Physics of Data. Part XIII

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How much data is needed to train deep learning algorithms?

With physics forget about Big Data. It is a world of small Data now; smarter. The problem is that you don't know it yet. That's the price we pay for not majoring in Physics. Dang!

The question above becomes irrelevant, or need to be reformulated, when you surround Data Science and Machine Learning projects with physics.

It's going to be hard, quite a few people will be able to do it. But with physics and Differential Equations you immediately change a "dumb" approach of forcing data to learn nature and Dynamical Systems, to one in which you discover and know the equations that describe the behavior of the system.

Right now, Physics integrated, informed, inspired - or the building of Partial Differential Equations - is not at the reach of the majority of people working in classical data science and machine learning. They need to equip themselves very rapidly with computational Physics. I mean it!

Today, the ones dominating the literature and development of physics, computational physics, scientific machine learning, and differential equations using Small Data are top physicists and mathematicians, mostly from the United States national laboratories, fusion research, ignition facilities, and few from academia.

These new disciplines should be fully spread out in a generation, possibly creating on its path a new computational paradigm, aiming at revolutionionazing and start true Artificial Intelligence.

The world of Big Data is not the right approach. It will continue eating up processing units, time, burning trillions of capital, electricity, and consuming energy, without really learning anything about nature and its laws.

Alfonso R. Reyes • You
VP Artificial Intelligence Engineering - Energy Division
4mo • Edited •

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