Project FAQ

1. How can we make our project stand out?

The most important way is to demonstrate efficiency and clear logic. For example, when calculating the Simple Moving Average (SMA-5) for stock prices, a naïve approach has time complexity $O(n \cdot k)$, while the sliding window approach reduces it to $O(n)$. Both give the same result, but the sliding window method is much more efficient.

```python
def sma_5(prices):
    k = 5
    window_sum = sum(prices[:k])
    result = [window_sum / k]

    for i in range(k, len(prices)):
        window_sum += prices[i] - prices[i-k]   # update in O(1)
        result.append(window_sum / k)

    return result
```

We will also compare projects against each other to decide the final score.

2. Should we use machine learning models?

Not necessary.

Please keep in mind that the focus is not on stacking as many features as possible, but on solving well-defined "smaller" problems with clear logic.

For example, I would value more the way you design a function to count how many times a word appears using the Dictionary data structure (even if that may be a very simple case), rather than just calling model_x.predict(article) to check whether the output is positive.

3. Can we modify or design new features?

Yes, you may design new features. Please refer to the guidance in Question 2 when you do so. Efficiency and clarity are more important than quantity.

4. Do we need to build a web interface?

I strongly encourage you to build a simple web interface. It does not need to be complex, a basic interface using a web framework is enough. The purpose is to prepare you for future projects and even for work after graduation. If you face difficulties, please reach out to me.

Please note: a more complex web interface will not earn extra marks.

5. Can we use our own dataset? How large should it be?

Yes, you may use your own dataset.

Since the focus is on programming practice rather than complex models, a reasonable set of test cases is enough.

6. Our group has only 4 members. Is that a problem?
No. Many groups also have 4 members. Having 5 does not necessarily mean higher productivity.