POST

Study this closely . . .

August 31, 2021

Study this figure closely …

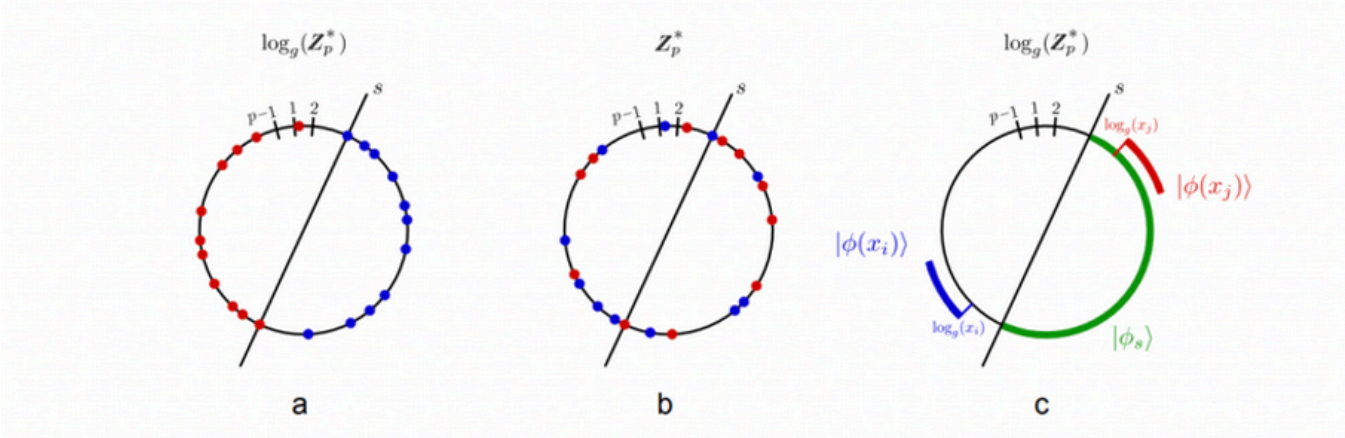

FIG. 1. Learning the concept class $\mathcal{C}$ by a quantum feature map. (**a**) After taking the discrete log of the data samples, they become separated in log space by the concept s. (**b**) However, in the original data space, the data samples look like randomly labeled and cannot be learned by an efficient classical algorithm. (**c**) Using the quantum feature map, each $x \in \mathbb{Z}_p^*$ is mapped to a quantum state $|\phi(x)\rangle$, which corresponds to a uniform superposition of an interval in log space starting with $\log_g x$. This feature map creates a large margin, as the $+1$ labeled example (red interval) has high overlap with a separating hyperplane (green interval), while the -1 labeled example (blue interval) has zero overlap.

… its important to glimpse the probabilistic relationship between quantum computing and machine-learning.

RUNNING AI ON QUANTUM DATA

---“Running AI on data after the probability wave function has already collapsed is kind of boring. It won’t nearly be as much fun as running AI on data before the probability wave collapses (if it ever collapses---the Copenhagen interpretation).

The real fun will be running machine-learning on quantum data (the probability wave itself) before the quantum data is realized in our classically observed reality. That’s gonna be fascinating.” - Jed Anderson, EnviroAI

Running AI on Classical Data

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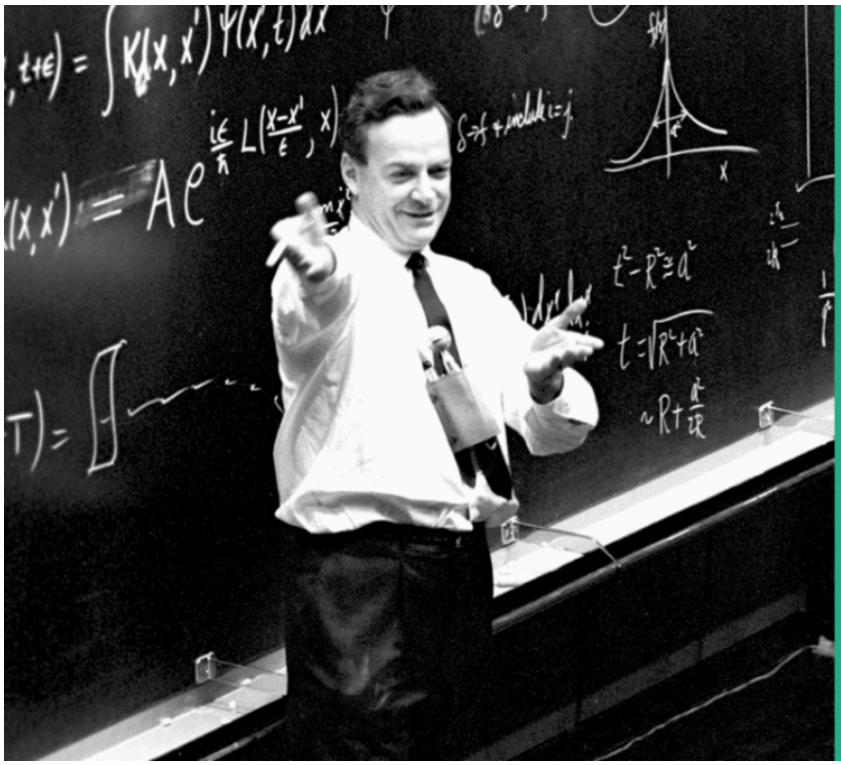
Using AI to understand classical data

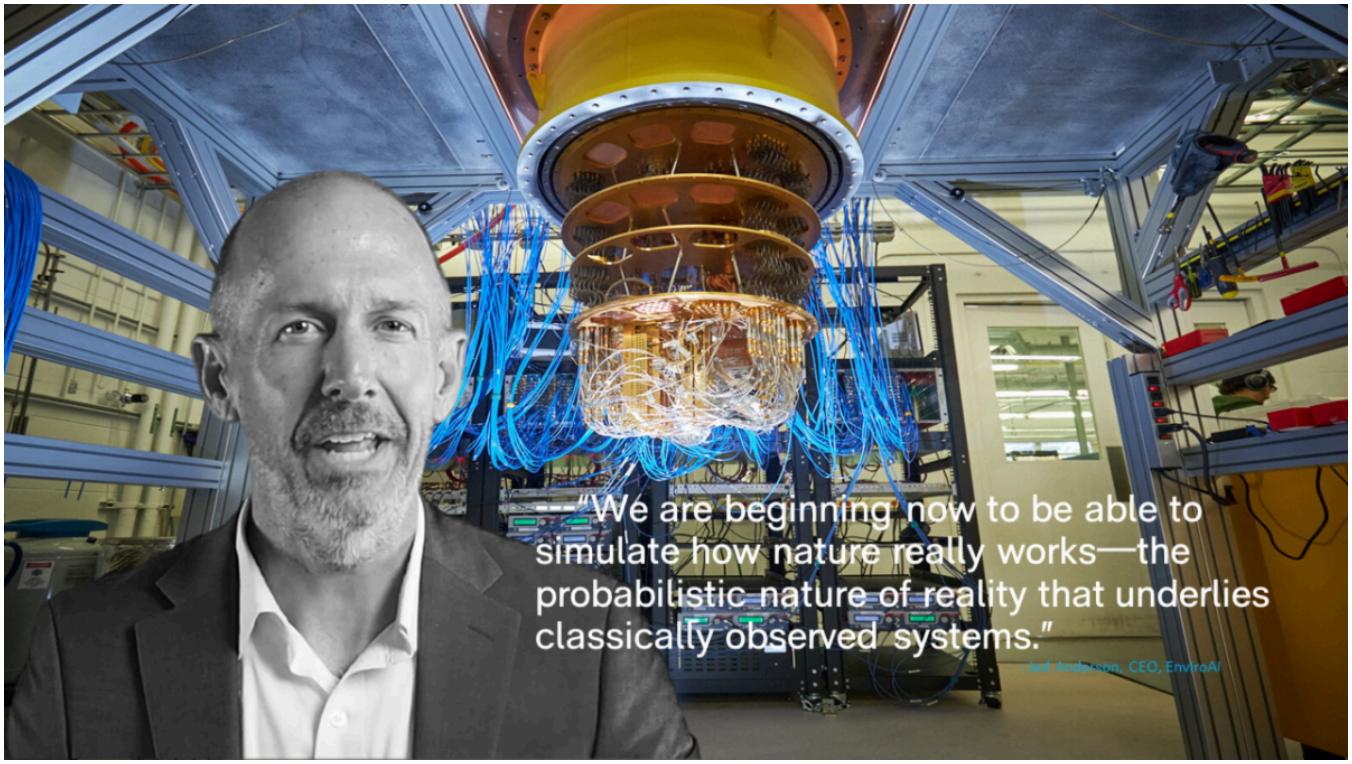
Running AI on Quantum Data

Using AI to understand quantum data

---“Right now the world is focused on running AI on classical data. The real breakthroughs will come when we run AI on quantum data.”- Jed Anderson, EnviroAI



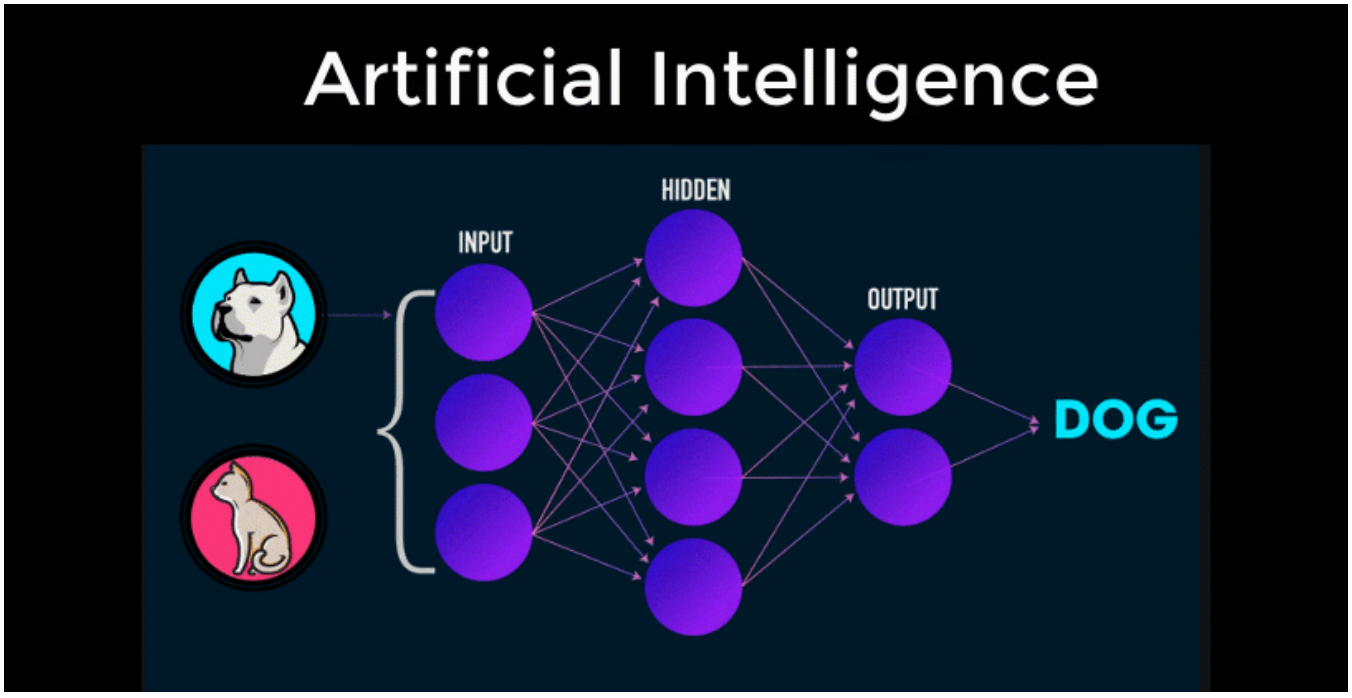
---"Nature isn't classical, dammit, and if you want to make a simulation of nature, you'd better make it quantum mechanical, and by golly it's a wonderful problem, because it doesn't look so easy." – Richard Feynman

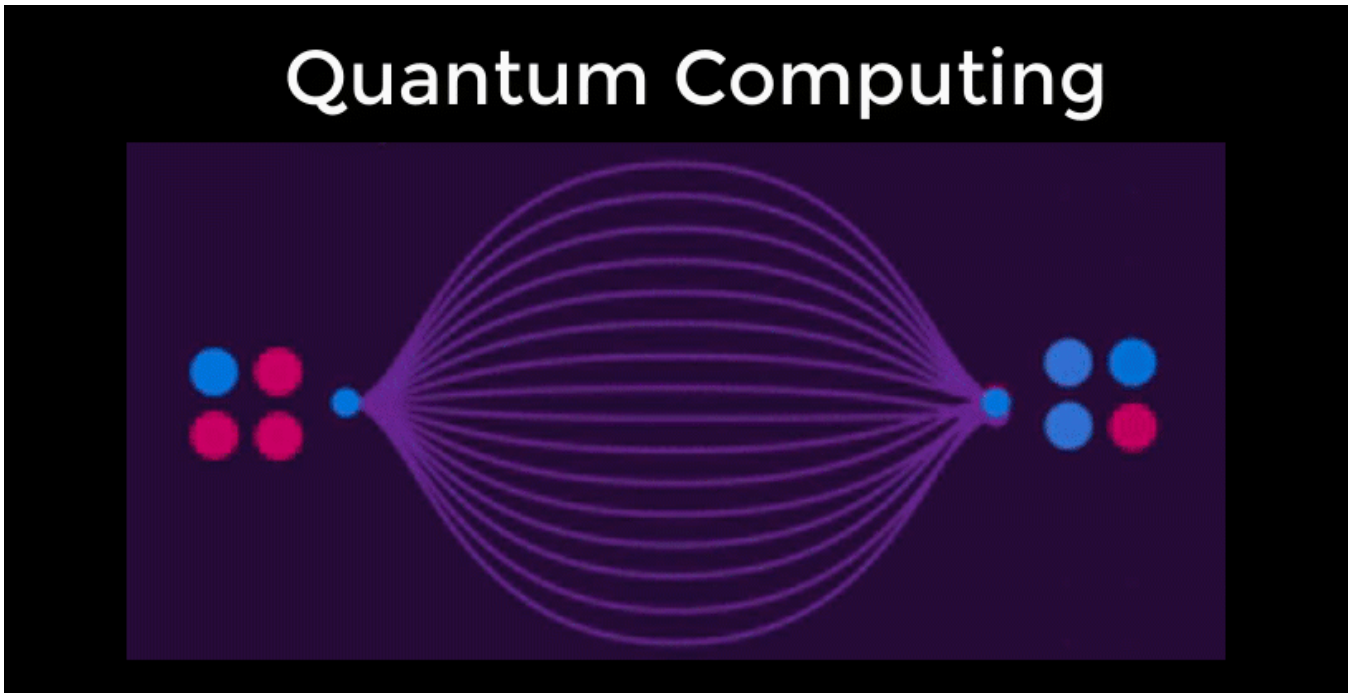


Both AI and quantum computing are based and rooted in probability (or to borrow from the great Einstein-Bohr discussion on quantum physics, “God playing dice” [Aside: It will not shock me if we eventually learn that God is indeed playing dice … but knows all the outcomes—i.e. Einstein and Bohr were both right]).

What we do know is that probability is a deeper reality of the underlying mechanisms at work in our classically observed world. We don't know what's causing this. We don't know what it means. God only knows at this point. But we do know this is reality. And we are beginning to harness more of these underlying powers of probability. [BTW … if you don't believe in quantum physics … you'll have a tough time believing in your cell phonesince this forms the basis of the technology (i.e. it would be hypocrisy to operate something you don't believe in, and difficult explaining to people that it instead of operating on quantum physics your particular phone operates on "magic"—which would really get people looking funny at you)]

What an incredible world we are continuing to discover! What a miracle life is! What an incredible time to be alive!




Quantum Computing

www.enviro.ai (https://r20.rs6.net/tn.jsp?f=001fBaI1p_3OUyTO88P3QdSYkZPPFVilHgNea9EGAOQYqEz4_dSP1gxHxZxbTM1SdMe2DAySSPEF2_-viiK5FwqeJUAIgi2waY0i9DZ06EbcGzG_aWQkRjtudB6ExQeWW09fYH6oi0HR1A=&c=&ch=)

Original source: Constant Contact campaign

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Source on GitHub: /src/content/posts/study-this-closely-2.md (https://github.com/jedanderson432/jedanderson-site/blob/main/src/content/posts/study-this-closely-2.md)