

J.A.R.V.I.S.

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CSE 352 - Artificial Intelligence

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Resources

- <http://www.boosharticles.com/2014/10/jarvis-ironman-ai-project-invention-future/>
- <http://www.forbes.com/sites/tonybradley/2013/10/14/one-startup-strives-to-make-iron-mans-j-a-r-v-i-s-a-reality/>
- <http://www.popularmechanics.com/technology/how-to/a5758/diy-jarvis-digital-assistant/>
- <http://marvel-movies.wikia.com/wiki/J.A.R.V.I.S.>
- <http://www.businessinsider.com/ibms-watson-may-soon-be-the-best-doctor-in-the-world-2014-4>
- https://en.wikipedia.org/wiki/Artificial_intelligence
- https://en.wikipedia.org/wiki/Natural_language_processing
- https://en.wikipedia.org/wiki/Human%E2%80%93computer_interaction

Overview

- What is JARVIS?
- Functionality of JARVIS
- JARVIS vs. Home Appliances
- JARVIS vs. Siri
- Two Important Roles in JARVIS
- Conclusion

What is JARVIS?

- JARVIS stands for “**J**ust **A** Rather **V**ery **I**ntelligent **S**ystem”
- Ironman’s Computing System that possesses human-like interactivity
- Ironman’s very sarcastic artificial butler
- Central Control System
- Ideas similar to JARVIS date back to Apple’s vision for the future in 1987:
<https://youtu.be/JIE8xk6Rl1w?t=30s>



Functionality of JARVIS

- Automatic Speech Recognition (ASR)
- Human-Like Interactivity
- Security
- Controls robotic appliances, heating and cooling systems
- Database similar if not bigger in size than IBM Watson
- Comprehension of owner/user's emotions, interests, etc.
- Holographic User Interface with interactivity

JARVIS vs. Home Appliances

- JARVIS is installed into each system, thus requires user involvement once before use
- JARVIS automatically creates a network of home appliances in the owner's home and acts as the Central Control System
- JARVIS creates an interactive hologram for the user to control his or her heating/cooling system and similar appliances
- Current implementations similar to this function of JARVIS include Microsoft HoloLens which allows holographic control over appliances but does not create a network of appliances
- IBM Watson is capable of understanding data provided to it and generate hypotheses and ideas from the data and is similar to the JARVIS' Central Control System in its data capacity but lacks greatly in portability
- Difficulties in A.I. : How to identify appliances as owner's?
Only two cases: Ours or not ours. Thus classification algorithms are simple to implement but difficult to find what data to provide for learning.

JARVIS vs. Siri

| Functionalities | JARVIS | Siri |
|------------------------------|--------|------|
| Learns about User | X | |
| Human-Like Interactivity | X | |
| Automatic Speech Recognition | X | -- |
| Sarcasm | X | -- |
| Multilingual | X | X |
| Search | X | X |
| Compile Report | X | |
| Delay | | X |
| Open Applications | X | X |

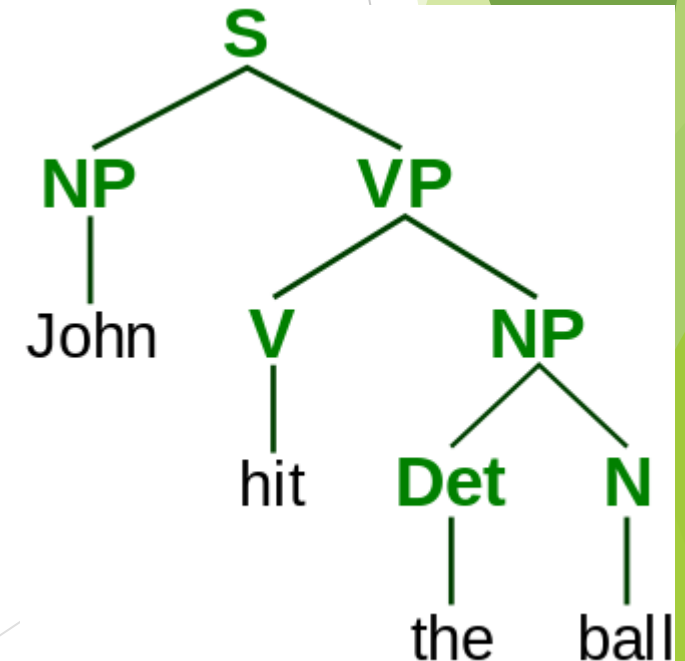
Difficulties in A.I. : How to implement ASR and human-like interactivity and remove delay for better communication? Learning about user can be accomplished dependent on user's usage of the technology.

Two Important Roles in JARVIS



Source: <https://www.microsoft.com/microsoft-hololens/en-us/development-edition>

- Human-Computer Interaction (HCI)
 - Interface between people and computers
 - Microsoft Hololens - Beautiful future interface
 - Holographic User Interface
- Natural Language Processing
 - The way to analyze people's speech (Sentences analysis)
 - Sentence structure contains a subject and a predicate
 - The subject is a Noun Phrase (NP)
 - NP -> (Det) (AP) N (PP)
 - The predicate is a Verb Phrase (VP)
 - VP -> V (NP) (PP)



Notes:
Det: Determiners
AP: Adjective Phrase
PP: Preposition Phrase

Source of sentence structure: SBU LIN230 - Prof. Mark Aronoff

Source: https://en.wikipedia.org/wiki/Artificial_intelligence#/media/File:ParseTree.svg

Current “JARVIS” Implementation

- Indian start-up company with the mission to create a Jarvis OS with current functionalities that include:
 1. Controls lights using voice commands
 2. Compiles Reports
 3. Access and interact on social media

Demonstration: <https://youtu.be/ah6tHb7eWBY?t=6m25s>



Conclusion

- JARVIS' portability and response speed cannot co-exist using realistic technology in the near future
- JARVIS in its perfection cannot be implemented but many of its functionalities are being implemented today through projects such as Intel's Jarvis, start-up Jarvis OS, Microsoft HoloLens and other personal assistants
- Closest thing to a JARVIS' Central Control System is found in IBM Watson