SharpeGPT: A Large Scale Language Model for Cryptocurrency Markets

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Abstract

SharpeGPT is a Large Scale Language Model designed for crypto financial applications, offering unique benefits in accuracy, relevancy, and timeliness of insights. The model leverages the power of generative transformer-based large language models and utilizes a crypto-native data-centric approach, making it particularly suited to handle the vast and complex landscape of crypto data. The LLM continually adapts to deliver the most accurate predictions possible. This whitepaper delves into the specifics of SharpeGPT, from its creation and architecture to its performance and potential applications, shedding light on its unique capabilities and prospects.

1 Overview of SharpeGPT

At its core, SharpeGPT is a powerful large language model that has been fine-tuned for cryptocurrency-specific data applications. It inherits the benefits of large language models, including their ability to understand context, make sense of unstructured data, and generate human-like text. The Model's architecture, which includes data gathering, preprocessing, and a user-friendly interface, works in unison to process and analyze data. Firstly, the data gathering component pulls in data from various sources, providing SharpeGPT with a comprehensive view of the crypto landscape. This data is then pre-processed to ensure it is in a format suitable for the model. The heart of the LLM is the model itself, which is a transformer-based large language model. It leverages self-attention mechanisms to understand the context of data and generate meaningful insights. The model has been fine-tuned with LoRa, allowing it to learn the specific nuances of crypto data and continually improve its performance. Finally, SharpeGPT features a user-friendly interface, making it easy for users to input data and interpret the model's output. This ensures that the insights generated by the model are easily accessible and actionable.

2 Applications of SharpeGPT

The unique capabilities of the LLM make it a valuable tool in a wide range of applications.

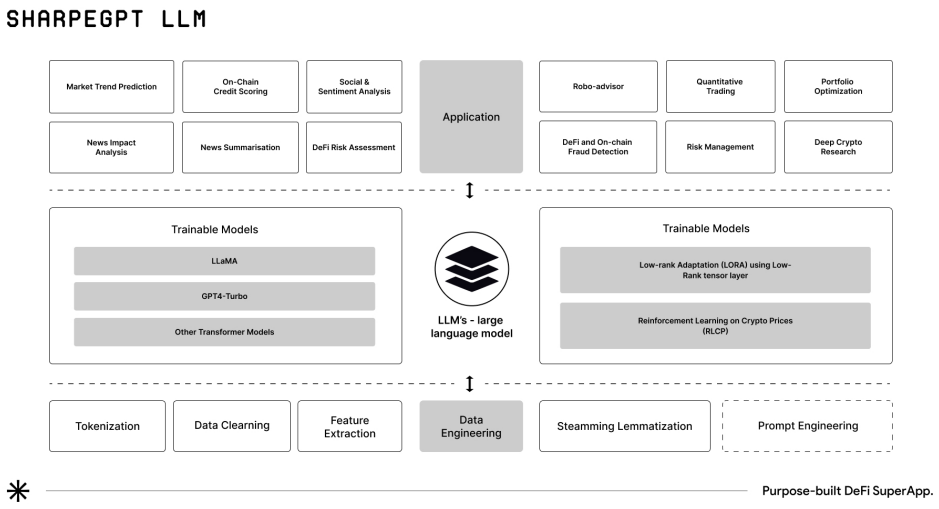

Figure 1: Applications of SharpeGPT

2.1 Market Trend Prediction

SharpeGPT can analyze vast amounts of data from various sources to predict market trends. Users can use these predictions to make informed financial and investment decisions.

2.2 News Impact Analysis

SharpeGPT can interpret news articles and social media posts to gauge their potential impact on the crypto market. This can help users stay ahead of the market, reacting to news before it has a chance to affect prices.

2.3 Social Sentiment Analysis

By analyzing social media sentiment, SharpeGPT can provide insights into the latest general public's perception of different cryptocurrencies and projects. This can help users understand the market sentiment, which is often a powerful driver of price movements.

2.4 Risk Assessment

The model's ability to analyze and predict market trends can be used to assess the risk of different investment strategies. This can help users manage their on-chain and off-chain risks more effectively.

2.5 Research

Researchers can use SharpeGPT to analyze the vast amounts of unstructured and On-chain crypto data, saving time and providing valuable insights that can drive further research.

2.6 Algorithmic Trading and Robo Advisor

SharpeGPT can be used to develop algorithmic trading strategies. Predicting market trends and assessing the risks of the user, can help investors decide on optimal portfolios according to their risk appetite.

2.7 Yield Generation

SharpeGPT can be used to develop advanced composable DeFi strategies. By predicting yield across sectors and projects, it can help traders find the best sustainable yield opportunities.

2.8 News Summarisation

SharpeGPT can summarize news articles related to cryptocurrencies, providing concise and relevant information. This can help users stay updated with the latest developments in the crypto world without having to read through lengthy articles to stay up-to-date.

2.9 DeFi and On-chain Use Cases

SharpeGPT can be used to analyze and predict trends in the DeFi. By analyzing on-chain data, it can provide insights into transaction volumes, gas fees, and other relevant metrics. This can help users identify potential investment opportunities in the DeFi space. Furthermore, The model can analyze smart contract interactions on the blockchain to identify patterns and trends. This can be particularly useful for identifying popular dApps or predicting the usage of certain smart contracts.

3 Data-Centric Approach of SharpeGPT

One of the distinguishing features of the Model is its data-centric approach. In the world of cryptocurrencies, the quality and relevance of data can significantly impact the accuracy of analyses and predictions. SharpeGPT is capable of processing real-time data, making it extremely responsive to the dynamic nature of cryptocurrencies. This capability ensures that the insights the model delivers are not only accurate but also timely. The data-centric approach also extends to the model's training process. The model is fine-tuned with LoRa, a technique that emphasizes learning from relevant, high-quality data. This ensures that the Model is constantly evolving and adapting to the ever-changing landscape

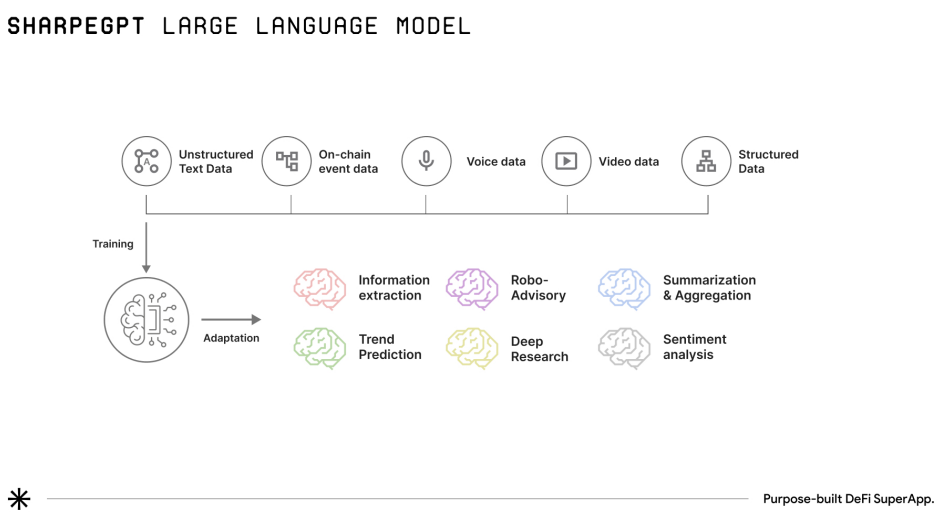

Figure 2: Data Preparation and Ingestion

of cryptocurrencies and ensures that it provides the most accurate and up-to-date insights possible, making it an invaluable tool for cryptocurrency research and analysis.

3.1 Data Curation Pipeline

The data curation pipeline for SharpeGPT is designed to handle the unique challenges of cryptocurrency data. It involves several key steps: Data Collection: SharpeGPT collects data from a wide range of sources, including social media platforms, news websites, podcasts, governance forums, and government filings. This ensures a comprehensive view of the crypto landscape. Data Preprocessing: The collected data is preprocessed to convert it into a format suitable for the model. This involves cleaning the data, handling missing values, and transforming text data into representations that can be processed by the model. Data Integration: The preprocessed data from various sources is integrated into a unified dataset. This involves resolving any inconsistencies and ensuring that the data from different sources can be combined seamlessly. Real-Time Data Processing: SharpeGPT is designed to process data in real time, allowing it to respond to the dynamic nature of cryptocurrencies. As soon as new data is available, it is incorporated into the model's analyses.

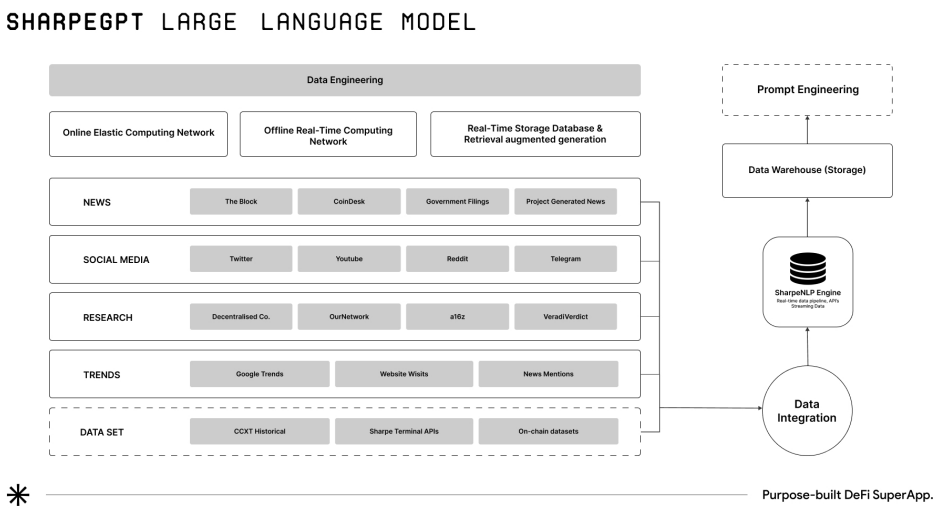

Figure 3: Data Curation Pipeline

4 Challenges in Handling Crypto Data

Cryptocurrency data presents unique challenges owing to its sparse and unstructured nature. Unlike traditional data types, cryptocurrency and on-chain data are often sparse and scattered across various platforms, including on-chain data across chains, social media, podcasts, governance forums, government filings, and news sites. This diversity makes it difficult to gather and analyze. Moreover, much of the data is communicated via text, further complicating the analysis process. Decoding the implications of news articles, social media posts, or podcast transcripts requires not just data analysis, but also natural language processing capabilities. Additionally, the real-time nature of cryptocurrency markets adds to the complexity. Given the volatile nature of cryptocurrencies, being able to process and analyze data in real time is crucial. This is particularly challenging given the diverse sources and unstructured nature of the data. The Model can process and analyze unstructured, text-based data, and being able to manage the signal-to-noise ratio when it comes to text-based datasets makes it uniquely suited to handle crypto-specific data. Furthermore, it can gather data from diverse sources and process it in real-time, ensuring its analyses and predictions are always up-to-date and relevant. In more detail, The Model utilizes advanced natural language processing techniques to make sense of the text-based data. Whether it's an article on a news site or a post on a social media platform, SharpeGPT can interpret the content and derive meaningful insights. To handle the diversity of data sources, The Model employs a robust data-gathering system. It is capable of pulling data from a variety of

platforms, ensuring that it has a comprehensive view of the crypto landscape. This ability to unify disparate data sources into a single, coherent model is one of SharpeGPT's key strengths. Finally, to ensure the timeliness of its insights, SharpeGPT is designed to process data in real-time. This means that as soon as new data is available, SharpeGPT can incorporate it into its analyses.

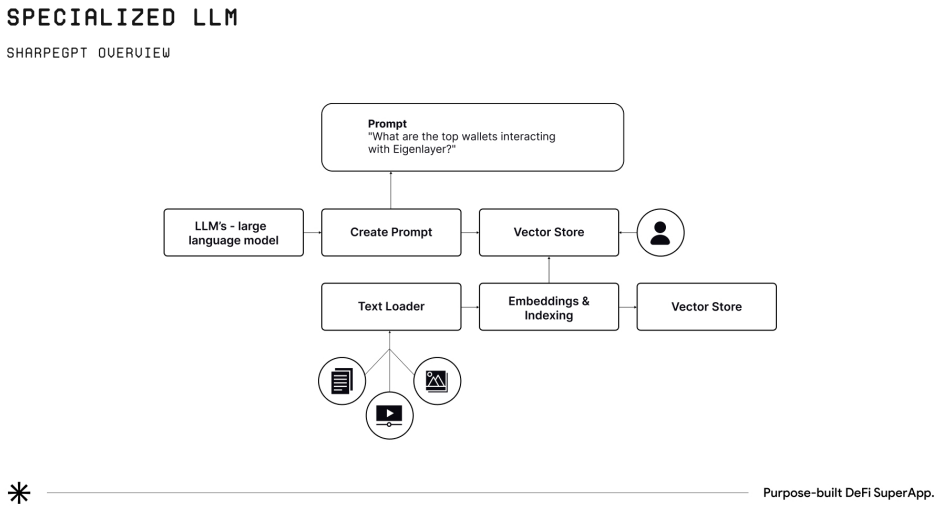

Figure 4: Handing Crypto-Native Data

5 Fine-Tuning with LoRa and Model Training

SharpeGPT utilizes a fine-tuning technique known as LoRa (low-rank adaptation), which plays a pivotal role in enhancing its performance. LoRa is a technique that adapts pre-trained models to specific tasks by adding a low-rank matrix to the pre-trained parameters. This allows the model to learn task-specific parameters without modifying the original pre-trained parameters, maintaining the general knowledge learned during pre-training while gaining specific knowledge about the new task.

In the context of SharpeGPT, LoRa allows the model to adapt to the unique challenges of cryptocurrency data. The technique helps SharpeGPT capture the specific nuances and patterns in the data, improving the accuracy of its predictions.

The objective of SharpeGPT is not just to generate creative text, but to analyze and make sense of cryptocurrency data. This is where fine-tuning comes in. During fine-tuning, SharpeGPT is trained on a task-specific dataset, which in this case involves data related to cryptocurrencies.

The fine-tuning process employs LoRa (Low Rank Adaptation), which allows SharpeGPT to adapt to the specific nuances and patterns in crypto data without forgetting the general language patterns it learned during pre-training. This ensures that SharpeGPT maintains its ability to understand and interpret human-like text while also being able to deliver accurate results.

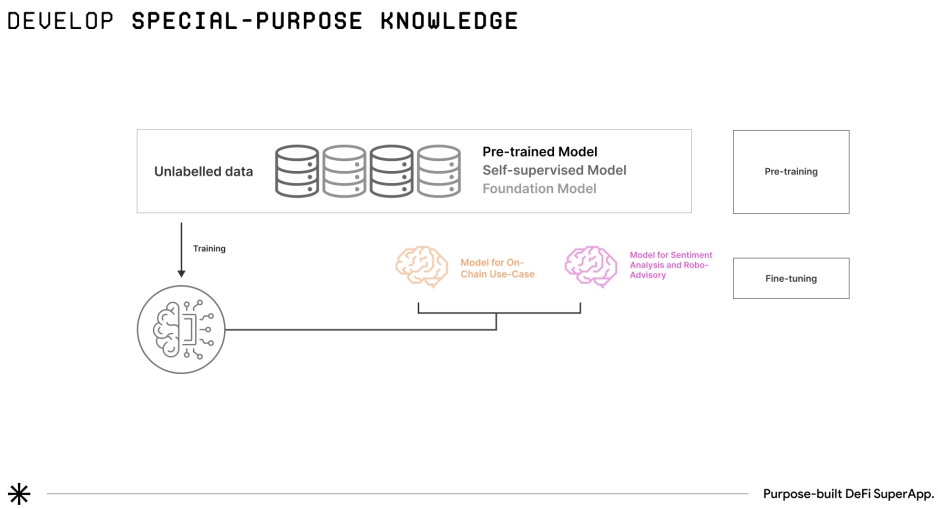

Figure 5: Model Training

6 SharpeGPT for Advanced App Integration

Integration with the Sharpe App will enable SharpeGPT to interact directly with DeFi platforms, DApps, and other decentralized ecosystems, providing a conversational UI frontend to DeFi for not only retrieval of information but also for executing transactions and creating bundles.

The integration of SharpeGPT with the Sharpe App opens up a plethora of possibilities. It enables SharpeGPT to interact directly with DeFi platforms, DApps, and other decentralized ecosystems. This integration provides a conversational UI frontend to all of Sharpe products, allowing for not only the retrieval of information but also for executing transactions and creating bundles.

This application of SharpeGPT can revolutionize the way users interact with DeFi platforms and DApps. By providing a conversational interface, it makes these platforms more accessible and user-friendly. Users can retrieve information, execute transactions, and create bundles using natural language commands, making the process more intuitive and efficient.

Moreover, the integration of SharpeGPT can enhance the accuracy and relevancy of the insights provided by SharpeGPT. By directly interacting with DeFi

platforms and DApps, SharpeGPT can access real-time data, ensuring that its predictions and insights are always up-to-date and relevant.

This represents a significant advancement in the field of improving user experience in DeFi. It not only enhances the capabilities of SharpeGPT but also revolutionizes the way users interact with DeFi platforms and DApps.

7 Conclusion and Future Work

SharpeGPT represents a significant advancement in the field of specialized LLMs built for cryptocurrency markets. By leveraging the power of large language models and incorporating a data-centric approach, SharpeGPT provides accurate, timely, and relevant insights into the dynamic world of cryptocurrencies.

This whitepaper detailed the creation and functionality of SharpeGPT, from its architecture and training process to its evaluation and applications. SharpeGPT's unique strengths, including its ability to process real-time data, understand context, and continually learn and adapt, set it apart from traditional models.

Looking forward, there are several areas where SharpeGPT can be further improved. Enhancements to its data-gathering capabilities could enable it to pull in data from even more diverse sources. Improvements to its user interface could make it even easier for users to input data and interpret SharpeGPT's output. And ongoing fine-tuning with LoRa will ensure that SharpeGPT continues to adapt and improve as the cryptocurrency landscape evolves.

8 Ethical Considerations

As with any tool that processes and analyzes data, there are ethical considerations to take into account when using SharpeGPT. These revolve primarily around data privacy and the potential misuse of information.

8.1 Data Privacy

SharpeGPT processes data from various sources, some of which may be personal or sensitive. It's crucial to ensure that data is handled responsibly, with respect for privacy laws and regulations.

8.2 Potential Misuse

The insights generated by SharpeGPT could potentially be used for nefarious purposes, such as market manipulation. Users must use SharpeGPT responsibly and by all relevant laws and regulations.

8.3 Transparency and Accountability

As an AI model, SharpeGPT's decision-making process can be complex and opaque. It's important to ensure transparency in how SharpeGPT works and

to hold it accountable for its predictions and analyses.

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