**Milestone 3 Report**

The creation of an interactive visualization dashboard that turns the predictions of our CNN model into an approachable analytical tool is the centerpiece of this last milestone, which marks the completion of the stock market prediction project. Based on the data preprocessing and model development of the earlier milestones, the dashboard gives financial analysts a dynamic platform to examine and analyze stock price forecasts.

Plotly is used by the interactive Dash application to build a thorough visualization environment. Important characteristics include:

- A stock symbol dropdown menu for choosing particular stocks

- An intuitive date range slider for temporal data exploration

- An interactive line graph showing the difference between the current and anticipated stock prices

- Mean Squared Error (MSE) and Mean Absolute Error (MAE) are displayed in the performance metrics tab for model evaluation.

Users can dynamically select and examine stock forecast data because of the implementation's smart approach to data display. The dashboard connects the dots between complex machine learning forecasts and useful financial information by incorporating interactive features with the predictive model's outputs.

Challenges & Solutions

Creating an intuitive user interface that successfully conveys the CNN model's subtle predictions was a major problem. Data representation and user experience had to be carefully considered for this. To solve this, I designed a responsive layout with a number of interactive elements that allow for detailed data analysis.

Managing real-time data filtering and visualization presented technical challenges. Plotly's graph objects and Dash's callback methods were used as part of the solution to guarantee seamless, real-time display updates in response to user input. The user experience is made responsive and relevant by the careful application of data filtering and metric computations.

Self-Evaluation & Next Steps

With this milestone, the predictive power of the CNN model is effectively converted into an interactive, user-friendly dashboard. The solution satisfies the primary goals of the project, which was to develop an interesting, data-driven financial analysis visualization tool. The dashboard offers instant insights into model performance using extensive metrics, going beyond just displaying predictions.

My main points for the project's final presentation will be:

1. Emphasizing the project's all-encompassing methodology, which includes interactive visualization, predictive modeling and data preprocessing.

2. Showing how machine learning can be used practically in financial forecasting.

3. Examining the technical difficulties resolved and prospective advancements.

The dashboard demonstrates the project's objective of enabling financial analysts to easily access and utilize sophisticated predictive models.