Assignment 0

RELEASE DATE: 01/22/2025

DUE DATE: 01/29/2025 11:59pm on Canvas

LaTeX Template: https://www.overleaf.com/read/qsbvxrhbpnfx#536f0c

Name: First-Name Last-Name UIN: 000000000

This assignment consists of two parts: a writing section and a programming section. For the writing section, please use the provided LaTeX template to prepare your solutions and remember to fill in your name and UIN. For the programming section, please follow the instructions carefully.

Discussions with others on course materials and assignment solutions are encouraged, and the use of AI tools as assistance is permitted. However, you must ensure that **the final solutions are written in your own words**. *It is your responsibility to avoid excessive similarity to others' work. Additionally, please clearly* **indicate any parts where AI tools were used** *as assistance.*

If you have any question, please send an email to csce638-ta-25s@list.tamu.edu

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1   LaTeX Basics [40pts]

Please typeset the following equation in LaTeX.

$$\frac{\partial L_{total}}{\partial \mathbf{w}_j} = -\frac{1}{m} \sum_{i=1}^{m} (y_i - \sigma(z_i)) \mathbf{x}_{i,j}$$

You can learn some basics about LaTeX here.

Solution:

Please enter your solution here.

2   Including Figures [30pts]

Please randomly choose a photo of cat and display it.

Solution:

Please enter your solution here.

3   Programming [30pts]

CSCE638-S25-HW0-3.ipynb: Colab Notebook

Please open the above Colab Notebook and implement a function called vec_square:

- Input: a `numpy.array` list v of arbitrary length

- Output: a `numpy.array` list y with $y_i = v_i^2$

- Examples:

    - Input: $[1.0, 2.0, 3.0] \rightarrow$ Output: $[1.0, 4.0, 9.0]$
    - Input: $[-1.0, 0.0, -0.5, 1.1] \rightarrow$ Output: $[1.0, 0.0, 0.25, 1.21]$

Please use your *@tamu.edu* email to access the Colab Notebook. Copy the Colab Notebook to your drive and make the changes. The notebook has marked blocks where you need to code.

$\#\#\# ========= TODO : START ========= \#\#\#$
$\#\#\# ========= TODO : \ \ END \ \ ========= \#\#\#$

You can learn some basics about Colab here.

Please copy and paste your code as well as the output as the solution. You can use the Minted package for code highlighting. Here is one example:

```python
def hello_world():
    print("Hello World!")
```

Solution:

Please enter your solution here.

Submission Instructions

You have to upload a `.zip` file to Canvas, which contains the following:

- `submission.pdf`: The `.pdf` file generated by the LaTeX template.

- `submission.py`: Please export the Colab Notebook to a `.py` file by clicking "File" $\rightarrow$ "Download" $\rightarrow$ "Download .py"