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Chatbots like ChatGPT, Bard and the Large language models (LLMs) behind them, like GPT, Palm or Llama are very powerful and popular on the text domain, then also in the image domain, and then on videos, etc., but we haven't heard much about using these LLMs for Geometric algorithms, right? 🧠 🚀

Well, that's the topic of my personal research. 🌐

Extending my doctoral work on Midsurface, I am trying to find neural-network-based solution for a Geometric-Dimension-Reduction problem called 'Midcurve', where given a 2D profile shape, you need to generate it's corresponding midcurve, a curve in the middle of the profile mimicking it's shape. 🧩 🤖

It's a challenging problem and I am at it for a few years now. I have already tried image2image based approach and now trying to leverage LLMs for the same. Idea is to serialize geometry in text format (pic below) using Brep (Boundary Representation) like structure and then try text-based encoder-decoder architecture on it. 📈 📚

Btw, if you can imagine this problem is essentially a graph translation problem where graphs/shapes on encoder and decoder sides are of different sizes and topologies. I believe this is fundamental problem found in many domains and remains unsolved so far.

More info about my journey so far, at my GitHub yogeshhk/MidcurveNN

To facilitate more research and contributions for this problem from a wider community, I have created a public dataset at Kaggle called 'MidcurveLLM'. A corresponding notebook has also been kept their to show how to use the dataset. Do have a look at them. 📊 🔍

If you are interested in working at this novel intersection of Generative AI and Geometry, do contact me at my email firstnamelastname at Yahoo dot com, and also comment "Interested" below. 📧 💬

This research opportunity is free, open to all, voluntary and non-commercial, meaning I don't pay you and you don't pay me. All contributions are to be made public on the repo. 🤝 💡

#ai #artificialintelligence #opensource #llm #chatgpt #bard #palm2 #geometry #midcurve #neuralnetwork #research #community #generativeai #AIInnovation #GeometryMeetsAI #GenerativeAI #ResearchFrontiers #GeometricAlgorithms #LLMs #MidcurveChallenge #GitHubResearch #OpenSourceCollaboration #DataScience #InnovationJourney #KnowledgeExchange #AICommunity #CollaborativeExploration #TechInnovation #FutureTech #ResearchOpportunity #AIandGeometry #KaggleDataset #MachineLearning #AIResearch #CreativeCoding #NeuralNetworks #TechPioneers #DigitalTransformation #ExploreTheUnknown #TechInnovators #EmergingTechnologies 🚀 💻 🔬

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