Investment Recommendation on NVIDIA Based on Financial Performance

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Abstract. This entire study has done based on the financial analysis of NVIDIA to comprehend their financial performance between 2021 and 2024. This fundamental purpose of this study is to obtain some knowledge about ratio analysis to find out how the enterprise operates in the industry. The data has been systematically collected through the following channels: east money information CO., LTD. Subsequently, these data sets are utilised to compute a series of ratios, and conducting horizontal analysis and vertical analysis. This study uses the solvency ratio, liquidity ratio and cash flow ratio to assess whether a company possesses sufficient assets, profitability, and cash flow to solve its short-term and long-term debt obligation. Additionally, the profitability ratio is utilised to assist investors in evaluating the company's earnings performance and cost control efficiency. Furthermore, s horizontal analysis was conducted to compare the upward or downward tendency in NVIDIA's financial performance and operational results from 2021-2024, and a vertical analysis was conducted to compare the proportion of carious financial data relative to total assets. Based on the analysis, this paper proposes a series of recommendations tailored to diverse categories of investors.

Keywords: Financial Performance, Ratio Analysis, Investment Recommendation, NVIDIA.

1 Introduction

Under the rapid development of artificial intelligence (AI) and high-performance computing (HPC), in 2023, approximately 70 AI models has been developed in academic, industrial, and business circles. NVIDIA has been taken from a company that produces video game cards to a manufacturer that makes a world-leading AI computing chip. There are a lot of famous products like RTX AI PCs, and G-SYNC displayer. Especially in 2023, the global demand for AI services has surged after the explosion of generative AI technology. This situation caused NVIDA's data center business income growth to exceed 200 percent yearly. This trend has made NVIDIA one of the capital market's focus areas. And NVIDIA has become one of the most influential technology companies, this has attracted numerous investors to invest in his stocks. Nevertheless, with the rapid development of competitors such as AMD in recent years, and the lack of new scientific and technological advancements, many investors are relatively pessimistic

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about the future investment returns of NIVIDIA. This research aims to analyse NVIDA's financial performance, and it will conduct a horizontal and vertical analysis of NVIDA's financial statements, evaluating year-on-year changes and the composition of its structure. The research paper will also compute a series of financial ratios, including Liquidity, profitability, cash flow and solvency ratio, to assess NVIDA's economic health. This study will analysis whether this company is worthy of investment.

2 Methodology

NVIDIA's financial analysis used techniques and tools such as horizontal, vertical, and ratio analysis in this study. But after this discussion, it can be stated that the pertinent information for East Money Information Co., Ltd. The crucial elements of three financial statements, the balance sheet, the income statement, and the cash flow, have been used to collect information [1]. Then, the enterprise's financial performance, respectively, horizontal analysis, vertical analysis, liquidity ratios, profitability ratios, cash flow ratios and solvency ratios, has been evaluated.

2.1 Horizontal Analysis

This analysis method compares a company's financial data from different periods. Trends are usually shown as percentages or amounts [2]. It can identify growth trends and declines in financial status and operating results. The calculation formula is the current amount minus the base amount divided by the base amount and multiplied by one hundred percent.

2.2 Vertical Analysis

This is another financial statement analysis method. It compares each piece of data in the financial statement with the benchmark amount to gain the relative proportion of each part of the statement [3]. In this manner, the financial structure of the company and the allocation of resources are assessed. Vertical analysis can assist enterprises in better understanding their asset allocation, capital structure, cost control, and profitability. Thereby optimising their financial strategies.

2.3 Financial Ratio Analysis

Liquidity ratios. In this ratio, three main ratios are often used: current ratio, acid-test ratio, and cash ratio [4]. Each of these ratios shows the liquidity performance of the company. For analysing this company, it is vital to use the liquidity ratio to know the ability of current assets to repay debts. For instance, how much cash is available to service the debt and whether there is enough liquidity to ensure the operating circle. Hence, the company's management could better understand the liquidity position using the current, acid test, and cash ratios.

Profitability ratios. This ratio is used to evaluate financial indicators of corporate profitability [5]. It includes gross profit margin, operating profit margin and return on equity (ROA). This ratio assists the investors and management understand the enterprise's business operation level and efficiency. As for gross profit margin, a higher margin indicates that the company holds an edge in pricing and cost control. Secondly, a higher operating ratio indicates that the company has higher operational efficiency. Thirdly, a higher ROA indicates a higher efficiency in the company's utilisation of resources.

Cash flow ratios. This financial metric evaluates a company's cash flow, position, and repayment ability [6]. It can help to analyse whether the company have enough cash flow to meet short-term and long-term debts. It can be divided into operating cash flow to total assets ratio and free cash flow ratio. Firstly, this research will show the operating cash flow to current liabilities ratio, which measures a company's ability to use the cash flow generated from its operating activities to repay short-term debts. The higher the ratio, the stronger the repayment ability. Secondly, it will show the operating cash flow to total liabilities ratio, and it can evaluate the enterprise's ability to repay all debts with cash flows from operating activities. The higher the ratio, the more financially sound the enterprise is.

Solvency ratios. This ratio evaluates the enterprise's long-term financial health status and the ability to repay long-term debt [7]. It helps investors and creditors estimate whether the company can access the assets or cash flow to cover long-term debts. This study will use the debt-to-asset and debt-to-equity ratios to estimate the company's long-term financial stability and repayment ability. The higher the assets-liability ratio, the greater the company's depend on debt financing and the higher the solvency risk. The smaller the debt-to-equity ratio, the lower the financial risk.

3 Analysis

3.1 Horizontal Analysis

Table 1. Financial data of NVIDIA

Balance sheet (in billions)				
			change compared to last year	
	2024	2023	Amount	Percent
account receivable	23.07	9.99	13.08	130.93%
total assets	111.6	65.73	45.87	69.79%
account payable	6.31	2.699	3.611	133.79%
total liabilities	32.17	22.75	9.42	41.41%
retain earning	68.04	29.82	38.22	128.17%
total equity	79.33	42.98	36.35	84.57%

Nvidia's total assets increased by $45.87 billion (69.79%), from $65.73 billion in 2023 to $111.6 billion in 2023. This increase was driven by a 130% rise in accounts receivable, reflecting a significant surge in customer demands, particularly the customers of data centers such as AWS, Google Cloud and Microsoft Azure. (Table 1)

On the liabilities side, total liabilities increased by $9.42 billion (41.41%), suggesting relatively minor changes in Nvidia's long-term debt by about 0.05%. Its liability growth mainly stems from accounts payable, which increased by 133.79%. Therefore, Nvidia has a relatively low financial risk. Additionally, the growth rate of liabilities is much lower than that of total assets and shareholder's equity, indicating that Nvidia expands relying on its profitability rather than excessive financing.

In terms of equity, in 2024, Nvidia's total equity significantly increased by $36.35 billion (85.57%). The retained earnings increased from $29.82 billion in 2023 to $68.94 billion in 2024, mainly due to Nvidia's tendency to retain funds for future investment rather than share buybacks to enhance the capacity for future growth.

3.2 Vertical Analysis

Table 2. Financial data of NVIDIA

Balance sheet (in billions)				
	2024	percentage of total assets	2023	percentage of total assets
current assets	80	71.80%	44	67.47%
accounts receivables	23.07	20.67%	9.99	15.20%
inventory	10.08	9.03%	5.282	8.04%
total liabilities	32.17	28.83%	22.75	34.61%
total non-current liabilities	14.23	12.75%	12.12	18.44%
long-term liabilities	8.463	7.58%	8.459	12.87%
total shareholder's equity	79.33	7.08%	42.98	65.39%
retain earnings	68.04	60.97%	29.82	45.37%

The key financial data of Nvidia can be found in Table 2. Nvidia's current assets accounted for 71.8% of total assets, up from 67.47% in 2023, reflecting an increase in the proportion of Nvidia's accounts receivables and inventory in total assets. This indicates that the company has a relatively strong short-term debt-repaying ability and is better positioned to cope with market fluctuations. On the liabilities side, the total liabilities as a share fell from 34.61% in 2023 to 28.83% in 2024, mainly due to the decline in the proportion of total non-current liabilities and long-term liabilities. And the proportion of total shareholder's equity has increased. The reason might be that the high net profit has led to a substantial increase in shareholder's equity, and at the same time, retained earnings have also grown rapidly. This indicates that the company relies more on internal fund accumulation than debt financing, reducing financial leverage and mitigating wealth risk.

3.3 Liquidity Ratio

The ratio for liquidity includes the current ratio, acid-test ratio, and cash ratio. The detailed analysis of the absolute number and the trend from 2021 to 2024 will be explained below.

3.3.1 Current Ratio.

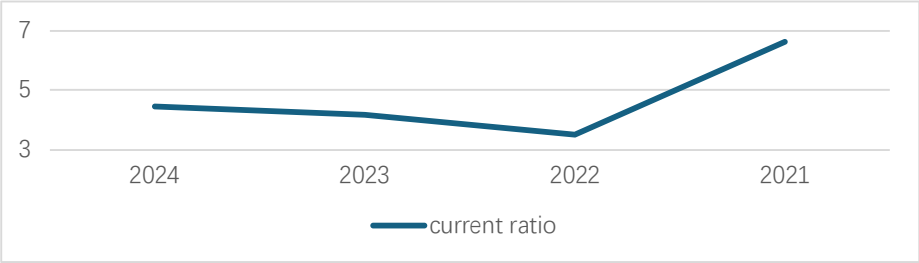

Fig. 1. Current ratio of NVIDIA

Table 3. Current ratio

Liquidity ratio	2024	2023	2022	2021
Current ratio	4.44	4.17	3.52	6.62

Based on an estimate of Nvidia's current ratio, it can be found that over four years, Nvidia's current ratio has stabilised at about 4.4 after a sharp decline from 2021 to 2022. The company currently has a high ratio, which means Nvidia has a strong ability to repay short-term debts [8]. (Table 3) (Fig. 1)

3.3.2. Acid-Test Ratio.

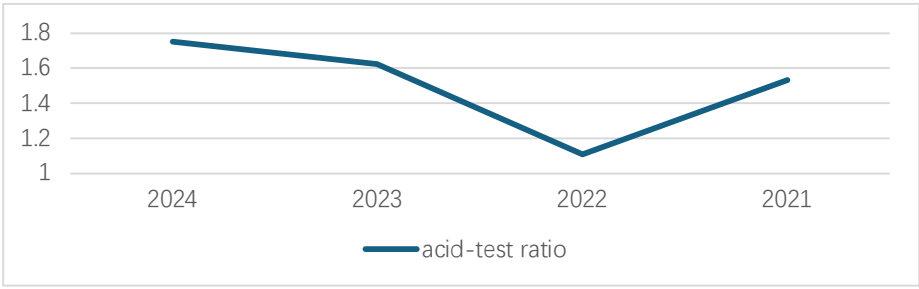

Fig. 2. Acid-test ratio

Simultaneously, the acid-test ratio had an upward trend from 2021 to 2023, and it increased to 1.75 in 2024, mainly due to the growth of income and profitability. It also

shows that the company has a stronger ability to repay short-term debts without relying on the sale of inventories. (Table 4) (Fig. 2)

Table 4. Acid-test ratio

Liquidity ratio	2024	2023	2022	2021
Acid-test ratio	1.75	1.62	1.11	1.53

3.3.3 Cash Ratio.

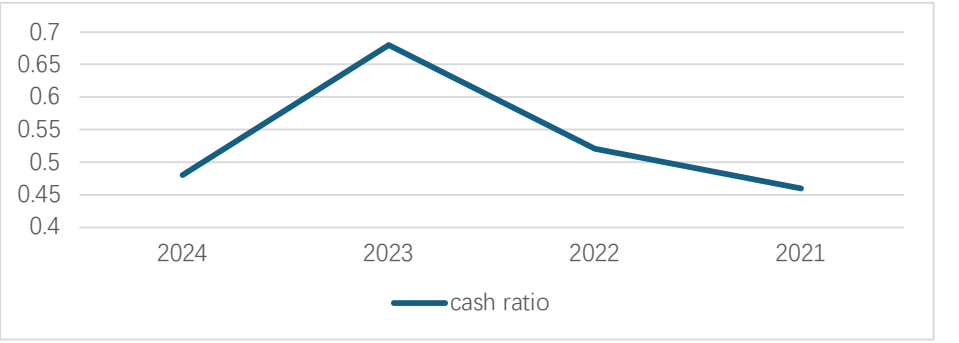

Fig. 3. Cash ratio of NVIDIA

Table 5. Cash ratio

Liquidity ratio	2024	2023	2022	2021
Cash ratio	0.48	0.68	0.52	0.46

According to the liquidity ratios, Nvidia's cash ratio is lower than one. This means that the company cannot rely on cash to repay all the debt, but this still falls within a reasonable range because Nvidia is a technology company with strong cash flows. (Table 5) (Fig. 3)

3.4 Solvency Ratio

The solvency ratio includes debt-to-asset ratio and debt-to-equity ratio. The detailed analysis of the absolute number and the trend between 2021 and 2024 will be explained below.

3.4.1 Debt-to-Asset Ratio.

Table 6. Debt-to-asset ratio of NVIDIA

Solvency ratio	2024	2023	2022	2021
Debt-to-asset ratio	0.29	0.35	0.46	0.40

Based on the debt-to-asset ratio, it can be discovered that the debt-to-asset ratio has declined to 0,29. This indicates that the increase in Nvidia's total assets outpaces the growth of its liabilities, the overall leverage level of the company has decreased, and the financial condition is more robust [9]. (Table 6) (Fig. 4)

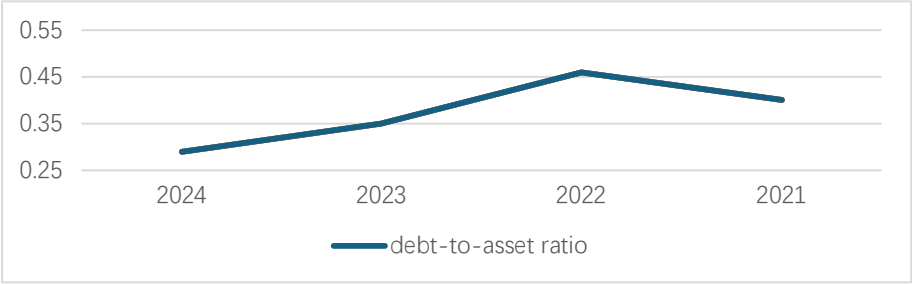

Fig. 4. Debt-to-asset ratio of NVIDIA

3.4.2 Debt-to Equity-Ratio.

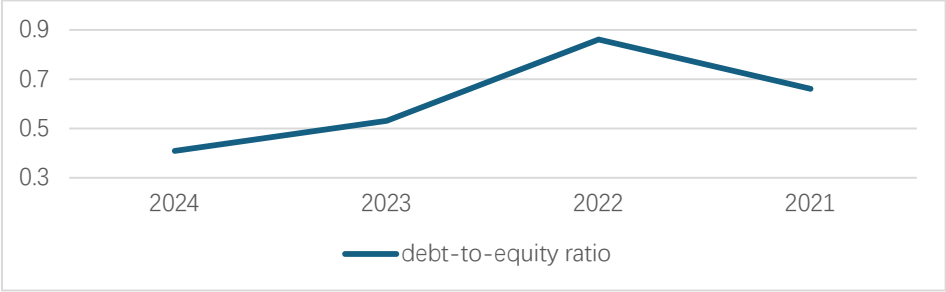

Fig. 5. Debt-to-equity ratio of NVIDIA

Table 7. The debt-to-equity ratio of NVIDIA

Solvency ratio	2024	2023	2022	2021
Debt-to-equity	0.41	0.53	0.86	0.66

Based on the solvency ratio, the debt-to-equity ratio declined to 0,41 in 2024. It can be inferred that the company's shareholder equity has increased and reduced its debt financing. So, it can enhance the attractiveness of the investment. (Table 7) (Fig. 5)

3.5 Profitability Ratio

The profitability ratio includes gross profit margin, operating profit margin, and ROA. The detailed analysis of the absolute number and the trend from 2021 to 2024 will be explained below.

3.5.1 Gross Profit Margin.

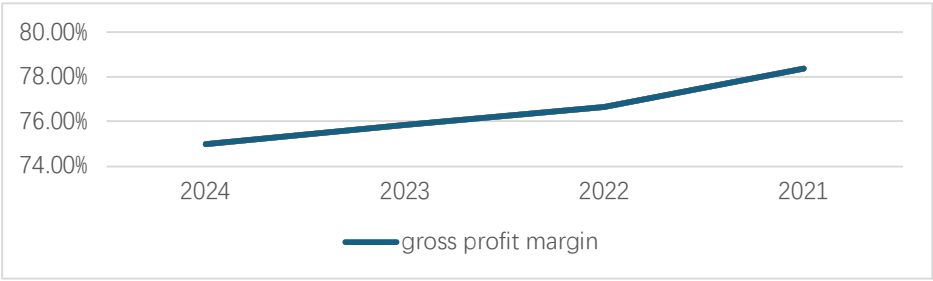

Fig. 6. Gross profit margin of NVIDIA

Table 8. Gross profit margin of NVIDIA

Profitability ratio	2024	2023	2022	2021
Gross profit ratio	74.99%	75.84%	76.64%	78.835

Nvidia's gross profit margin continuously declined to 74.99%. Due to market competition pressure, the price of certain products, such as gaming graphics cards, must be reduced to maintain market share. On the other hand, the reasons may include increased chip manufacturing costs and fluctuations in raw materials, leading to rising production costs. (Table 8) (Fig. 6)

3.5.2 Operating Profit Margin.

Fig. 7. Operating profit margin of NVIDIA

Table 9. Operating profit margin of NVIDIA

Profitability ratio	2024	2023	2022	2021
Operating profit ratio	64.71%	62.98%	63.39%	64.94%

The operating profit margin of Nvidia maintained at 62.98% -64.94% over the past four years. This indicates that Nvidia's management has excellently optimised cost control and business structure. (Table 9) (Fig. 7)

3.5.3 Return on Assets (ROA).

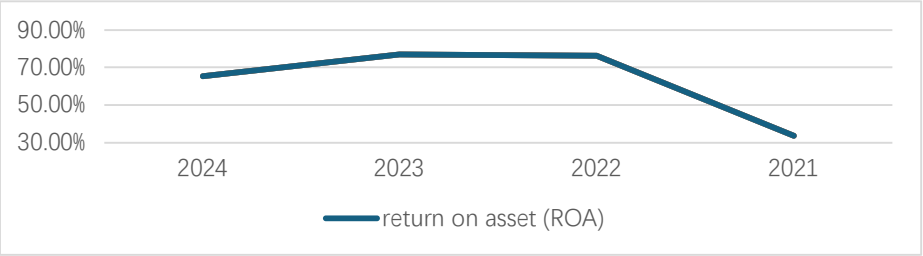

Fig. 8. Return on asset of NVIDIA

Table 10. Return on asset of NVIDIA

Profitability ratio	2024	2023	2022	2021
Return on asset	65.30%	77.27%	76.44%	33.67%

Nvidia's ROA increased significantly between 2021 and 2022, and then its growth rate gradually flattened out and finally dropped to 65.37% in 2024. The key reasons behind this are the decline in gross profit margin and the short-term decline in profitability resulting from asset expansion [10]. (Fig. 8) (Table 10)

3.6 Cash Flow Ratios

The cash flow ratios include the operating cash flow to current liabilities ratio and operating cash flow to total liabilities ratio. A detailed analysis of the absolute number and the trend from 2021 to 2024 will be explained.

3.6.1 Operating Cash Flow to Current Liabilities Ratio.

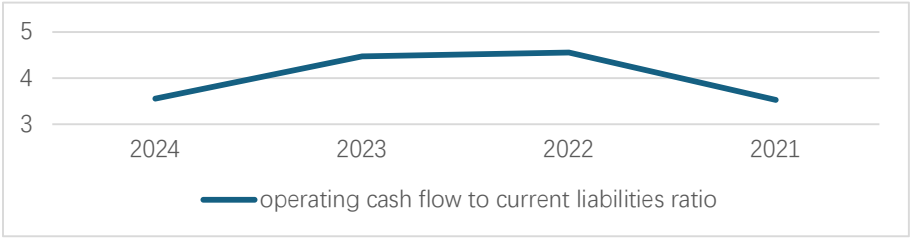

Fig. 9. Operating cash flow to current liabilities ratio

Table 11. Operating cash flow to current liabilities ratio

Cash flow ratio	2024	2023	2022	2021
Operating cash flow to current liabilities ratio	3.55	4.46	4.55	3.53

Based on the operating cash flow to current liabilities ratio, it can be observed that this ratio has remained relatively high over the past four years. In 2024, the operating cash flow to current liabilities ratio is 3.55, which shows that Nvidia possesses extremely strong short-term debt repayment capabilities, and the company rely on the cash flow generated from its operating activities to repay debts (Table 11) (Fig. 9)

3.6.2 Operating Cash Flow to Total Liabilities Ratio.

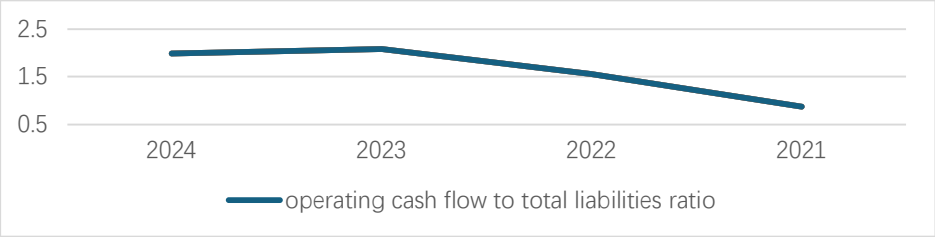

Fig. 10. Operating cash flow to total liabilities ratio

Table 12. Operating cash flow to total liabilities ratio

Cash flow ratio	2024	2023	2022	2021
Operating cash flow to total liabilities ratio	1.99	2.09	1.56	0.87

Based on the data of the operating cash flow to total liabilities ratio, it can be observed that Nvidia has an excellent ability to repay all debts with cash flow. Its financial position is extremely sound, and the cash flow generated within one year is sufficient to settle all liabilities. (Table 12) (Fig. 10)

3.7 Discussion and Recommendation to the Investor

However, based on the entire analysis of Nvidia's financial position, it can be observed that Nvidia is in an excellent and sound financial position. The company's overall deleveraging relies on shareholder's equity rather than debt expansion. Moreover, the company has strong profitability. However, the decline in ROA indicates a relatively rapid asset expansion rate. In the future, attention should be paid to the efficiency of capital utilisation (Brazer & Daryanto,2019). Lastly, Nvidia ethically produces their financial statement, further confirming its authenticity.

As for the long-term investor, in recent years, Nvidia has optimised its financial structure, reduced leverage and has strong profitability. Due to AI and data centre business continuing to grow and its excellent profitability, Nivida might increase share buybacks or dividends. Hence, long-term investors could buy the dips and wait for the value to increase as AI develops.

As for the short-term investor, stock prices may be volatile in the short term because the ROA decreased from 77.27% to around 65%, and currently, the stock price is high

and may face the pressure of correction in the short term. Therefore, short-term investors should wait for the market to adjust after entry and not mindlessly chase higher.

As for the conservative investor, hold stocks cautiously and look for a more stable alternative, such as MSFT and AAPL. Although the financial position is stable, the company prefers to reinvest rather than pay dividends to shareholders. So, if short-term fluctuations are acceptable, taking a small position in Nvidia is suitable. Otherwise, look for more solid tech stocks which offer more consistent returns.

4 Conclusion

In this era of rapid advancements in artificial intelligence, NVIDIA, as the leading player in the AI chip market, has garnered significant attention from investors. However, NVIDIA's competitors are advancing rapidly, leading some investors to adopt a pessimistic outlook regarding their investment in the company. In order to assist investors in evaluating the investment potential of NVIDIA. This paper uses horizontal analysis, vertical analysis, liquidity ratio, profitability ratio, cash flow ratio, and solvency ratio. This study employs data from NVIDIA Corporation's balance sheets from 2021 to 2024 to conduct a horizontal, vertical, and comprehensive analysis of these financial ratios. It has been observed that the total company's financial position is currently more stable, and it maintains a sustainable market leadership position and strong growth momentum. Especially in liquidity cash flow profitability, NVIDIA's financial performance has been sustainable throughout the four years with no risk of liquidation and debt pr solvency. However, NVIDIA's capital expansion has outpaced its profit growth, so it is necessary to pay attention to the changes in future rates of return. For long-term investors, this remains a highly viable investment target. Nevertheless, it is imperative for short-term and conservation investors to exercise prudence in considering the purchase of NVIDIA Corporation's shares and to evaluate alternative, more stable investment products as substitutes for NVIDIA's stock.

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