The Physics of Data - Part IV

The Physics of Data - Part IV | Alfonso R. Reyes

Loved this post because kind of explains why AI is struggling, machine learning algorithms still are out of target, and data science has become lethargic.

“the LinkedIn data community really hates **Math**”

Cannot explain or model the world with only data

That probably explains why every Data Scientist and machine learning engineer wants to explain the world with data only, when they should be complementing their understanding of data generated by natural occurring phenomena with math and physics; in other words Differential Equations should be set up first to accompany data science, machine learning, and AI models.

Is statistics enough?

There are some things that can be explained by statistics but data is a reflection of dynamic Systems, and as such data is subject to physical laws.

Data by itself will not ever be able to make accurate predictions with pure data-driven models because it will not be constrained or have boundaries, varying wildly. Therefore, these DS/ML/AI cannot generalize out of sample.

The role of Physics

Differential Equations provide those boundaries for the data, the model behavior, while making the models far more predictable, and requiring almost no training data.

Remember this “if you have the right differential equation, obtained the proper parameters, and considering the correct independent variables, you are able to predict the future”.

Data Scientists, ML/AI experts are at disadvantage without knowledge of Physics

If LinkedIn data scientists, software engineers, or ML/AI experts do hate math, I doubt we will make any significant advances towards true AI.

If people working with data models do not understand, or love math, much, much less will be able to reach understanding of physics and differential equations.

If I were a data scientist, or machine learning practitioner, or an AI aspirant, I would start sharpening the saw, specifically, on advanced calculus, differential equations, Computational Physics, modeling using physics, and check how the field of scientific machine learning or SciML is progressing.

Differential Equations SPE Petroleum Engineering Data Science Machine Learning Artificial Intelligence Computational Physics Physics Of Data

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10mo • Edited •

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#DiffEq #spe #PetroleumEngineering #DataScience #MachineLearnin