**Assignment 1**

**Dong Joo Rhee**

**1. Backpropagation in a Simple Neural Network**

a) Dataset

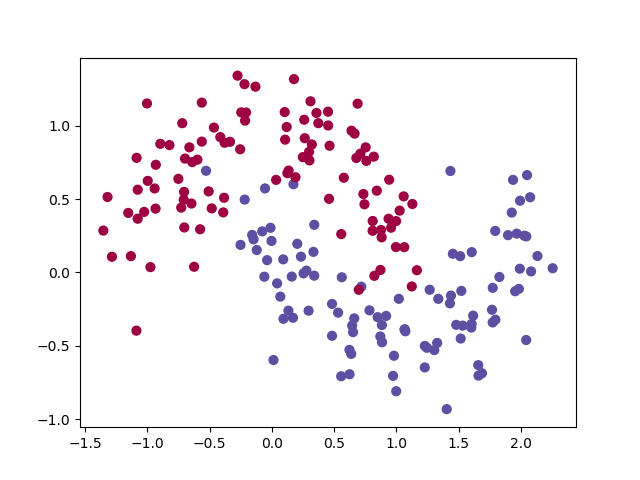


Fig 1. Distribution of Make-Moons dataset

b) Activation Function

1)

2) Derivatives of Tanh, Sigmoid, and ReLU

Mathematically, the derivative of ReLU(z=0) is undefined, but it is necessary to define the value for computational reasons. Therefore, the derivative of ReLU(z=0) is defined to be 0 in my code.

3)

c) Build the Neural Network

d) Backward Pass – Backpropagation