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AI Coach (Helping People/Organizations in their AI Journeys)...
now •

Symmetry is Everything 🤔

During my exploration of Graph Neural Networks (GNNs), I came across a field known as 'Geometric Deep Learning' (GDL).
GDL takes a uber/meta view of Deep Learning, encompassing data-domains like Grids (such as images), Groups, Graphs, Geodesics, and Gauges (the 5Gs). 🔍

The core concept of GDL is to leverage the symmetries inherent in the data to design neural network layers accordingly. For instance, Convolutional Neural Networks (CNNs) utilize traversing-filter layers and pooling layers to preserve translation symmetry. This means that even if 'cat' in the image shifts, it can still be recognized as a 'cat'. 🐈

Symmetry, in the context of Geometry, refers to transformations that preserve the structure and distances between points. Similarly, in Physics, symmetry pertains to transformations that uphold the applicability of the laws of Physics. 👯

I recently came across some insightful talks on this topic, and I have summarized them in a Medium story. Feel free to check it out to dive deeper into the fascinating world of Symmetries. 🎞️

https://lnkd.in/dUNPPcdW 📄

And here is a wonderful article by Google DeepMind on topic of 'Symmetry-Based Representations for Artificial and Biological

General Intelligence' [https://lnkd.in/d_vYYjn5] 📃

#GraphNeuralNetworks #GeometricDeepLearning #Symmetry #summary #mathematics #physics Petar Veličković Michael Bronstein #ai #ml #neuralnetworks #deeplearning #geometry #cnn

Also feel free to follow me there as well
👇 https://lnkd.in/d8SVk752

Why Do We Search for Symmetry?
medium.com • 1 min read