Take Home Task - Data Science Position

Expected Duration: 3-4 Hours

Purpose of the Task

This task is designed to assess your expertise in time series modeling, coding skills, analytical depth, and expertise in machine learning methodologies. You will be addressing a real-world problem faced by our finance team: forecasting the company's revenue stream to facilitate budget planning and allocation throughout the fiscal year. Due to the dynamic nature of our business operations, traditional financial tools have fallen short in providing accurate predictions, necessitating the application of ML/statistical models.

Data Provided

You will work with simulated historical data comprising monthly revenues, the number of new subscribers addition, and marketing campaign budget. The data structure is as follows:

#	Column	Dtype	Description
0	month	date	Calendar month
1	revenue	float	Monthly revenue $
2	subs	int	# Monthly new user subscriptions
3	spend	float	Monthly marketing campaign budget allocation $

Notes:

- The data is simulated and does not represent Lightricks data.
- When performing the model selection, note that the marketing monthly spend is known for each month until the end of the year. On the other hand, the number of subscribers is not known ahead of time.

Tasks

1. Exploratory Data Analysis (EDA):

- Conduct an exploratory analysis of the provided dataset to uncover trends, patterns, and anomalies.
- Utilize any libraries of your choice, though you are expected to be proficient with pandas and graphical libraries.

2. Model Development:

- Develop a model that predicts , per a given month , the monthly revenue for the remainder of the current year based on the provided data.
- Justify your model choice and approach.
- Evaluate the model's performance and robustness through appropriate metrics and error analysis.

3. Results Presentation:

- Summarize your results for the DS team with the relevant insights from EDA, justify your model choice and approach, and present the model performance and error analysis. Make sure you address the decisions you made along the process.
- Summarize your findings, model performance, and any insights in a format suitable for the finance team's review. Keep it up to 5 slides.

Task Evaluation Criteria:

Submissions will be evaluated based on the thoroughness of the EDA, the rationale behind the model selection, robustness of the model, and the clarity and professionalism of the final presentation of results. Make sure your code is readable and documented when needed.

Submission Guidelines

Please submit your completed task in two files - a PDF format for the presentations and the code. The code can be sent in either a .py file or .ipynb file (or in a git repo link). For any question you can reach out to Nachi Lieder at: nachi@lightricks.com