

# CMPT 728 Deep Learning

School of Computing Science

Simon Fraser University

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## Assignment 3:

This assignment consists of two parts : conceptual exercises + a project.

You should submit a assignment3.zip package including :

- Answers to the conceptual exercises part in .PDF version,
- Your code of project part in both .PDF (or .html) and .ipynb (jupyter notebook) version.

## A. Conceptual Exercises (50 points)

Exercise numbers refer to the textbook (Introduction to Deep Learning).

1. (15 points) Explain why, if you are using L1 regularization, it is a bad idea to compute the total loss (error), as opposed to computing only the gradient.
2. (15 points) Solve Exercise 4.4
3. (20 points) Vanishing/exploding gradient
  - 3.1 Explain the vanishing/exploding gradient phenomena, and why it happens in RNN models.
  - 3.2 Why LSTM prevent the vanishing gradient problem.

## B. Project Part (100 points)

Please see the assignment3\_proj.pdf and assignment3\_proj.ipynb files.