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CSE 4314-004

Assignment #2

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**Report on Creating Human-Centered AI with Human-AI experience webinar**

**Microsoft Research**

**Life long Learning**

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In this paper, I will be writing a report on a webinar on creating human-centered AI with human-Ai experiences (HAX) toolkit by Microsoft Research Team. This webinar was given by dr. Saleema Amershi and dr. Maheala Vorvoreanu. Technically, we are entering into AI powered age. In 10 years, almost 90% of our instruments, will have artificial intelligence inside. For example: our phones has fingerprint, faceId, spotify, google search, etc; all of these human centered and AI in common. In near future, our daily lives sector like transportation, education, agriculture, house equipment’s, etc. will be powered by AI. AI will continue to fundamentally shape our daily lives. This webinar’s main taking point about how we can be more focused to ethically improve AI. Also, how can we embrace diversity around technologies, make it more responsible towards the betterment of our society.

First of all, according to dr. Amershi, while design any AI product or project, human and society should always be our primary focus which means thinking about the user on early and using that understanding about the users to drive all other technical decisions of the system. Human centeredness prescribes doing all that upfront understanding about the users and the variety of contexts in which they may be using the system and we should use that to drive all of our decision while building our AI-based technology. For example: while designing a face recognition AI technology, our data should include all races of human i.e. Asian, southeast Asian, middle-eastern, African, European, etc. This is how we can capture our diversity of society in AI. If our AI is for broad range of people, it is our responsibility to include all diverse perspectives throughout development. That includes collecting data on different kinds of decision made by different people, to overall increase the accuracy of our system. The more diverse the data, the better and more accurate result it gives.

For that purpose, Microsoft research team has developed a toolkit with these features in them:

**Guidelines for Human-AI Interaction**: It is considered as a process of best Practices for how AI systems should behave during human-AI interaction. AI is fundamentally changing on how we interact with these technologies because of development of new methods of sorting of data and its use. This guideline has four categories. Initially, make clear what the system can do and make clear how well the system can do what it can do. Secondly, during interaction times services should be based on context, show contextually relevant information, match relevant social norms, and mitigate social biases. Thirdly, when wrong, AI should support efficient invocation, support effective dismissal, support efficient correction, scope services when doubt and make clear why the system did what it did. Lastly, over time, it should remember recent interactions, learn from user behavior, update and adapt cautiously, encourage granular feedback, convey the consequences of user actions, provide global controls, notify user about changes. These guidelines are important to address the challenges and improve our work in AI.

**HAX Workbook**: It is a tool to guide teams through planning and implementing human-AI interaction best practices. It helps teams define the right teams define the right breakdown and sequence of steps that are needed to plan the UX early and it helps them accurately estimate resources needed to implement the guidelines. Also, the workbook provides right level of guidance and prompts so that teams can anticipate the impact of each guideline on the user and the user experience and thus helps them to prioritize. This workbook is available online as an excel sheet i.e. <https://www.microsoft.com/en-us/haxtoolkit/uploads/prod/2021/05/2-HAX_Workbook.xlsx>. It has tables to cover for all our previous guidelines and chose among them which is more relevant to our project and work according.

**HAX design patterns**: It is a set of flexible and reusable solutions to recurring human-AI interaction problems. Design patterns are useful because they capture flexible solutions to recurring problems. For example: When we have a similar problem, we can match it to a solution which will save our time and we can create consistently high-quality user experiences. There are thirty and thirty guidelines into eight categories selected based on research. We can implement them into daily pattern and find a general solution for different problem.

**HAX Playbook**: It is a tool for generating scenarios to test based on likely human-AI interaction failures. This tool is created because we do less offline testing to a diverse data of human in the loop prior to development. It is important to understand that AI is designed to adapt based on human activity, so it is highly possible that at some point it will fail or give error in result and it is very hard to know until it happens. So, this playbook is designed based on common failure that can occur over time and test them in advance. This playbook has a lot of questions based on that scenario like text or speech with different conversational questions. Based on them the system will develop a set of advance tests, which we can cover while beta testing. If we use this tool in early development of our project, it will keep us secure from future failure.

In conclusion, this seminar gave me an idea on how to use the HAX toolkit to improve our interaction with AI, how to make AI more diverse with the help of these guidelines. Also, the questions and advance testing from the guidelines and playbook will improve the accuracy and lifetime of our devices or software.

**Reference:**

**1.** MicrosoftResearch. (2021, August 6). *Create human-centered AI with the human-ai experience (HAX) toolkit webinar*. YouTube. Retrieved September 24, 2021, from https://www.youtube.com/watch?v=JppYmctp0a8&ab\_channel=MicrosoftResearch.

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