

Natural Language Applications with a Brain

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Agenda

- **Natural vs. “Unnatural”**
- **Recognition vs. Understanding**
- **How to make sense of it...**
- **Script vs. Brain-Driven**
- **That’s why we’ll see more Brains...**

Limited vs. Natural Language

Limited: Key words and phrases only

“Sales”, “Support”

“Open a new account”

“I want to create another account online”

Open: Any combination of words

Limited vs. Natural Language

Limited: Key words and phrases only

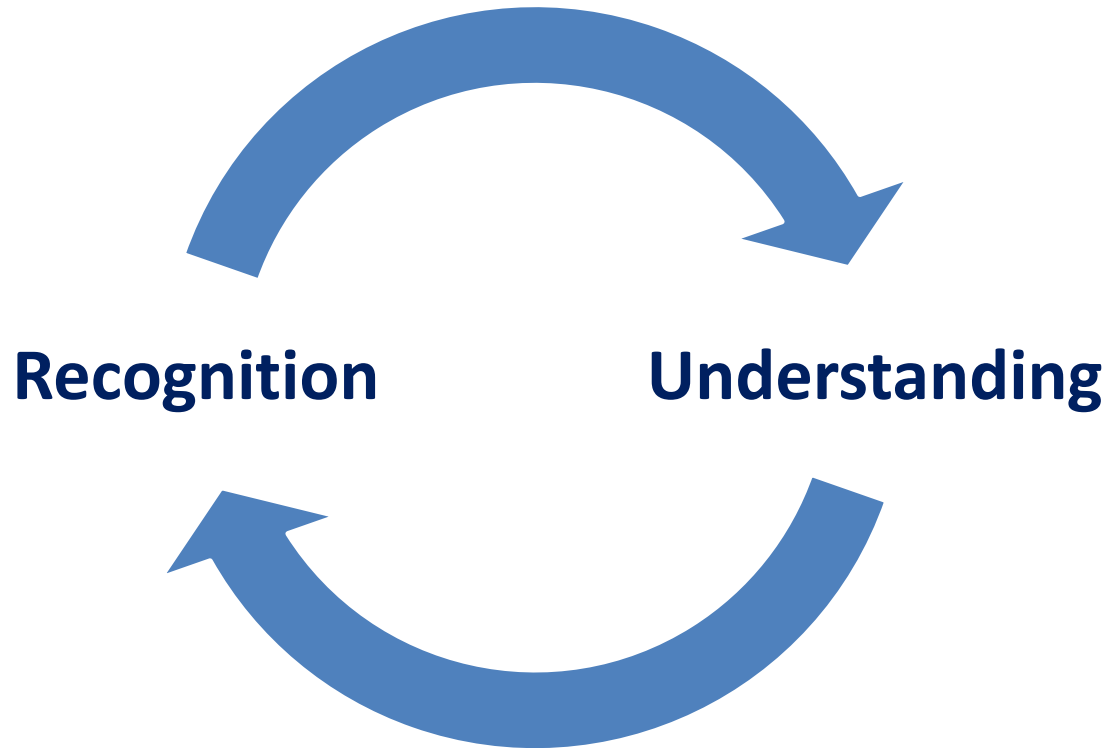
- Meaning is extracted automatically

Open: Any combination of words

- Sentences need to be interpreted

“I’ll meet him at the new bank, same as last time – got it?”

Speech Applications



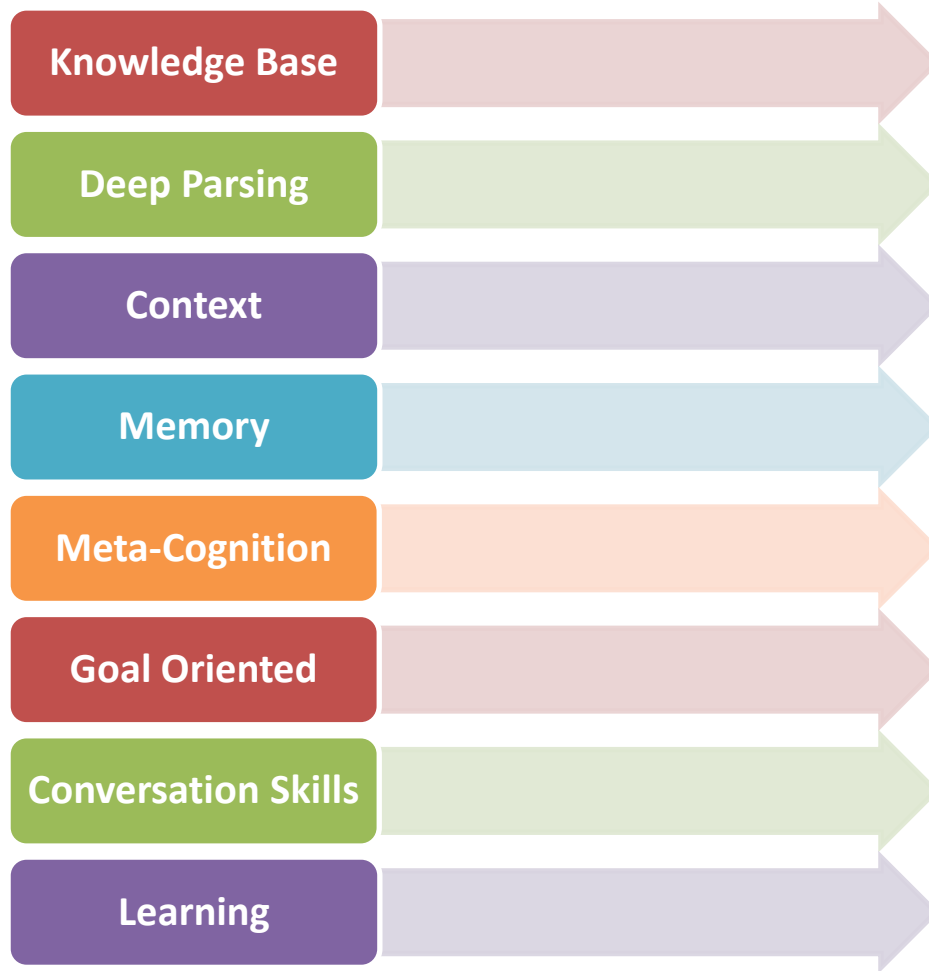
“Understanding” means...

Extracting meaning, making sense of it...

Responding appropriately...

Really understanding...

“I’ll meet him at the new bank, same as last time – got it?”



Some **Features** of Brain-based Apps

Knowledge Base

- **Language Knowledge: Large vocabulary of words and phrases.**
- **Plural, tenses, abbreviations, synonyms, homonyms, etc.**
- **Ontology: Entities/ attributes/ relationships, abstract/ concrete**
- **Common sense facts about customers, products, time, etc.**

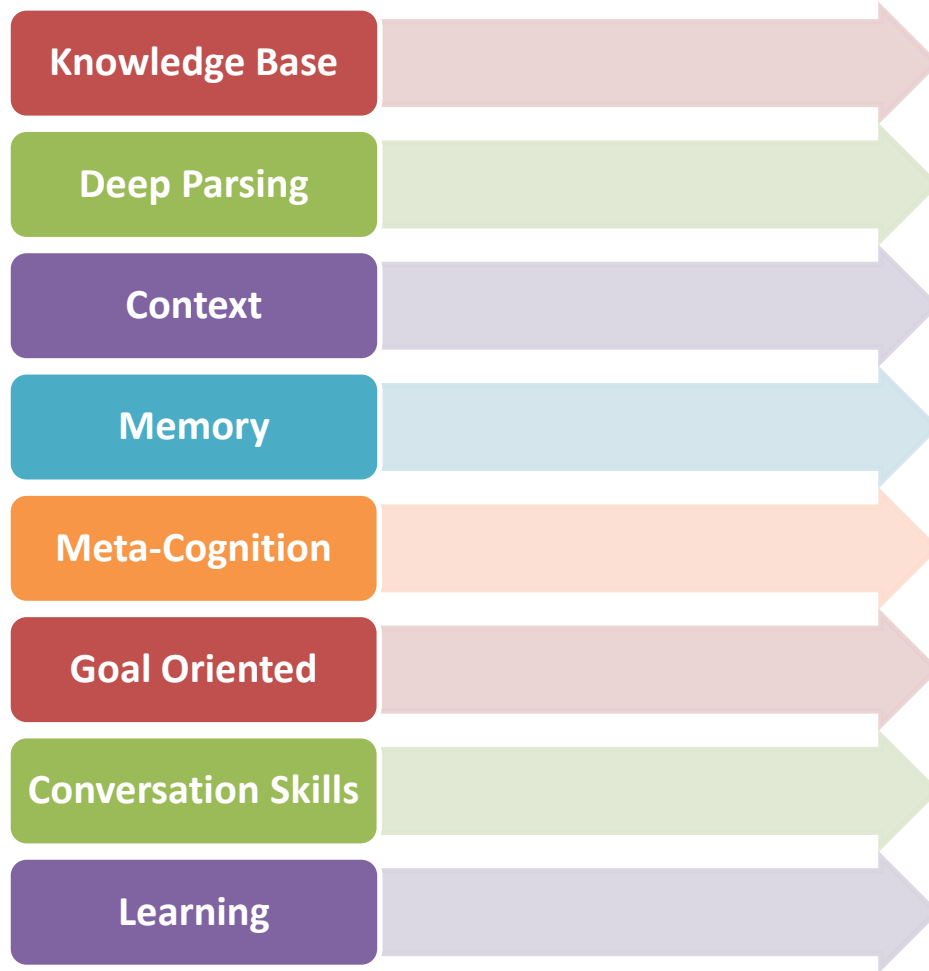
Some **Features** of Brain-based Apps

Deep Parsing

- **Statistical parse & semantic parse**
- **Meaning extraction “...next Tuesday in the afternoon”**
- **Fuzzy grammatical parsing**
- **Using context, memory, and goals**

Really understanding...

“I’ll meet him at the new bank, same as last time – got it?”



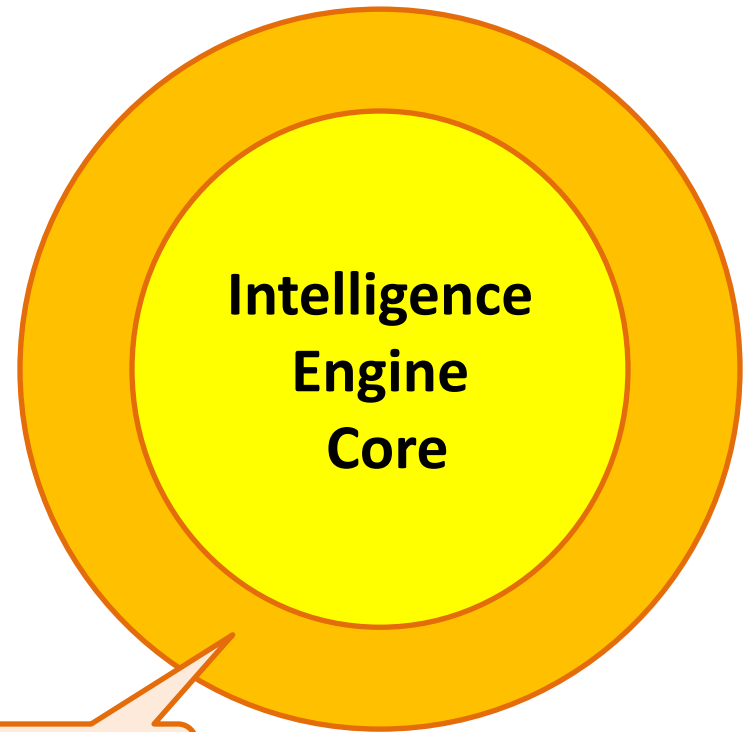
Conventional Apps

Static – Pre-Built



Apps with a Brain

Dynamic Evaluation & Flow



Additional Knowledge

Benefits of Brain-based Apps

Re-Use

- Large pool of Knowledge & Skills
- High level of Functionality/ Intelligence
- Add only Custom Requirements

Better

- Automate more Complex Interactions
- Easier Tuning & Improvements
- Superior Customer Experience

Faster, Cheaper

- Faster Implementation & Deployment
- Less Testing needed
- Overall Cost Savings

Improves over time

- Ongoing Learning & Personalization
- Pooling of New/ Improved Skills
- Ongoing R&D of Brain



Thank You

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