

# Homework 4

A K M Salman Hosain

801402112

Problem 1: [https://github.com/salman2826/ECGR-5106/blob/main/HW4\\_P1.ipynb](https://github.com/salman2826/ECGR-5106/blob/main/HW4_P1.ipynb)

Problem 2: [https://github.com/salman2826/ECGR-5106/blob/main/HW4\\_P2.ipynb](https://github.com/salman2826/ECGR-5106/blob/main/HW4_P2.ipynb)

Problem 3: [https://github.com/salman2826/ECGR-5106/blob/main/HW4\\_P3.ipynb](https://github.com/salman2826/ECGR-5106/blob/main/HW4_P3.ipynb)

## Problem 1

Training Loss: 0.0388 | Training Accuracy: 0.9943

Validation Loss: 5.6173 | Validation Accuracy: 0.3965

English: I am cold

Translated French: j'ai j'ai j'ai froid j'ai froid j'ai froid

English: She speaks French fluently

Translated French: elle parle français couramment > >

English: We love music

Translated French: nous aimons la musique

English: He listens to music while jogging

Translated French: il écoute de la musique en faisant du jogging

English: They travel around the world

Translated French: ils voyagent à paris

## Problem 2

Training Loss: 0.0032 | Training Accuracy: 1.0000

Validation Loss: 5.3223 | Validation Accuracy: 0.4420

English: I am cold

Translated French: nous construisons un château

English: She speaks French fluently

Translated French: parle français couramment français couramment

English: We love music

Translated French: aimons la musique la musique

English: He listens to music while jogging

Translated French: écoute de la musique en faisant du jogging de la musique en faisant du jogging

English: They travel around the world

Translated French: ils vont à la salle la table

### Problem 3

With Attention:

Training Loss: 0.0029 | Training Accuracy: 1.0000

Validation Loss: 5.2084 | Validation Accuracy: 0.4744

French: J'ai froid

Translated English: i am cold

French: Elle est heureuse

Translated English: is happy happy

French: Nous sommes amis

Translated English: we are friends

French: Le soleil brille

Translated English: sun is shining shining

French: Ils voyagent autour du monde

Translated English: they ride bicycles

Without Attention:

Training Loss: 0.0631 | Training Accuracy: 0.9869

Validation Loss: 4.6938 | Validation Accuracy: 0.5115

French: J'ai froid

Translated English: i am cold

French: Elle est heureuse

Translated English: she is happy

French: Nous sommes amis

Translated English: we are friends

French: Le soleil brille

Translated English: the sun is shining

French: Ils voyagent autour du monde

Translated English: they travel around the world

For both the model, French to English seems to have higher validation accuracy by a small margin.