

# **Project Summary: Options and Derivatives Analysis**

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This comprehensive project delves into the intricate world of options trading, pricing models, and derivative strategies, catering to both personal understanding and broader educational purposes. The project unfolds through a combination of theoretical exploration, practical implementations, and insightful visualizations, covering a diverse range of financial instruments.

## **File 1: Introduction and Pricing Models**

- Provides an insightful introduction to European options, elucidating the rights associated with buying or selling an underlying asset.
- Implements the Binomial Lattice model for European Call options, unraveling the step-by-step process of option pricing over distinct time intervals.
- Integrates the Black-Scholes formula, a fundamental tool for calculating option prices based on essential parameters.

## **File 2: Black-Scholes-Merton (BSM) Model and Time Impact Analysis**

- Leverages the Black-Scholes-Merton model to price options, with a focus on a specific stock (e.g., 'tsla').
- Explores the impact of time decay on option prices, providing dynamic insights into the temporal dimension of options.

## **File 3: Options and Derivative Trading Strategies**

- Encompasses a broader spectrum by including futures and forwards contracts, offering a holistic view of derivative instruments.
- Explores and visualizes various option trading strategies, such as forward and futures contracts, Bull Spread, Bear Spread, Butterfly, Long Straddle, and Covered Call.
- Simulates and visualizes future payoffs for both long and short positions in futures contracts, enhancing practical understanding.

## **Conclusion:**

This self-directed project emerges as a robust educational resource, unraveling the complexities of options trading and derivative instruments. From theoretical underpinnings to hands-on simulations, the project caters to personal exploration while providing a valuable asset for anyone seeking a deeper understanding of financial derivatives.