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Wings to the Research

Opinion

Electronic Companion (E-Co)

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Opinion

This write-up contains two ideas in Ubiquitous Computing and an AI based Electronic Companion. The first idea is to enable every physical object with a digital connector (DigiCon) as an interface which can extract data to/from our electronic gadgets and computers. The other idea is an A.I based electronic companion (E-Co) that is all-time- present verbose companion to advice and discuss everything including my job, skills, everyday matters, etc. I must also discuss my research ideas with E-Co.

Introduction to DigiCon

Our day-to-day life needs our interactions with electronic and non-electronic physical objects that need to be personalized by our presence. For example, in a conference or meeting my chair or table should automatically scan my name, email, contact number to make it visible to others. There are a number of scenarios where we need to display our personal information while staying outside our home or office. Our smart doors and walls should be able to record a visitor's information; or send a welcome message to our visitors; or a garden should introduce its new flowers and plants by sending a message to its visitors; a grocery store should remind us to visit again even if I didn't buy anything at all. A customer should find a shop easily where he can get his favorite shirt in minimum price by writing a query giving his choice of shirt and price. Something that I need specifically: My belongings must let me know if some other persons have used it in my absence. Physical objects should be theft proof even if these are taken by others. The objects must be Wi-Fi enabled to transmit data to nearby persons informing about stealing them. A camera on a traffic signal can be connected with a traveler's mobile phone to see the full view of road, or cameras installed in a market can be connected using the predefined interfaces to help people find the proper shops. Or, security guards need to see different views of street from the surveillance cameras. They can connect their mobile phone with cameras.

Technical aspects

A. An Electronic/Wi-Fi interface for ubiquitous sensing. This should be secure and must be private as well as public. Our private data cannot be scanned that must be passkey protected, and it should first ask our permission to get scanned. The physical objects should also be programmable by allowing outside world to interact them by using APIs. That means all physical objects must be enabled with an electronic circuit including Wi-Fi and USB access.

B. When all things are connected then clouds should also be needed to keep information available while moving from place to place. A cloud-based database must be available in a super market to send query to find the items of our choice. The plug-n-play digitally enabled devices can exchange data such that our daily used electronic and non- electronic objects should be able to respond us according to our present status.

Electronic Companion (E-Co)

The idea of E-Co is technically possible after DigiCon is implemented successfully. The E-Co is an electronic or virtual companion that is intelligent enough to respond verbally in all situations indoor or outdoor. A person should be able to talk to something that listens him all times and based on AI responds accordingly. This requires our rooms and offices need to be full multimedia and DigiCon enabled and connected to our private cloud that will be used to read our current data and respond us in our favor. For example, A Digital Room idea. On entering in the room E-Co should talk to me intelligently based on its previous knowledge about me. A chat GPT powered device should also know about my today's activities. Based on that it must remind me verbally, can respond my arguments and accordingly should advise me like my personal assistant, or something that is all time present, knows everything about my day-to-day matters. An expert assistant or companion that must be built-in everywhere in every device. For example, in my study room, bed room, kitchen, car, washroom, or in my mobile while I am outside. A virtual assistant or multipurpose companion, E-Co may be an expert professor advising me about my research, or an assistant advising me on shopping, or outing. This is possible if the virtual assistant has complete day to day information about my personal matters (connected my private cloud). It must be a good listener and observer as well, for example, while I am talking to others, E-Co should be able to listen and infer meaning and should try to resolve my issues by talking to me giving advices and ideas. The expert must also be able to see objects including my face expressions and body language. Fully equipped with visual power to see and observe intelligently like a normal human being who is highly educated advisor.

Technical aspects

a) Speech Recognizer: A.I based natural language processor. Listens and responds.

b) Multimedia: Mic, Camera and Speaker.

c) My private cloud database (profile) that must keep medical history posted by a hospital, about the meetings with my doctor and the list of medicines. On purchasing the medicines, the full record must be posted by medical store to my cloud seamless. This means some important transactions with hospital or government bodies (police/security) that would be posted directly to my cloud that is accessible to E-Co every time.

d) Emotions and body language reader: Computer vision component should be able to scan owner's face expressions and body language then the companion infers meaning out of human expressions and body language then responds to his human companion.

e) Surroundings observer: The E-Co will observe the surrounding objects and people around her owner. It can identify the situation of danger that may arise from humans or physical objects. This means a fully environment-aware as well as owner's aware companion who responds verbally in favor of her owner.

f) Visual Presence (TV, radio, mobile, usb): Imagine a living room equipped with A.I based multimedia system. A computer screen mounted on wall to read research papers or with a keyboard and mouse attached to my bed I should be able to write computer programs or any other work. When I enter my room, the DC should scan my usb in my pocket and find some pdf files that I didn't read since a month. She must start talking to me reminding me to complete my pending work. Without a mouse click DC must show me the list of files to read. This requires an additional innovative work that is a smart USB enabled to connect room's Wi-Fi to connect my DC. Or, some of my pdf files downloaded in my mobile phone hard drive accessible by DC to inform me my pending reading stuff.

g) Without using TV remote controller, my DC should control TV according to my verbal commands; similarly, DC can let me hear news on my favorite radio frequencies. While sitting in my car DC should continue the similar connectivity and the must have the screen to show me some documents I want to see for a while just to have an idea for a very important meeting.

h) Daily reminders: DC must be aware of my daily routines and about my appointments. This may include reminding me a doctor's appointment, some important meetings with others and necessary preparations. DC should connect my cloud and remind me accordingly, for example, when I drive my car or anywhere outside travelling or walking it should indicate a nearest medical store.

References

There are a number of electronic assistants already available which have been built for special purpose. For example, an assistant to help old people, or some expert system that may answer to our problems. The system like E-Co is not available according to my knowledge that is present all the time as a real human being connected to our physical objects and profile database and answers according to the changing situation and topic.