

Lab 1: Introduction to ChatGPT

ChatGPT: Working and Real-World Applications

Introduction

ChatGPT is an AI language model created by OpenAI based on the GPT (Generative Pre-trained Transformer) architecture. It uses deep learning and transformers to understand and generate human-like text. GPT-4, the latest version, was trained on vast amounts of text data, enabling it to answer questions, write content, and hold conversations.

How It Works

ChatGPT operates in two main stages:

- **Pre-training:** The model learns language by predicting the next word in large text datasets, developing understanding of syntax and facts.
- **Fine-tuning:** Human feedback improves the model's responses, making them more accurate and appropriate.

The transformer architecture uses *self-attention* to focus on important words within context, helping ChatGPT generate relevant and coherent replies. Visualization tools illustrate how attention weights shift across sentences.

Applications

- **Education:** Personalized tutoring, homework help, content summarization.
- **Healthcare:** Assisting with medical documentation, patient communication, and health education.
- **Business:** Customer support chatbots, email drafting, data analysis.
- **Creativity:** Storytelling, poetry, idea generation for design and branding.

Conclusion

ChatGPT is a versatile AI that enhances communication and creativity across various fields. Its transformer-based design allows for powerful language understanding, making it a valuable tool in education, health, business, and creative industries.