



October 15, 2020

National Institute of Standards and Technology
100 Bureau Drive
Gaithersburg, MD 20899

Re: Draft NISTIR 8312: Four Principles of Explainable Artificial Intelligence

Dear NIST,

BlackBerry commends NIST's leadership and transparent, consensus-based process to set "*a plan for Federal engagement in developing technical standards and related tools*" to respond to the Executive Order (EO 13859), "*Maintaining American Leadership in Artificial Intelligence*". We hope these efforts lead to better understanding of the theoretical capabilities, limitations, and risks of AI, and will advance the foundational research seeking to build trust in AI systems by improving their accuracy, reliability, security, robustness, and explainability.

We are encouraged by the recent AI workshop Series and appreciate the opportunity to comment on the publication of draft NISTIR 8312 "*Four Principles of Explainable Artificial Intelligence*".

BlackBerry supports NIST's foundational AI research to cultivate trust in the design, development, and use of AI. Please find our Comments to NISTIR 8312 in the attached Excel file. Below is an overview of our response.

General Comments

We agree with two foundational positions expressed in the NISTR 8312 draft, namely: that explainability is one of several properties that enable trust in AI systems, and that approaches taken to explainable AI will be improved by considering viewpoints, methods, and lessons from multiple disciplines, including computer science, engineering, and psychology.

The First Principle: "Explanation"

The first principle is described in terms of obligation (Line 173). We respectfully express our concern that this description is too constrictive to be applied for all AI systems across the board. Not all the AI systems are required to produce explanation. Further investigation is required to advance understanding of when and to whom an explanation needs to be provided for what purpose. We propose updating the description in terms of how the first principle can be satisfied.

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Types of Explanations

We generally agree that there are multiple types and purposes of explanations. There is trade-off between explanation detail and time constraints. However, further work is required to characterize explanation, meaningfulness and explanation accuracy for types or purposes of explanations. Referring to the use case of movie recommendations, we note that such explanations are not only for the owner's benefit but also for the user's. For example, an explanation based on the user's previous choices may increase his or her willingness to accept a movie recommendation.

Next Steps for Progress

We propose that to facilitate advancement of explainable AI methods necessary for complex, real-world systems, the following challenges must receive careful attention and priority consideration:

1. Establishing a common framework and definitions for explainable AI. A common taxonomy and terminology is a necessary first step.
2. Characterizing explanation, meaningfulness and explanation accuracy for types and purposes of explanations.
3. Identifying, cataloging, and establishing a prioritization of limitations and challenges to overcome with respect to explainability in systems utilizing AI.

Conclusion

BlackBerry encourages NIST's continued leadership in foundational AI research to build trust in AI systems. We welcome the opportunity to comment on NISTIR 8312 and offer Mr. Takashi Suzuki tsuzuki@blackberry.com to respond to questions about BlackBerry's response.

Respectfully submitted,

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