Subject: Re: Four Principles of Explainable Artificial Intelligence

Date: Wednesday, October 14, 2020 at 9:25:31 AM Eastern Daylight Time

From: Shawn Riley

To: NIST Explainable AI

Dear NIST,

You're welcome for the feedback on explainable AI. We're using NIST NVD data (CVE, CWE, CPE, etc) in the Explainable AI work going on out at OASIS's Threat Actor Context (TAC) TC where the community is building description logics ontologies and identifying explainable deductive logical inference that can be made using cyber threat intelligence (STIX) and contextual information sources like NVD. Inference identified as part of these standardized description logics ontologies for the OASIS TAC TC are planned to be captured in STIX Notes objects so the step by step reasoning over the evidence to reach the conclusion is shared and captured for the humans to agree or disagree with.

This next year is going to be exciting for explainable AI in cybersecurity.

Best regards,
Shawn

Shawn Riley
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From: NIST Explainable AI <explainable-AI@nist.gov>
Sent: Tuesday, October 13, 2020 2:47 PM
To: Shawn Riley <shawn.p.riley@darklight.ai>
Cc: NIST Explainable AI <explainable-AI@nist.gov>
Subject: Re: Four Principles of Explainable Artificial Intelligence

Dear Shawn Riley,

Thank you for submitting your comments our draft of Four Principles of Explainable Artificial Intelligence (Draft NISTIR 8312).

Your feedback is important for us to shape this work, and we appreciate your contribution.

Best Wishes,
NIST Explainable AI Team

From: Shawn Riley
< **Date:** Wednesday, August 19, 2020 at 8:16 AM
To: NIST Explainable AI <explainable-AI@nist.gov>

Subject: Re: Four Principles of Explainable Artificial Intelligence

BTW if the authors are not familiar with modern symbolic AI that uses Description Logics ontologies and that produces fully explainable results, there is a great explainer article on Medium.

https://medium.com/@shawn.p.riley/modern-symbolic-ai-in-2020-dfcc27abbc5c

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From: Shawn Riley
Sent: Wednesday, August 19, 2020 6:00 AM
To: explainable-AI@nist.gov <explainable-AI@nist.gov>
Subject: Four Principles of Explainable Artificial Intelligence

NIST Explainable AI-

I was reading the new Four Principles of Explainable Artificial Intelligence NISTIR8312 and it appears to be aimed exclusively at non-symbolic AI (machine learning / deep learning) and did not seem to guidance on the fully explainable symbolic AI (machine understanding) used today. If the intention is for this work only to apply to machine learning / deep learning systems then perhaps it would be beneficial to call it Explainable Machine Learning? I'm just concerned there might be some confusion since we have 2 very different and very active fields of artificial intelligence in the community. Symbolic AI has advanced from the ProLog days of Propositional Logic, Implications, and Truth Tables to using more expressive, standardized Description Logics Ontologies and Description Logics Inference Engines that are used to create fully transparent and explainable artificial intelligence solutions that give the AI and human users a shared understanding of the integrated data, information, and knowledge. Shouldn't there be one NIST standard for explainable AI or shouldn't the explainable AI standard describe both types of artificial intelligence and how both non-symbolic AI and symbolic AI can be explainable AI and how their different?

The point is that symbolic AI today is fully explainable artificial intelligence and the entire NISTIR8312 only talks about non-symbolic AI as explainable artificial intelligence. Either change the name of the work to be explicit to non-symbolic AI or be inclusive of both fields.

We already have people out there working on Co-symbolic AI / NeuroSymbolic AI where people are

combining the Description Logics Ontologies and Reasoners of symbolic AI for deductive logical inference and machine understanding with the algorithms of non-symbolic AI with their inductive statistical inference and machine learning ability. Shouldn't the Artificial Intelligence standards and guidance cover both non-symbolic AI and symbolic AI given that both have transformed over the last 20 years?

Shawn

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