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26th of September, 2020

Invasion of Privacy With Personal Robots

Personalization is a very effective business strategy for a company to distinguish itself from the rest of the market. Personalization is achieved by identifying the unique customer behavior and needs and offering these customers something that is tailored to their lifestyle and experiences. By doing this, companies can dramatically improve the attractiveness of their products. Companies like Amazon, Spotify, Netflix have built their business models on catering to the needs of the customers. This obsession with customer personalization is equally applicable in the field of personal robotics. Customers would want the robots to tailor their responses and actions to them. Since different people have different needs and expectations, the robots need to have some mechanism to distinguish different users. This can be done through facial recognition or speech recognition. There could be other ways to give commands, but they would require some added steps like giving it through phones or entering them through a monitor on the robot. Since these require some manual intervention, they will be a little less appealing when compared to the robots with automatic recognition capabilities. With the ability to discern who is giving commands, these robots can unlock some really interesting capabilities.

Google's smart voice assistant on google home can recognize up to 6 voices. It uses a neural network to identify certain characteristics in a person's voice when they say the phrase "Hey Google" or "Ok Google". Based on the recognition, google can provide tailored answers for a particular user like reciting their specific calendar. As innovations progress in this space, google's voice assistant will be able to perform a wider variety of personalized tasks. Similar innovations in the space of personal or household robots will offer a new level of customer satisfaction. As of 2019, the global personal robot

market was estimated to be about $21.5 billion. It is expected to more than double by 2030, reaching $51.5 billion[1]. The major factors for this boom will be rising awareness, an increase in the aged population, and comfort and leisure[1]. Companies setting themselves apart in terms of price, comfort, and leisure will gain an upper hand in the desirability of their product. One way to attack the comfort and leisure portion of the robots would be to offer extensive personalization. For example, Walker, an intelligent humanoid service robot, is capable of identifying its user (I presume through facial recognition and speech recognition). Based on the classification, the robot is able to perform tailored greeting. Furthermore, as shown in the introduction video on UBTECH's home page, when a man snaps his fingers, Walker starts playing music [2]. Such customization can only be achieved through some form of speech and facial recognition. The customizations like this really help in creating a seamless experience, which is one of the goals of these personal robots. Personalization can also help increase the safety capabilities of these robots. Certain actions like not opening the main door if a small child asks the robot to do that or not carrying out other actions if the minor requests can be implemented using some level of parental control, which in turn would depend on the robot's ability to discern who is giving it commands.

Despite these positives of robots using speech and facial recognition to identify speakers, there are certain disadvantages or potential for misuses. Robots can learn to perform a lot of personalized actions based on data they collect or the profiles they create. These profiles can be sent back to the parent company that makes these robots, which can then sell it for profits. These companies can also have collaborations with other companies like amazon and google which can use these profiles to target advertisements to different consumers using the robot. This can all happen without explicit consent. Furthermore, these robots might be storing all the voice recordings to improve their performance. These recordings can be subpoenaed as part of legal proceedings, blurring the lines of privacy. These robots can also have access to certain areas of residence like office or bedroom where the robot owners may not want to take a chance of their robots recording things. Lack of such trust can result in paranoia even in one's

home, evading trust from these robots. Additionally, robots can also gain insight into the temperament of the users based on voice patterns. Based on existing profiles created, these robots might be capable of emotionally manipulating the user. In the case of Walker, the introduction video shows a child interacting with it. The child can form certain emotional bonds with the robot because of personalized interactions. This may results in tremendous emotional pain if the robot breaks or has to be let go for some reason or another.

Given these positives and negatives that come with robots capable of advanced speech recognition, one obvious question is raised; should we continue developing robots with such sophistication? My stance on this issue is yes we should continue developing such robots. My first argument is that robots need sophisticated speech and facial recognition technology to perform complex tasks. Personal robots, like the Walker, are after all trying to mimic human tasks which involve human interaction. For smooth interaction, these robots ought to be able to discern the speaker and be able to cater to the need of the speaker. Without this technology, we will still have robots that can still perform some tasks by understanding speech, but they won't able to perform tasks that require human logic and reasoning. For example, a home robot should not open the entrance door for a stranger if there is a child alone in the house. Advanced speech recognition can allow such complex behavior to embedded in the robots.

My second argument is that most of the devices we already use like smart speakers, mobile phones collect some form of voice data and are, presumably, able to segment it based on different voices. Robots doing this are not much different than these devices. The privacy and safety issues associated with speech recognition will not be resolved by curtailing the development of advanced speech recognition robot. Granted these robots can be mobile, so they can move around the house and collect data. But a similar argument can also be made for mobile phones. After all, we pretty much always have our phones with us. What's going to resolve the privacy and security concerns is data collection and usage regulation.

For example, in 2015 the state of California passed a regulation that “prohibited the sale of voice recordings from smart televisions and restricted the ability of law enforcement to require that surveillance”[3]. Although this regulation was just for smart televisions, it was the first of a kind in the United States and laid the groundwork for future regulations[3].

With the growing fascination with personal robots, we are bound to see some interesting robots come in the market. Companies will leverage data to implement unique features that set them apart. The current data privacy policies are not sufficient enough to protect the consumer and fend of anxiety that would arise with such technology. Instead of curbing robotic development utilizing advanced speech and facial recognition, there should be a more structured focus on establishing statutes and regulations. Many of the social and ethical implications that arise from the growth of such robots can be resolved through extensive data protection and privacy laws.

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