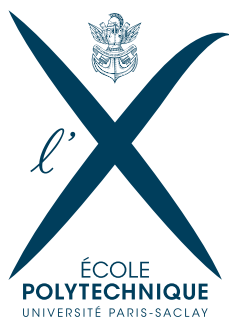# MACHINE LEARNING I

Assignement Report

29 octobre 2017

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TABLE DES MATIÈRES

1
VARIATION OF VARIOUS PARAMETERS

1.1 INFLUENCE OF THE SIZE OF THE TRAINING SET

Here are the results depending on the size of the training set.

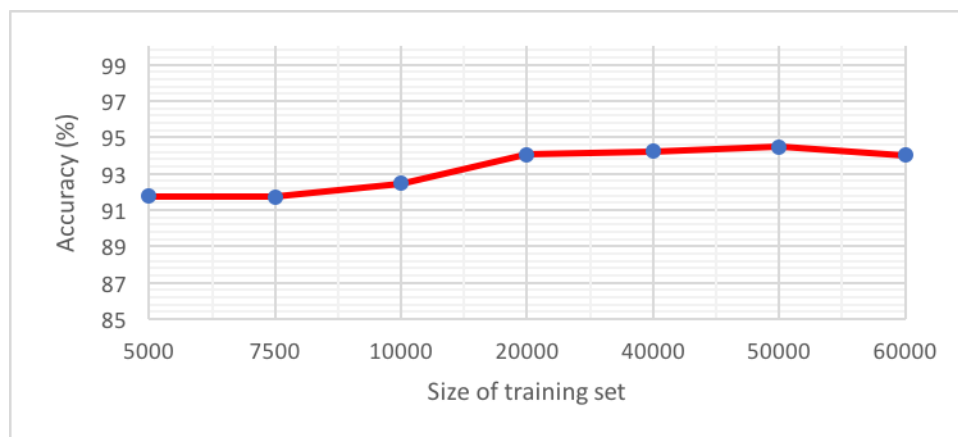| Training Size	Test Size	Hidden Layers	Nodes	Lambda	MaxFun	Accuracy
5000	5000	1	100	3	50	91.759 %
7500	5000	1	100	3	50	91.739 %
10000	5000	1	100	3	50	92.459 %
20000	5000	1	100	3	50	94.060 %
40000	5000	1	100	3	50	94.219 %
50000	5000	1	100	3	50	94.459 %
60000	5000	1	100	3	50	94.020 %

FIGURE 1 – Influence of the size of the training set

1.2 INFLUENCE OF THE SIZE OF THE TEST SET

Here are the results depending on the size of the test set

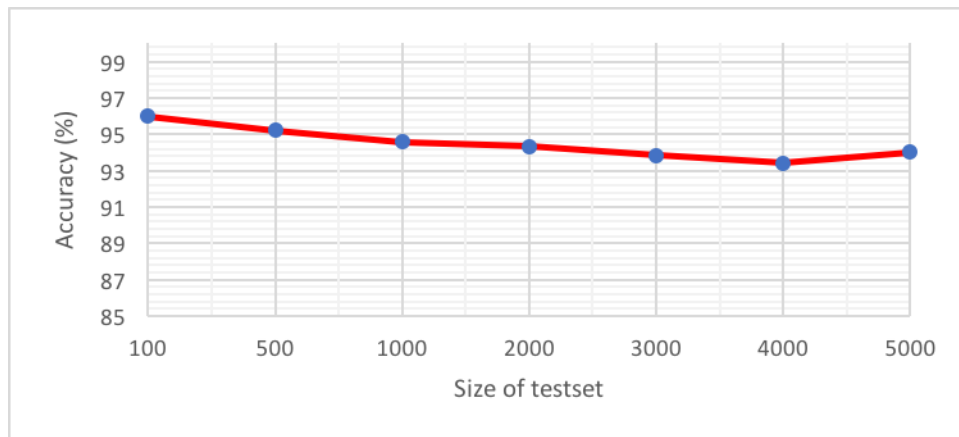| Training Size	Test Size	Hidden Layers	Nodes	Lambda	MaxFun	Accuracy
20000	100	1	100	3	50	96.0 %
20000	500	1	100	3	50	95.199 %
20000	1000	1	100	3	50	94.599 %
20000	2000	1	100	3	50	94.349 %
20000	3000	1	100	3	50	93.833 %
20000	4000	1	100	3	50	93.424 %
20000	5000	1	100	3	50	94.020 %

FIGURE 2 – Influence of the size of the test set

1.3 INFLUENCE OF THE NUMBER OF LAYERS

Here are the results depending on the number of layers

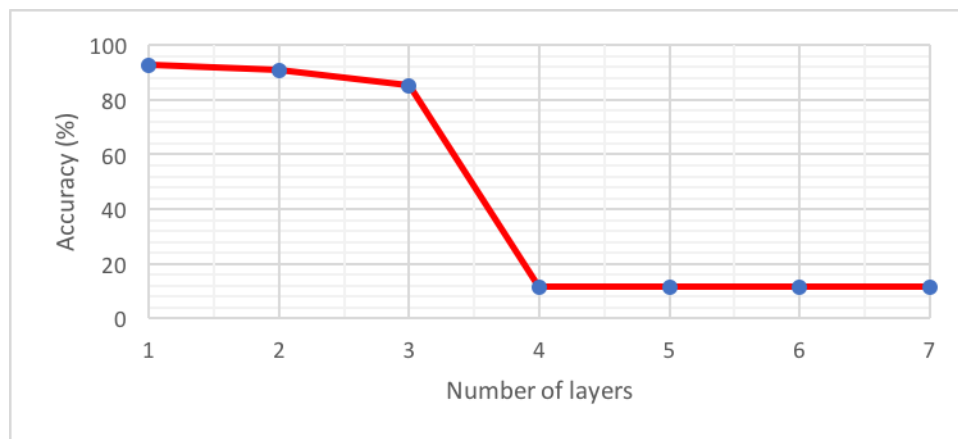| Training Size	Test Size	Hidden Layers	Nodes	Lambda	MaxFun	Accuracy
20000	5000	1	100	3	50	92.820 %
20000	5000	2	100	3	50	90.920 %
20000	5000	3	100	3	50	85.359 %
20000	5000	4	100	3	50	11.42 %
20000	5000	5	100	3	50	11.42 %
20000	5000	6	100	3	50	11.42 %
20000	5000	7	100	3	50	11.42 %

FIGURE 3 – Influence of the number of layers

1.4 Influence of the number of nodes per layers

Here are the results depending on the number of nodes per layers

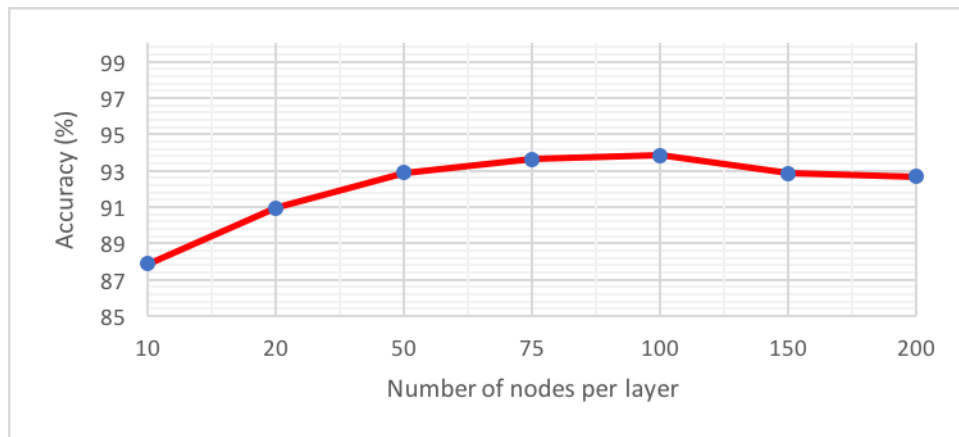| Training Size	Test Size	Hidden Layers	Nodes	Lambda	MaxFun	Accuracy
20000	5000	10	100	3	50	87.879 %
20000	5000	25	100	3	50	90.939 %
20000	5000	50	100	3	50	92.879 %
20000	5000	75	100	3	50	93.640 %
20000	5000	100	100	3	50	93.840 %
20000	5000	150	100	3	50	92.859 %
20000	5000	200	100	3	50	92.679 %

Figure 4 – Influence of the number of nodes per layers

1.5 Influence of the lambda parameter

Here are the results depending on the lambda parameter

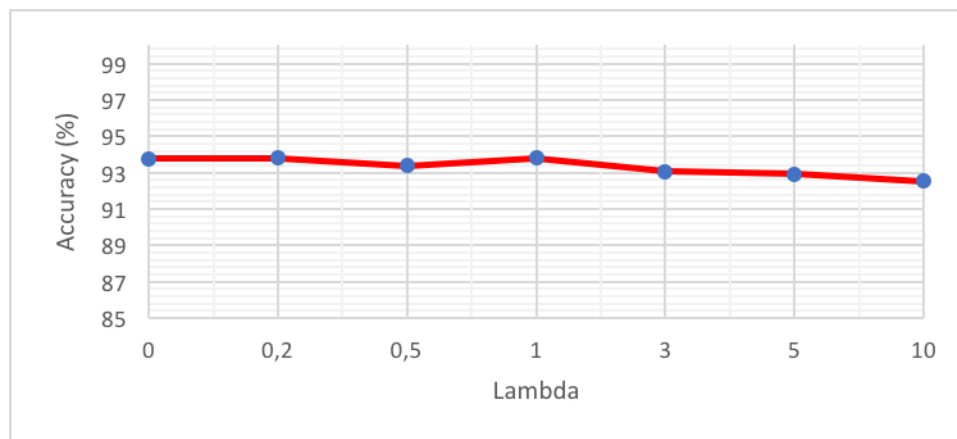| Training Size	Test Size	Hidden Layers	Nodes	Lambda	MaxFun	Accuracy
20000	5000	1	100	0	50	93.760 %
20000	5000	1	100	0.2	50	93.799 %
20000	5000	1	100	0.5	50	93.379 %
20000	5000	1	100	1	50	93.799 %
20000	5000	1	100	3	50	93.060 %
20000	5000	1	100	5	50	92.939 %
20000	5000	1	100	10	50	92.540 %

FIGURE 5 – Influence of the lambda parameter

1.6 Variation of the MaxFun parameter

Here are the results depending on the MaxFun parameter

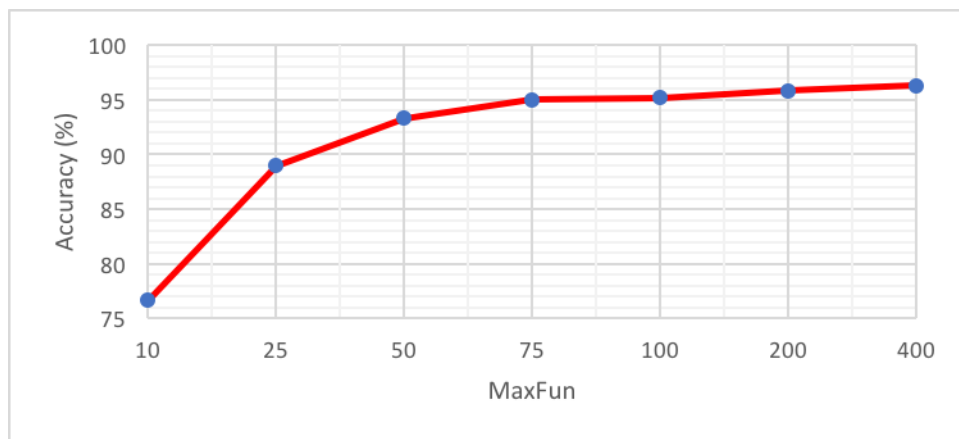| Training Size	Test Size	Hidden Layers	Nodes	Lambda	MaxFun	Accuracy
20000	5000	1	100	3	10	76.620 %
20000	5000	1	100	3	25	88.980 %
20000	5000	1	100	3	50	93.320 %
20000	5000	1	100	3	75	95.040 %
20000	5000	1	100	3	100	95.179 %
20000	5000	1	100	3	200	95.840 %
20000	5000	1	100	3	400	96.319 %

Figure 6 – Influence of the MaxFun parameter