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## THESIS

To obtain the diploma of **Engineer**  
Field: **Computer Science**  
Specialty: **Ingénierie des Systèmes Informatiques (ISI)**

### Theme

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**Enhancing gold price forecasting using deep learning  
technique insights from pandemics and news data.**

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In front of the jury composed of:

Mr. KESKES Nabil	President
Mr. KHALDI Belkacem	Examiner
Dr. Badia KLOUCHE	Supervisor
Dr. Amina BELALIA	Co-Supervisor

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# *Dedication*

I dedicate my master's thesis to my wonderful parents, *Dad* and *Mom*, for their unwavering love, tireless support, and invaluable guidance throughout my life. You have been my pillars of strength, and I am forever grateful for your boundless encouragement.

To my dear brothers, *Anis* and *Nassim*, your constant belief in me has fueled my determination to overcome challenges and strive for excellence. I deeply appreciate your unwavering support.

I extend my heartfelt gratitude to **Drs. Badia KLOUCHE** and **Amina BELALIA**, two exceptional teachers whose wisdom and mentorship have shaped my academic journey. Your dedication to imparting knowledge and guidance has been truly inspiring.

I am grateful for the unwavering confidence and support of *Azzedin Lebbah* and *Nazim Ganna*. Your belief in my abilities has been a driving force behind my achievements.

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Finally, I would like to express my deepest appreciation to all those who have played a part, no matter how small, in my educational achievements. Your guidance, assistance, and encouragement have been priceless. Thank you all from the bottom of my heart.

*Belambri Samy*

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# Abstract

Predicting the stock market, and especially the price of gold, is a hard job that involves economics, computer science, and a number of outside factors. It is a well-known subset of artificial intelligence for researchers in finance. It gets a lot of attention in school and the finance industry because it has so many uses and has a big effect. Researchers in machine learning have made a lot of models and released a lot of studies in this field, most of which are about predicting financial time series.

In the past few years, deep learning models have become strong tools that work better than traditional machine learning methods. Building on this progress, the goal of this project is to use deep learning techniques to make a complete model for predicting the price of gold and then compare its accuracy to that of more standard forecasts methods. The project's goal is to make correct predictions about the price of gold by taking into account things like historical data, market emotion, and outside events like pandemics, wars, and news.

To do this, methods for machine learning and deep learning will be used to look at past data on gold prices and find patterns and trends. Also, a sentiment study will be done to find out how the market feels and how outside factors affect gold rates. By taking these things into account, a whole-person method to predicting the price of gold is created.

The answer that is put into place will use the latest web technologies to build an easy-to-use tool for getting to and seeing the gold price forecasts. This tool will give users useful information and help them make smart investment choices based on predicted gold prices and research of public opinion, pandemics, wars, and news.

In short, the goal of this project is to use machine learning, deep learning, emotion analysis, and a number of outside factors to make an accurate and complete model for predicting stock market gold rates. By looking at past data, market mood, and outside events, the goal is to give buyers useful information and help them make better decisions.

**Keywords**— Deep Learning, Machine Learning, Artificial Intelligence, Stock market, Gold price , News , Covid 19, Trading, Time Series, Technical Analysis, Financial Forecasting, LSTM, CNN, BiLSTM, PAXGUSD, Bert, TextBlob, Django, Sentiment Analysis, NestJs, Flutter .