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➡ Principles of Explainable AI

The National Institute of Standards and Technology (NIST) has issued a draft report, NISTIR 8312, concerning a subject of increasing concern, namely the ability of an AI system to explain why and how it reached a certain result. For example, why was a loan application denied (did it have anything to do with the ethnicity of the applicant)? Or why did the autonomous car not break in front of a crossing bicycle (did it mistake it for a car and miscalculated its speed across the intersection)? The report (17 pages plus front and back matter) proposes four principles of explainability:

1. Explanation: systems deliver accompanying evidence or reasons for all outputs.
2. Meaningful: systems provide explanations that are understandable to individual users.
3. Explanation accuracy: the explanation correctly reflects the system's process for generating the output.
4. Knowledge limits: The system only operates under conditions for which it was designed or when the system reaches a sufficient confidence in its output.

Relevant stakeholders are invited to submit comments on the draft *until October 15*. To do this, you need to download this form, then submit it by e-mail (sounds a little clunky compared to what can be done with web forms, but the intent is good, and so will hopefully be the outcome).

The remaining question, which is still open and discussed by researchers, is whether there is a conflict between power and explainability. A more complex neural network (more layers, more complex computations or decisions at each node) may not be as explainable as a simpler one, or its explanation may be so complex that it cannot be understood by a mere mortal. These issues are likely to receive continued attention.

➡ Takeaways from the IIC Quarterly Meeting

The Industrial Internet Consortium (IIC) held its Q3 meeting, virtually, on Sep.28 to Oct. 1. With a significant membership in Asia, arranging a practical schedule was a challenge; some sessions started at 4:00 a.m. on the US Pacific Coast, others at 10:00 pm on the East Coast, and Asia/Pacific participants were sometimes up in the middle of the night.

Without revealing information that is reserved for paying members of IIC, here are some takeaways:

- IIC is compiling a catalog of IIC products offered by its members. The initial version comprises 175 products, classified into 4 categories. There was some discussion about including services (e.g., consulting) in the future.
- The Agency for Science, Technology and Research (A*STAR) of Singapore has an Industrial IoT Innovation (I^3) program, based on a public-private partnership model.

- Stan Schneider, CEO of Real-Time Innovations (RTI) gave a presentation on "Autonomy Beyond the Car." His key point is that we've talked about "human in the loop" in terms of having the occupant of a self-driving car take back control in unexpected situations, but this is not realistic: future passengers may not even know how to drive, and will probably be occupied with other things while riding in the car. Stan believes that fleets of autonomous cars will be connected to control rooms, where remote human operators will be the ones taking over to resolve problems.
- Peter Klement (DXC Technology) presented an incipient effort to specialize the Industrial Internet Reference Architecture (IIRA) for the minerals and energy industries. Some work was done for mining, including an architecture models using ArchiMate from the Open Group as well as a drilling process model in BPMN.
- There was an initial discussion about a potential testbed to monitor operator fatigue in the mining industry.

➡ And to no one's surprise... COVID-19 and the Cloud

TechRepublic published in June the results of a survey by LogicMonitor about the acceleration of cloud migration provoked by the COVID-19 pandemic. With the generalization of remote work, both the necessity of operating an on-premises data center and the practicality of staffing it have decreased dramatically. While this is a rather obvious statement, the results are impressive: "87% of global IT decision makers agree the COVID-19 pandemic will push organizations to accelerate cloud migrations." Click on the link above for more survey results and comments.

In a related article, TechRepublic reports on a Hitachi ID survey about the challenges IT support teams have faced to help users access corporate applications. You might think that the top challenges might be VPNs or incompatibilities with various browsers, operating systems, plug-ins, etc., but in fact "employee password lockouts was the top issue cited by 71% of those surveyed." *Plus ça change...*

➡ Seen Recently...

"Why is software created using taxpayers' money not released as free software? If it is public money, it should be public code as well."

-- Free Software Foundation Europe (FSFE)

"Knowing how to use a word processor doesn't make us into people prepared for the current world. The pandemic has made manifest the need for a specific curriculum to teach students real digital skills: it's in schools that this education must start."

-- Subtitle of a September 17 article on "digital illiteracy" (in Spanish) by
D. López Álvarez, A. Bahamonde Rionda and J. Velázquez Iturbide;
published by Ethic, "a group of professionals who believe that
information of quality is required to trigger changes."