Introduction 🚀

3D Neural Pathway Visualizer

Tagline:

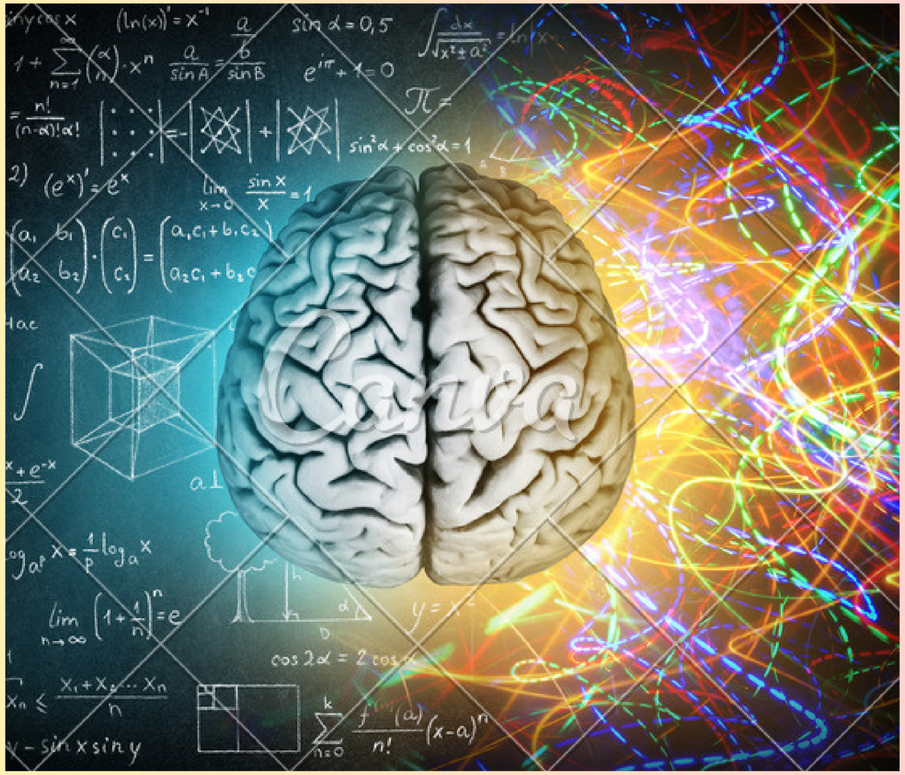
"Illuminating the brain's intricate pathways with 3D immersion."

Description:

Dive deep into the brain's vast neural networks with our 3D Neural Pathway Visualizer. Powered by Dreamfusion's advanced 3D generative capabilities, we bring forth an unparalleled clarity and precision to understanding the brain's complexities.

Use Case 💬

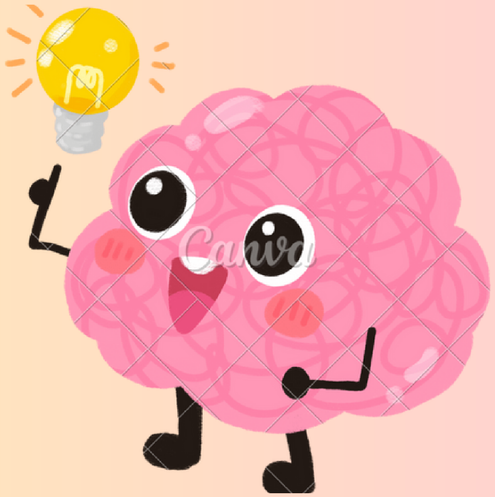
Medical students, neurologists, and neurosurgeons can utilize this tool for both educational and pre-surgical planning purposes. This tool can help visualize potential problem areas, plan surgeries, or simply understand the neural structures better.Better visualisation can also aid in discovery of new treatment strategies as well!



Motivation

The brain, being the epicenter of human function, is still a frontier of discovery. Visualizing its complexities aids in the next wave of neurological breakthroughs and better educative outcomes.

Purpose & Target Audience 🎯



Purpose: Simplifying complex neural pathways to foster better understanding and research.

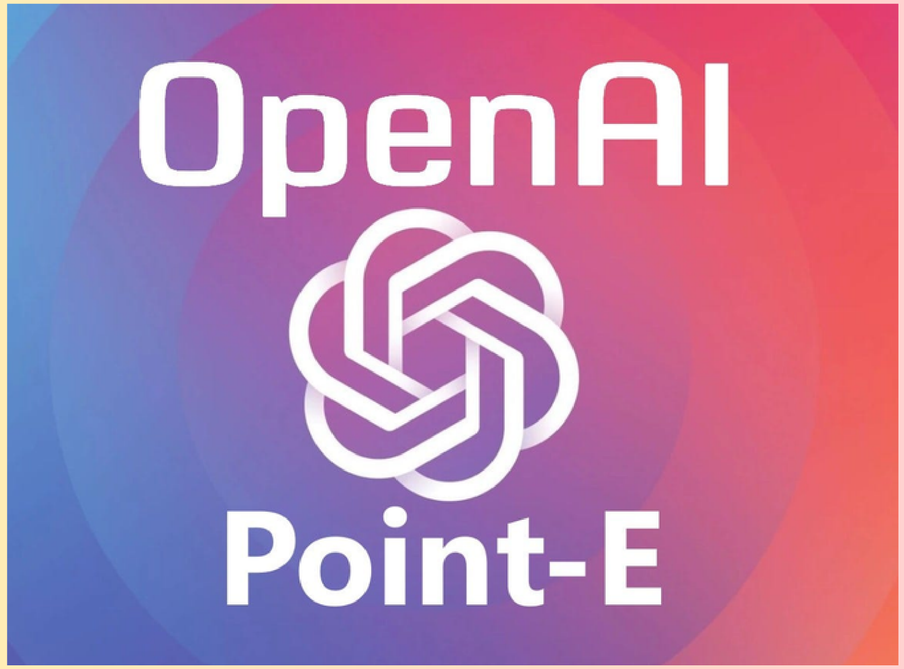
Target Audience: Medical students, neurologists, neuroscientists, researchers and educational institutions.

Profitability & Market Introduction: Licensing the software to educational institutions and medical centers or offering it as a premium cloud-based service.

Market Strategy & Profitability 💼

- Partnering with research center, universities, medical schools, and online educational platforms to integrate our tool into their curriculum. Potential for a subscription model for continual updates and refined models.

- Drug discovery agencies and pharma industries



Tools Used

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Point-E: Leveraged for generating intricate 3D neural pathways, offering a true-to-life representation of brain anatomy.

Tech Stack & Scalability

We used Google Colab, Blender, and Unity to create a scalable 3D brain anatomy model that can be used in WebGL or mobile apps.

Ideas & Planning

Initiated with brainstorming sessions focusing on the pressing need for advanced neurology tools. Mapped out the neural structures that would be pivotal for our model.

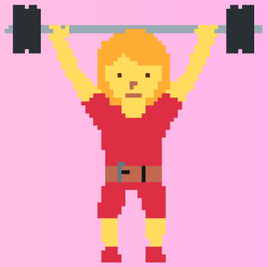
Potential Features

Interactive 3D Models: Rotate, zoom, and dissect neural pathways.

Annotations: Detailed information accompanying each pathway segment.

Simulation Mode: Visualize neural signal travel through pathways.

Achieving anatomical accuracy.

Challenges 

Ensuring seamless interaction in real-time.

What We've Learned 🎓

The profound intricacies of the brain and the boundless potentials of 3D generative models when applied to medical science.

Wrapping Up 🏁

While we've achieved significant milestones in visualizing neural pathways, the journey to decode the brain's mysteries is ongoing.

Future Scope

Expanding to other organs, integrating AI for predictive analytics on neural disorders, and AR integration for real-world surgical applications.

Proof of Concept/ Demo 🎞

Below listed are the youtube links for demo vedios

https://youtu.be/GldYnwFc34s

https://youtu.be/qTxUz2lA0lo

https://www.youtube.com/watch?v=e-gs8gXlhuw

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Educational Anatomy Models:

- Allow user to visualize and manipulate complex 3D structures like organs, tissues, or cellular structures.
- Include annotations and information to make it an medical tool.

Github links

https://github.com/DreamFusion-LabLab-Hackathon/3DNeuralPathwayVisualizer