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Artificial Intelligence Based Multilingual Voice Assistant

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Abstract: *Artificial intelligence technologies are beginning to be actively used in human life, this is facilitated by the appearance and wide dissemination of the Internet of Things (IoT). Autonomous devices are becoming smarter in their way to interact with both a human and themselves. New capacities lead to creation of various systems for integration of smart things into Social Networks of the Internet of Things. One of the relevant trends in artificial intelligence is the technology of recognizing the natural language of a human. New insights in this topic can lead to new means of natural human-machine interaction, in which the machine would learn how to understand human's language, adjusting and interacting in it. One of such tools is voice assistant, which can be integrated into many other intelligent systems. In this paper, the principles of the functioning of voice assistants are described, its main shortcomings and limitations are given. The method of creating a local voice assistant without using cloud services is described, which allows to significantly expand the applicability of such devices in the future. Intelligent Voice Assistants (IVA), like Siri and Alexa, are created to assist their users with simple digital tasks. Here, we propose the steps we have used to develop a voice operated IVA which can process direct commands in two languages: English and Hindi, to perform menial tasks for the users. the language processing is performed by a modified finite state automaton. The IVA also takes advantage of the subject/action structure of commands to reduce the size of the word domain, and utilizes a generalization function to ensure that the language processor can understand multiple languages without undergoing major modification - making this approach suitable when training data is limited.*

Keywords: NLP, NLU, TTS, Voice Assistant, NER, Machine learning, ASR, Internet Of Things, Smart Things

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