

AI: NLP: Conversational AI: The Theories

Speech Act Theory (John L. Austin) & Speech Acts (John R. Searle)

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AI Deep learning (Source: mindovermachines.com)

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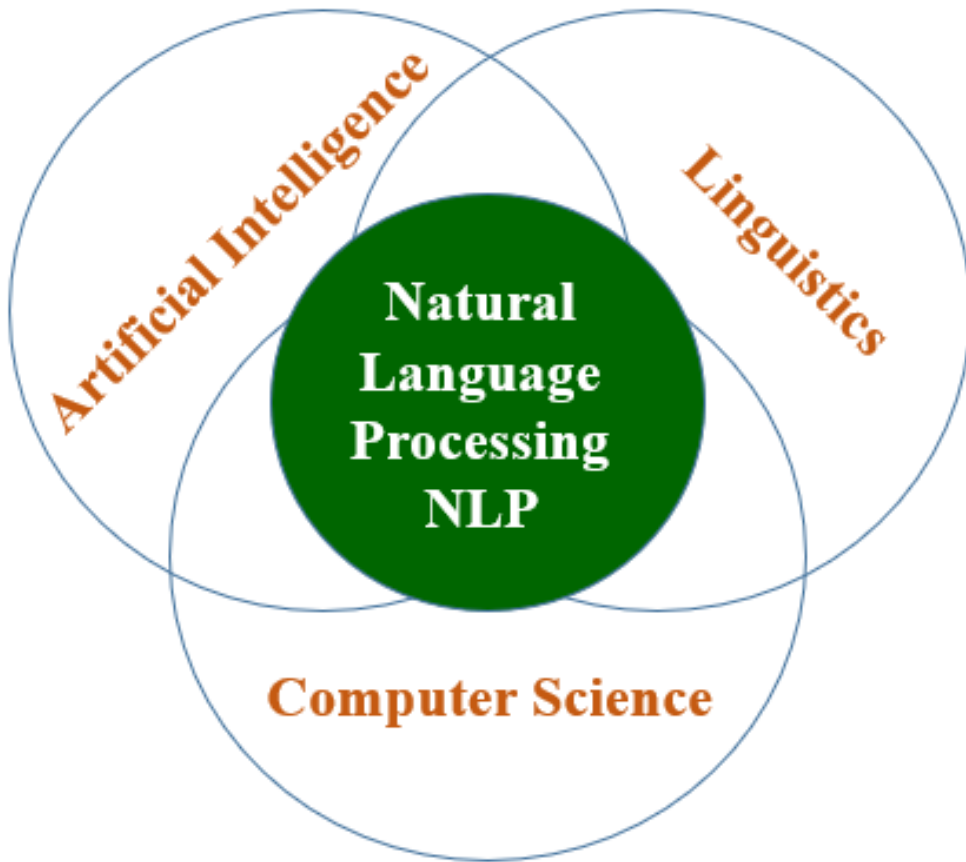
Natural Language Processing

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.

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Natural Language Processing What is It?



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.

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NLP: Natural Language: Dialogues

Dialogue = DIA + LOGOS

(Greek)

Through

Words

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NLP: Natural Language: Dialogues: Speech Act Theory

John Langshaw Austin (1911—1960)



J. L. Austin was one of the more influential British philosophers of his time, due to his rigorous thought, extraordinary personality, and innovative philosophical method. According to John Searle, he was both passionately loved and hated by his contemporaries. Like Socrates, he seemed to destroy all philosophical orthodoxy without presenting an alternative, equally comforting, orthodoxy.

Austin is best known for two major contributions to contemporary philosophy: first, his 'linguistic phenomenology', a peculiar method of philosophical analysis of the concepts and ways of expression of everyday language; and second, speech act theory, the idea that every use of language carries a performative dimension (in the well-known slogan, "to say something is to do something"). Speech act theory has had consequences and import in research fields as diverse as philosophy of language, ethics, political philosophy, philosophy of law, linguistics, artificial intelligence and feminist philosophy.

Source: Internet Encyclopedia Of Philosophy (<https://iep.utm.edu/john-austin/>)

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NLP: Natural Language: Dialogues: Speech Act Theory

Speech Act Theory (John L Austin, 1962: *How To Do Things With Words*)

- A foundational theory of so many fields of study, including Artificial Intelligence (AI). (*Source: Internet Encyclopedia of Philosophy*)

How about:

Literature, Communication, Business, ...,
even Mathematics, and Computer Science?

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NLP: Natural Language: Dialogues: Speech Act Theory

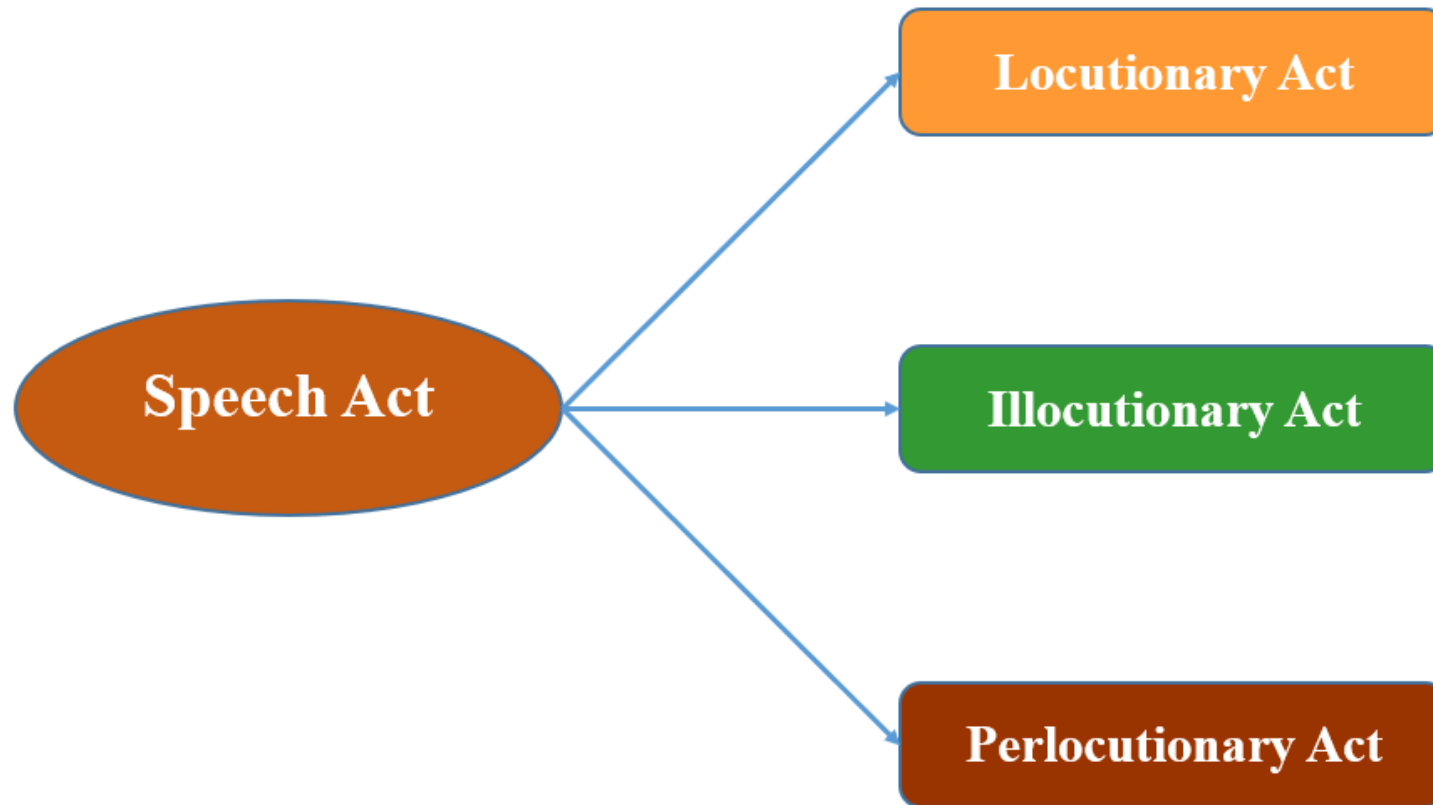
To **say** something

is

To **do** something

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NLP: Natural Language: Dialogues: Speech Acts (John L. Austin 1962)



Language (speech) is a sort of **action**, not only the tool to convey or express thoughts.

When a person **says** something, he/she **performs** a **set** of **three acts** (or actions) simultaneously.

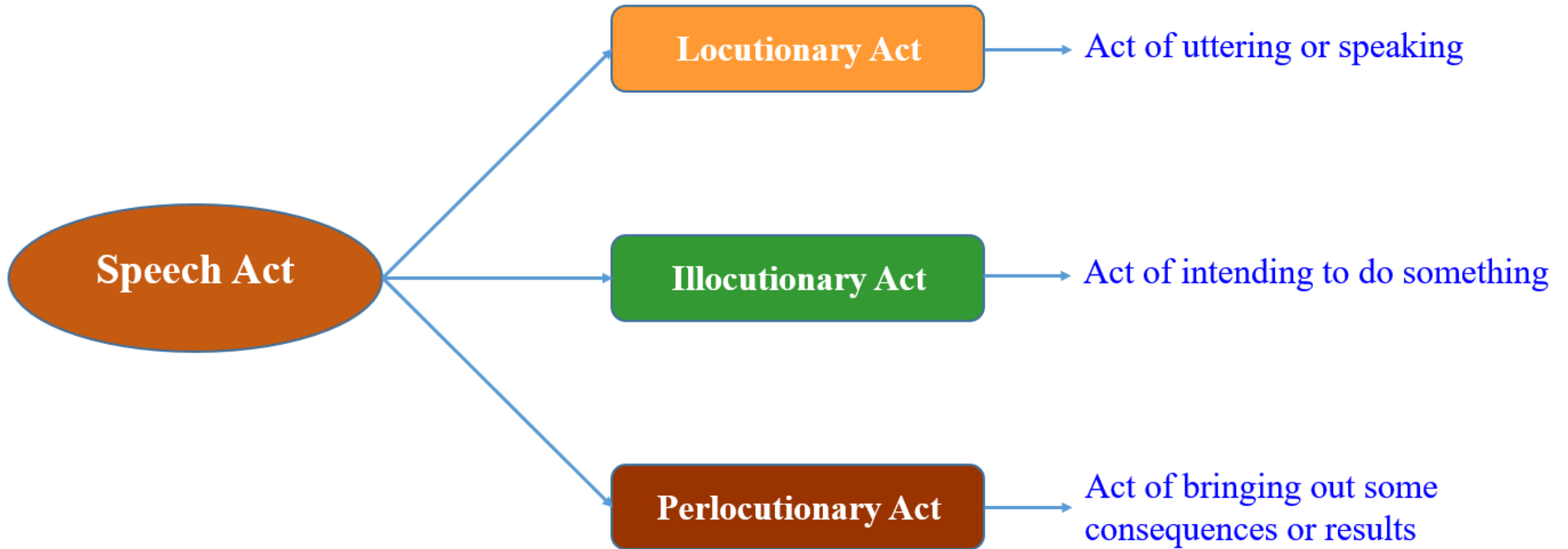
John L Austin (1962)

How To Do Things with Words

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NLP: Natural Language: Dialogues: Speech Acts (John L. Austin 1962)

- When a person **says** something, he/she **performs** a **set** of **three acts** (or actions) simultaneously:



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NLP: Natural Language: Dialogues: Speech Acts

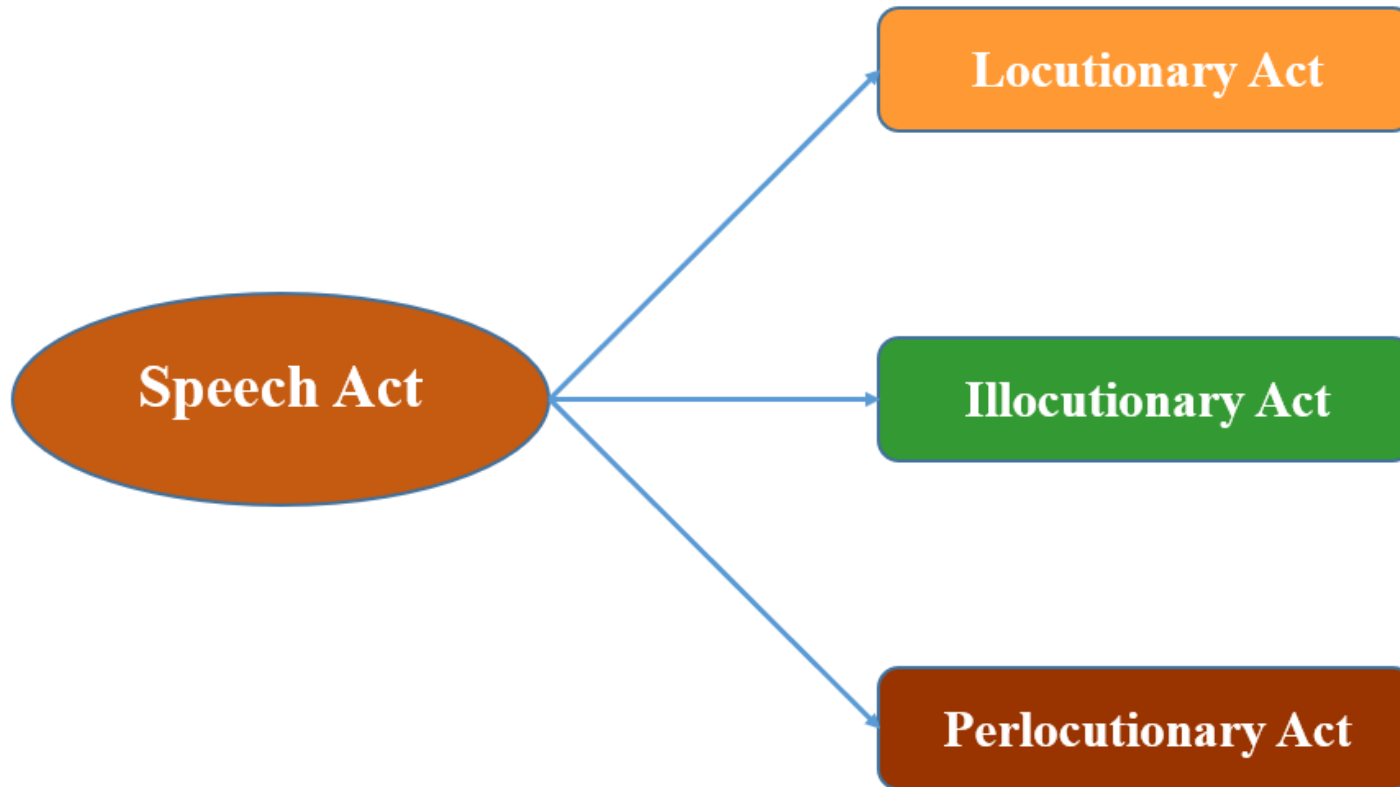
Speech Act Theory (John L Austin, 1962: *How To Do Things With Words*)

- Language (speech) is a sort of **action**, not only the tool to convey or express thoughts.
- When a person **says** something, he/she **performs** a **set** of **three acts** (or actions) simultaneously:
 - (1): A **locutionary** act: Physical action of **speaking or uttering** → **Utterance**
 - “... The **speaker** produces sounds (phonetic act) which are well ordered with respect to the phonological system and grammar of a particular language (phatic act), and carry some sense with respect to the semantic and pragmatic rules of that language (rhetic act)”
 - (2): An **illocutionary** act: The act of **intending to do something** → **Intention**
 - “... expressing his intention by virtue of conventions shared in his speech community ...”
 - (3): A **perlocutionary** act: The act of **bringing out some consequences or results** → **Consequences**
 - “... performs a third act that results in the consequences of his speaking ...”
 - **NOTES**: *he has only limited control over them.*

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NLP: Natural Language: Dialogues: Speech Acts

- When a person **says** something, he/she **performs** a **set** of **three acts** (or actions) simultaneously:



For a **speech act** to be **successful**, its "**felicity**" **conditions** must be fulfilled:

- **Locution** must be **successful**.
- **Illocution** must be **appropriate**.
- **Perlocution** must be **effective**.

John L Austin (1962)

How To Do Things with Words

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NLP: Natural Language: Dialogues: Speech Acts

Speech Act Theory (John L Austin, 1975: *How do Things With Words*)

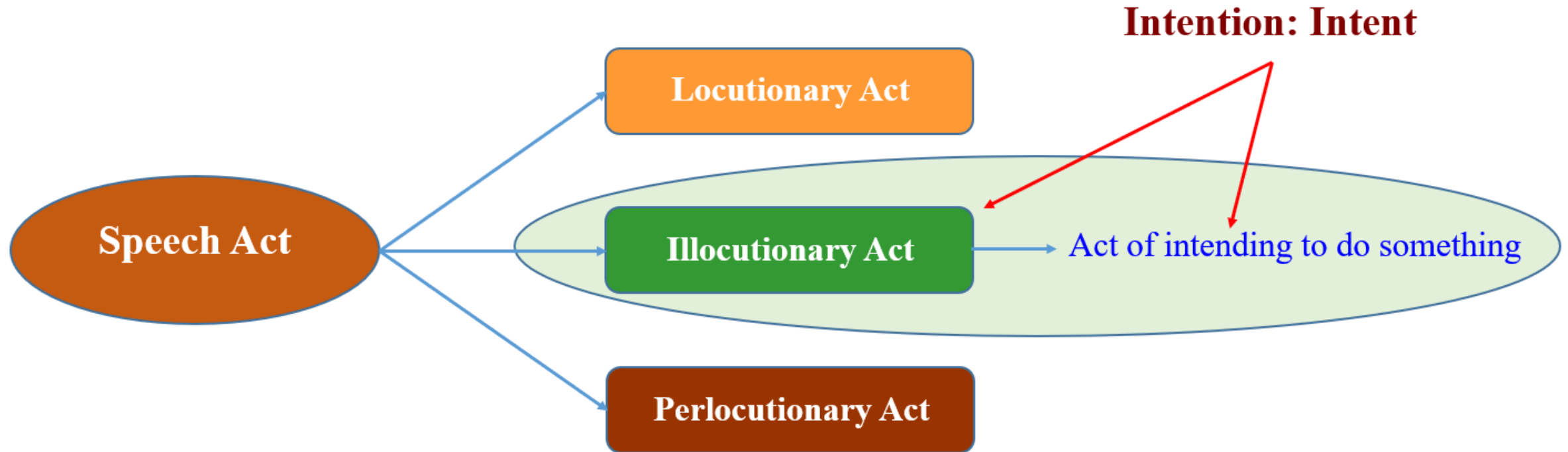
- Language (speech) is a sort of **action**, not only the tool to convey or express thoughts.
- For a speech act to be successful, it must fulfill a set of appropriate (or “**felicity**”) conditions
 - (1): **Locution**: **Successful** if words and sounds are produced correctly.
 - (2): **Illocution**: **Appropriate** if it meets the conditions of its context and community.
 - (3): **Perlocution**: **Effective** if it produces consequences or results that matches the speaker’s desires.

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NLP: Natural Language: Dialogues: Speech Acts

Speech Acts (John Searle, 1969, *Speech Acts: An Essay On Speech Act Theory*)

- John Searle: Austin's student
- Well-known for deep and profound contribution to the **development** of the **Speech Act Theory**
- Focusing on the **intentionality** of Speech Acts



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NLP: Natural Language: Dialogues: Speech Acts

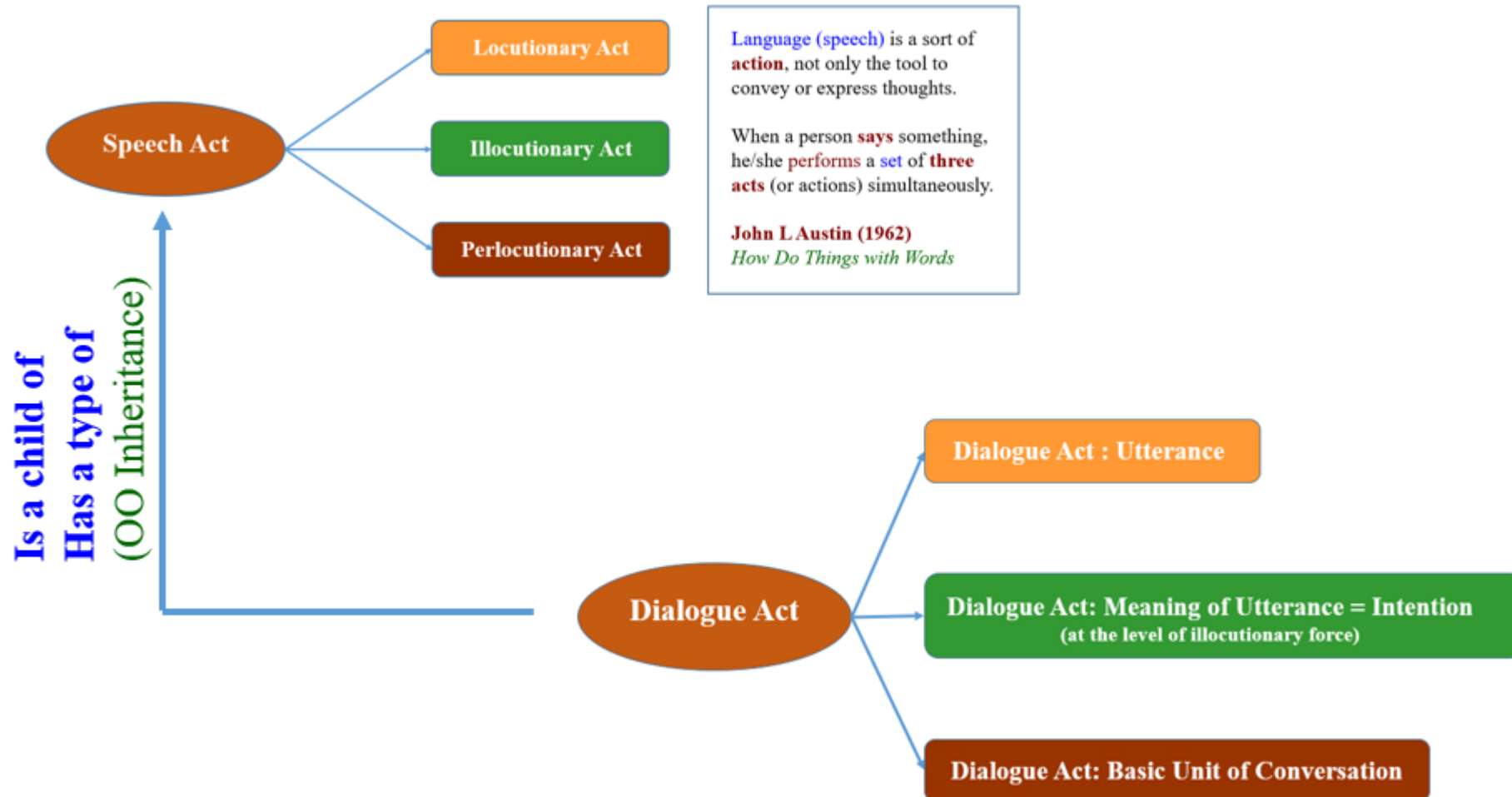
Speech Acts (John Searle, 1969, *Speech Acts: An Essay On Speech Act Theory*)

- John Searle: Austin's student
- Well-known for deep and profound contribution to the **development** of the **Speech Act Theory**
- Focusing on the **intentionality** of Speech Acts in Speech Act Theory
- According to **Searle**:
 - The **basic unit** of a **natural language** is the **illocutionary act**
 - One of the three speech acts performed simultaneously when an utterance is produced, i.e., when someone says something.
 - In other words, the **basic unit** of a **natural language** is the **act** of **showing an intention**, or **intent**, to do something.
 - In a **conversation**, for a **token**, i.e., a word, to be an **instance of the conversation**, the **audience** must **take** it as being produced to **show some intentions**, or **intents**, of the speaker.

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NLP: Natural Language: Dialogues: Dialogue Act (DA)

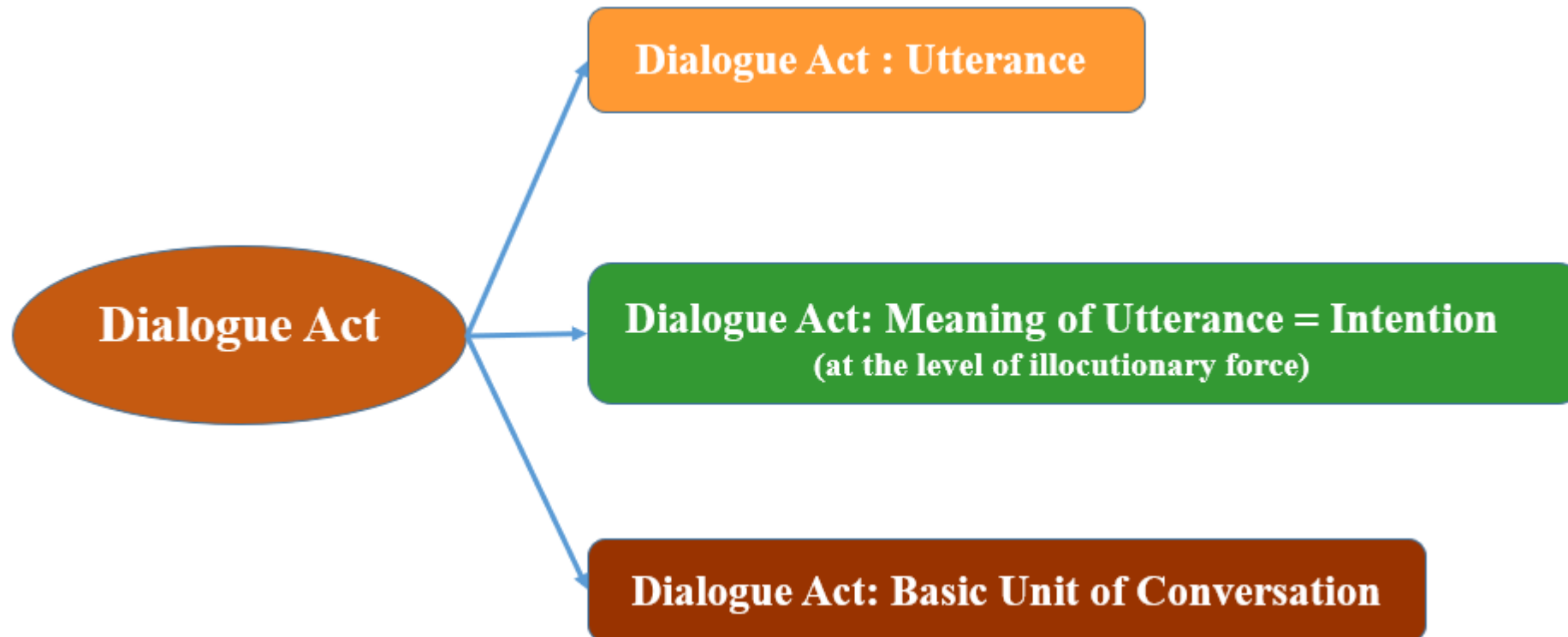
Dialogue Act: A concept that directly inherits the meaning from the **speech act** of Austin's **Speech Act Theory**



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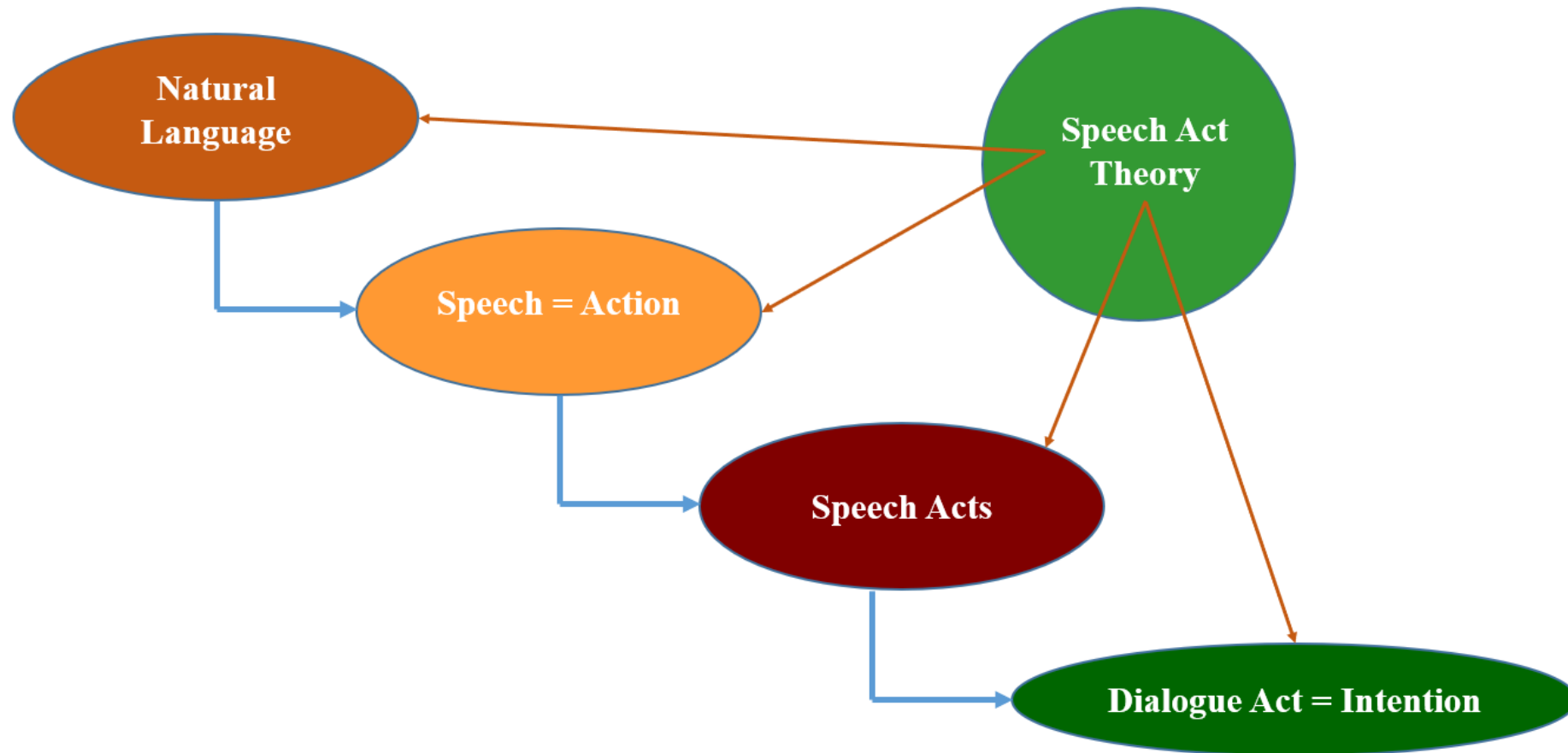
NLP: Natural Language: Dialogues: Dialogue Act (DA)

Dialogue Act: A **concept** that **directly inherits** the **meaning** from the **speech act** of Austin's **Speech Act Theory**



19: AI: NLP: Conversational AI: The Theories

- When a person **says** something, he/she **performs** a **set** of **three acts** (or actions) simultaneously:



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Conversational AI: Dialogues: Intention Is All You Need!

