

CONEXTUALIZATION: GENERALIZATION AND EMPOWERING CONTENT DOMAIN

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Abstract - Context is the main challenge in Artificial Intelligence. Even though Artificial Intelligence has been in theory since many decades lack of Context Management has handicapped its application in day 2 day's world. In this project, we are not only going to discuss the importance of context in Artificial Intelligence, knowledge acquisition, machine learning, communication, databases, and ontology. We shall develop different algorithms and strategies to create, extract and formulate contexts and manage the contexts using decision theory and other related subjects. We shall take existing graph data available in the graph database and by using context management strategies developed we shall derive forests and trees from the graph of data. We shall be using different graph traversal algorithms like DFS, BFS, and others and create Logical Forests and Trees which can be utilized in the Integration and Application of Artificial Intelligence.

Key Words: Contextualization, Artificial Intelligence, Trees, Graph, Decision Making, IoT, NLP, NLU, NLG

1. INTRODUCTION

When interacting with systems or with apps, often have to make complex decisions, which is supported by natural language understanding (NLU) giving users what they want—before they are asking for it with personalization, the system learns about certain traits, likes and preferences of the individual user[2]. This personalization approach starts with a user's requests, since input is well suited to learn user likes and dislikes because it often contains direct representations of a person's preferences.

1.1 Contextualization

The relationship between people and technology through context, speech and language solutions driven by advances in artificial intelligence and cognitive computing. it has pioneered the evolution of speech recognition technology that these days integrates artificial intelligence (AI) to transform the way people interact with the devices, systems, apps, and services that surround them. Every day, millions of people and thousands of organizations expertise our technology through intelligent systems which will listen, understand, learn, reason and facilitate life and work.

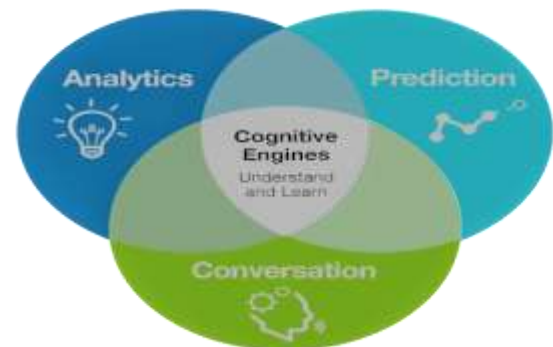


Fig -1: Contextualization in AI

To realize contextualization, a knowledge rule-based approach supported context or reasoning an AI technology that is completely different from the machine learning approach deployed for personalization. One reason for this decision is that contextualization and reasoning usually depend upon data that's established throughout the training part, annoying mistakes would be inevitable[2]. There is a lot of easier methods that provides a additional satisfying user expertise to directly offer the system with the desired info, that is well-known prior to and therefore doesn't should be learned. For the mixing of contextualization, the fundamental desires is to access to the car's sensing element knowledge, like navigation knowledge or reserve.

1.2 Graphs & Trees Traversal

Graphs are sensible in modelling real world issues like representing cities that are connected by roads and finding the methods between cities, modeling traffic controller system, etc. These forms of issues are onerous to represent victimisation easy tree structures.



Fig -2: Decision Making Trees

2 Natural Language Processing

Context & Speech is one of the foremost natural and intuitive ways in which to move with devices, applications and systems, decrease our reliance on the mouse, keyboard and touch screen. We've developed a broad portfolio for context and speech recognition and Natural Language Understanding (NLU) technologies that integrate machine learning and large data for the variability of systems and services that leverage virtual and cooperative assistant offerings across devices and services within the Mobile, Enterprise and aid industries. Further, our Document Imaging business drives inflated productivity and security for the world's largest enterprises that require achieving management over document capture and workflows.

2.1 Natural Language Understanding

NLU directly permits human-computer interaction (HCI). NLU understanding of natural human languages permits pcs to grasp commands while not the formalized syntax of computer languages and for computers to speak back to humans in their own languages. The field of NLU is a crucial and difficult set of tongue process (NLP). whereas each perceive human language, NLU is tasked with human action with untrained people and understanding their intent, that means that NLU goes on the far side understanding words and interprets that means. NLU is even programmed with the flexibility to grasp that means in spite of common human errors like mispronunciations or converse letters or words.

2.2 Natural Language Generation

It can be said an NLG system is sort of a translator that converts information into a natural-language illustration. However, the strategies to supply the ultimate language are completely different from those of a compiler thanks to the inherent expressivity of natural languages. NLG has existed for an extended time however business NLG technology has solely recently become wide on the market.

NLG could also be viewed because the opposite of natural-language understanding: whereas in natural-language understanding, the system must clear up the input sentence to supply the machine illustration language, in NLG the system must build selections regarding the way to place an idea into words.

A simple example is systems that generate kind letters. These don't usually involve synchronic linguistics rules, however could generate a letter to a client, e.g. stating that a mastercard defrayment limit was reached. To place it differently, straightforward systems use a templet not like a Word document mail merge; however a lot of advanced NLG systems dynamically produce text [1]. As in alternative areas of natural-language process, this will be done victimization either specific models of language (e.g., grammars) and also the domain, or victimization applied math models derived by analysing human-written texts.

3. Personalization

With personalization, the system learns regarding bound traits, likes and preferences of the individual user. The personalization approach starts with a user's voice requests, since speech is well matched to find out user likes and dislikes because it usually contains direct representations of a person's preferences.

Taking into account as an example utterances like "Find cheap parking" or "Find some Mexican food." each directly visit this user's predilections [2].

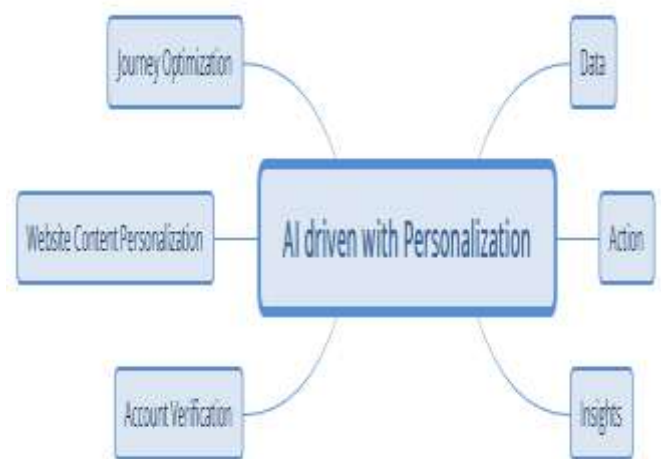


Fig -3: Personalization in AI

While the individual details might vary, the method follows the identical overarching steps:



Fig -4: Considerations in AI

- Awareness: The customers that are beginning to discover the matter they're attempting to resolve and wish facilitate to outline it.
- Consideration: Customers that are attempting to make your mind up that company or product to use to resolve their drawback.
- Decision: A conversion is formed within the style of a sale, subscription or another style of "sale."

- Advocacy: A client is currently in a very position to function a referral or a reviewer within the style of spoken selling.

Once you've outlined your client journey, you'll beyond question have many points in it that need solutions that require to be tailored to the individual shopper or company, [1]keep in mind that your customers are additional responsive once you have known a necessity that directly relates to them and you give an answer to their challenge.

Automation and AI, like chatbots and personalised content, will be terribly useful here, as these ways mix consumers' increasing need for fast answers and asynchronous communication, and may typically save brands time and cash once enforced.

4. CONCLUSION

The Contextualization based system will be developed on the basis of contexts which will be traversed with the help of graph data structures. Various algorithms will be implemented like BFS, DFS and through this a generalized system will be developed

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