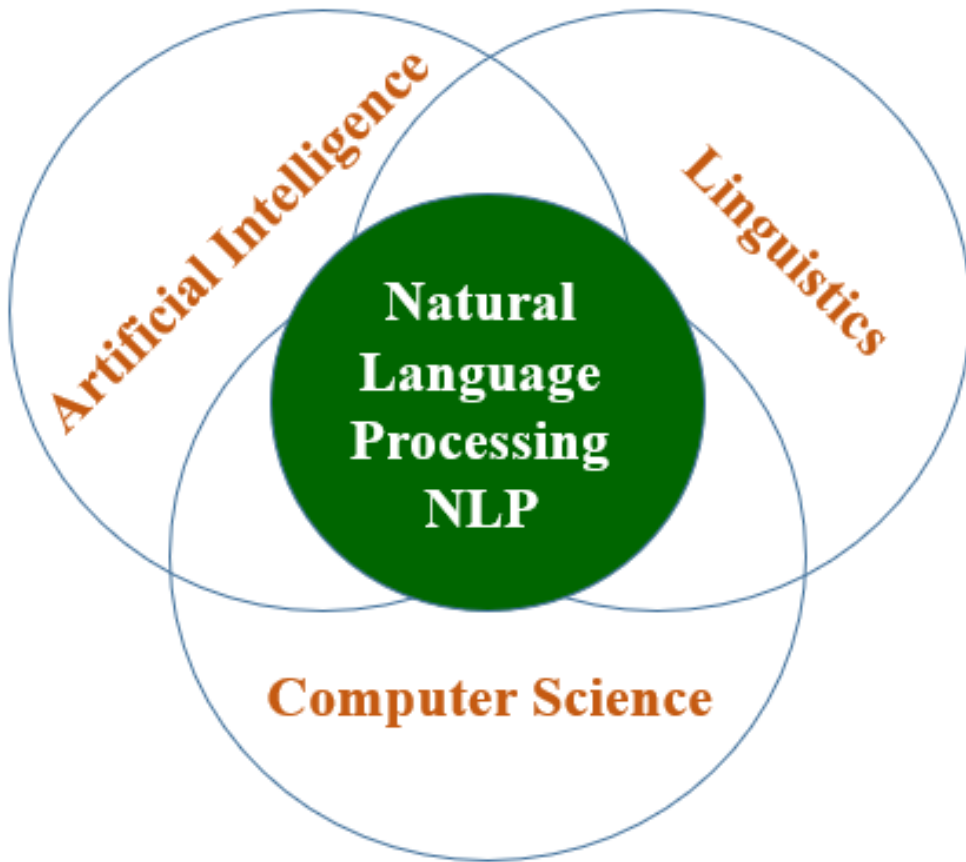
Natural Language Processing (NLP) applications such as **Natural Language Understanding** (NLU) and **Conversational AI** (Dialogues) are those among the most challenging tasks that AI needs to solve.

Conversational AI: Dialogues: Intention Is All You Need!

NLP: Natural Language: GCP Dialogflow CX

$$Dialogue = DIA + LOGOS$$

(Greek)

Through   **Words**

NLP: Natural Language: GCP Dialogflow CX

Dialogueflow = DIA + LOGOS + FLOW

(Greek)   (English)

Through   **Words**

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NLP: Natural Language: Dialogues

Dialogue:

- A conversation between two or more speakers that consists of multiple **turns**.

Terminology:

- **Turn**: An utterance made by one speaker in a conversation or dialogue

- **Turn-taking**:
  - *"... is a type of organization in conversation ... where participants speak **one at a time** in alternating turns. In practice, it involves processes for constructing contributions, responding to previous comments, and transitioning to a different speaker, using a variety of linguistic and non-linguistic cues ... While the structure is generally universal, that is, overlapping talk is generally avoided and silence between turns is minimized, turn-taking conventions vary by culture and community. Conventions vary in many ways, such as how turns are distributed, how transitions are signaled, or how long the average gap is between turns." (Credit: Wikipedia)*

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NLP: Natural Language: Dialogflow CX: Introduction

Dialogflow is a Natural Language Understanding (NLU) platform used to design and integrate a conversational user interface (CUI) into mobile apps, web applications, devices, chatbots, interactive voice response systems, and related uses. (*Source: Wikipedia*)
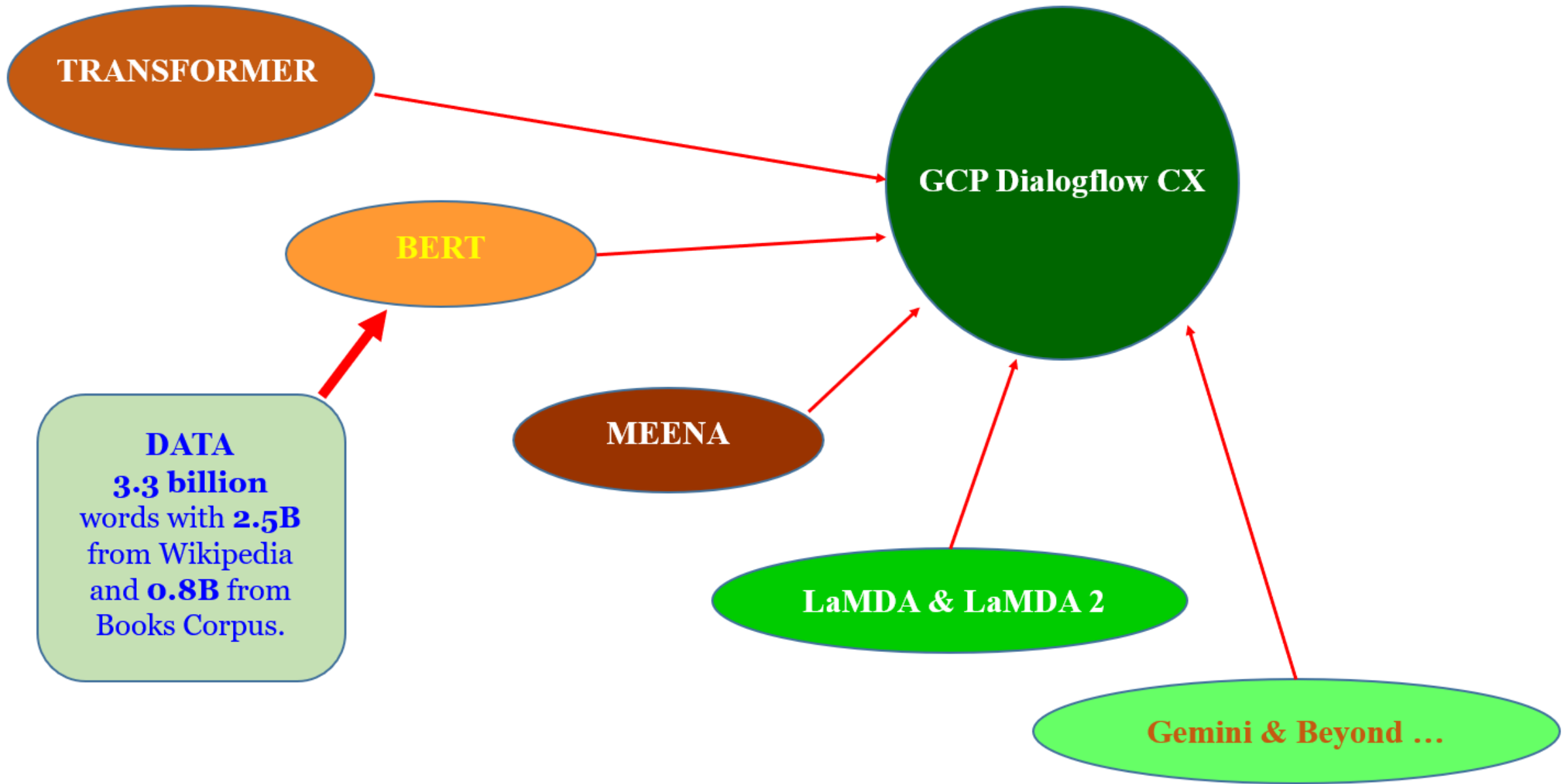
Dialogflow CX:

- CX: Customer Experience
- A new version of GCP: Dialogflow, released in 09/2020
- Focus on state-based data models
- Provide new approaches to design virtual dialogue **agents** and its conversation **flows**
    - Clear controls over complete conversational flows
    - Better user experiences
    - Better development environment of the workflow

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NLP: Natural Language: Dialogflow CX: A Bit Of History

- **2012**: Speaktoit, a Russian start-up, received funding from Intel Capital to start working on a voice assistant system.

- **2014**: Speaktoit released **api.ai** (a voice-enabling engine) used to power its voice assistant system (Assistant).

- **2016**: **Google** bought Speaktoit
  - Renamed it to **API.AI**
  - Released API.AI as a voice recognition engine to developers who built applications for Google Assistant system.

- **2017**: Google renamed API.AI as **Dialogflow**
  - Google merged Dialogflow into Google Cloud Platform (GCP)

- **2020**: Google released new version, **Dialogflow CX**, commercial version for enterprises
  - The first version was renamed as Dialogflow ES

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NLP: Natural Language: Dialogflow CX: Concepts

- **Conversation Session**: A complete dialogue from start to finish, including one or more conversation topics. A conversation can be visualized as a state machine.
- **Agent**: A virtual agent, like a customer service call agent in the real world.
- **Flow**: A concept used to define a specific conversation topic and its associated conversational paths.
- **Page**: A concept represents a state of the state machine of the conversation (or session).
- **State**: A state of the state machine of the conversation (or session).
- **State Handler (or Handler)**: A controller that controls the conversation by creating responses for end-users and/or by transitioning the current page.
- **Intent**: Intention of an end-user's conversation turn (an utterance)
- **Entity**: A concept used to control how data is extracted from an end-user's inputs