Iterative Methods in Extreme Learning Machines

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1 Introduction

In machine learning, there are certain frameworks that provide acceptable performance in regression and classification tasks when used in their generic form. One that has been rather uncommon, when compared to Support Vector Machines or multi-layer perceptron models, is the Extreme Learning Machine (ELM) [1]. Despite their unpopularity, ELM's possess a handful of interesting properties: primarily their ability to train in drastically shorter amounts of time than other machine learning frameworks. At the heart of an ELM is the computation of a Moore-Penrose pseudo-inverse to train the model. In a similar vain, iterative methods, such as the Jacobi method, Gauss-Seidel [2], and successive over-relaxation (SOR) [3], can be applied to approximate the model. The application of the Gauss-Seidel method was explored by de Frietas et al. in *Gauss–Seidel Extreme Learning Machines* [4]. The goal of this work is to replicate their results, apply other iterative methods to ELM's, and investigate time and RAM consumption during model training.

1.1 Extreme Learning Machines

An extreme learning machine, specifically the one built for this report, is a feed-forward, three-layered (input $\rightarrow$ hidden $\rightarrow$ output) neural network that is built for classification and regression tasks [1]. The weights between any given node in the networks are initialized randomly and the output weights are treated as a linear system of **N** equations, where **N** is the number of inputs in the network. A matrix representation of this linear system is as follows:

$$\begin{bmatrix} g(w_1 * x_1 + b_1) & ... & g(w_L * x_1 + b_L) \\ . & & \\ . & & \\ . & & \\ g(w_1 * x_N + b_1) & ... & g(w_L * x_N + b_L) \end{bmatrix} \begin{bmatrix} \beta_{1,1} & ... & \beta_{1,n} \\ . & & \\ . & & \\ . & & \\ \beta_{L,1} & ... & \beta_{L,n} \end{bmatrix} = \begin{bmatrix} t_{1,1} & ... & t_{1,n} \\ . & & \\ . & & \\ . & & \\ t_{m,1} & ... & t_{m,n} \end{bmatrix}$$

Where L represents the number of hidden neurons, $g()$ represents a chosen activation function, w_i represents an inputs weight to the hidden node, b_i represents a set bias value of the input, x_i represents the input data for a sample, $t_{i,j}$ corresponds to target data, and $\beta_{i,j}$ is the output weight.

After this setup, the Moore-Penrose pseudo-inverse of the first matrix, the one representing the activation function being applied to weighted and biased inputs, can be calculated. Upon calculation, the pseudo-inverse times the target matrix yields the desired output weight matrix, β. Once β is found, then predictions and classification can be made by simply multiplying an input (with activation of weighted and biased data) by β. Since training is done in one step for all given data, training times are remarkably low.

1.2 Objectives of Iterative Methods

Rather than the Moore-Penrose pseudo-inverse, being used to solve for β, β can be approximated via iterative methods. The iterative methods laid out in this framework, referred to as 'optimizers' in the code, are the Jacobi method, the Gauss-Seidel method, and successive over-relaxation (SOR). The benefit to using iterative methods rather than the pseudo-inverse is the storage efficiency in large datasets while still retaining low training times.

2 Methods

2.1 Numerical Concepts

Mathematical manipulation is necessary to implement these iterative methods for any given dataset. In application, receiving data that is Hermitian is exceedingly unlikely. To resolve this issue, linear systems $Ax = f$ can be rewritten as $A^TAx = A^Tf$. Now, A^TA is Hermitian since $A \in \mathbb{R}^{m\times n}$. This also implies that A^TA is symmetric and thus the Jacobi method, Gauss-Seidel method, and SOR methods all converge.

The element-wise iteration methods are used to approximate solutions when using the aforementioned iterative methods [2]. For sake of experimental consistency, the initial solution matrix will always be zero. Once a previous iteration is within some tolerance of the next iteration, the iteration is ended and the approximate solution is returned. To make the computations efficient in memory allocation, in-place updating takes place. In-place updates only require two copies of the solution to be stored at any given

time. From a time-complexity standpoint, all algorithms, including the computation of the Moore-Penrose pseudo-inverse, are along the order of $O(n^2)$. There is not necessarily a time optimization through the iterative methods.

2.2 PyTorch Implementation

To handle all of the neural network propagation and updating, the PyTorch library is utilized. All matrices and vectors are thought of as 'tensors' and all normal matrix operations ensue. This usage of an external library hinders efficiency, especially when considering Python's already slow nature in comparison to C++. As such, the developers heavily optimize built-in functions such as the computation of the Moore-Penrose pseudo-inverse. To keep the computation of the pseudo-inverse as computationally inefficient as the non-optimized iterative methods, an SVD (to calculate the pseudo-inverse) calculation is done from scratch. This allows for a fair comparison of the iterative methods versus the pseudo-inverse in regards to memory allocation and speed in the PyTorch setting.

The SVD calculation is done using the power iteration method to find eigenvectors and singular values [5] [6]. After the SVD is found $U\Sigma V^T$, the pseudo-inverse is found via $V\Sigma^{\dagger}U^T$.

2.3 Experimental Setup

2.3.1 Datasets

In an effort to mimic the experimental setup of de Frietas et al., the UCI Machine Learning Repository's WINE, IRIS, and GLASS datasets are used [7].

Other models were created such as: classifier to identify handwritten digits from the MNIST dataset [8] and a classifier to predict a batted ball's result given 2023 MLB play-by-play data [9]. Some of de Frietas et al. findings need to be dismissed, such as their use of the BUPA dataset [7]. According to the metadata of the dataset, the set should only be used for regression based tasks; however, de Frietas et al. use a non-target trait for a classifier model.

The IRIS dataset leverages 4 features to identify 3 different classes of flowers with 50 instances of each. The WINE dataset uses 13 features of a chemical analysis to classify 3 types of wine. The GLASS dataset uses 9 different oxide type measurement to classify a type of glass.

For each dataset, all entries are shuffled and split into thirds to create a training and test set.

2.3.2 Parameters

Similar to de Frietas et al., each of the three datasets evaluated in this paper will be evaluated on models of different solvers (iterative methods or pseudo-inverse), neurons, tolerances, activation functions, and maximum number of iterations. Each of the tested values are as follows:

1. Solvers: Gauss-Seidel, Jacobi, SOR with relaxation factor 1/2, Moore-Penrose Pseudo-Inverse (PyTorch built-in), Moore-Penrose Pseudo-Inverse (Power Iteration method)

2. Neurons: 10, 100, 500

3. Tolerances: $1e-1$, $1e-3$, $1e-5$

4. Activation Functions: sine, hyperbolic tangent, sigmoid

5. Max no. of iterations: 50, 100, 500

2.3.3 Metrics

The percentage of correct classifications made on the test set (testing whether the generated classification is equal to the known target) is utilized to track the accuracy of a classification task. For regression tasks (none tested here, but regression framework is set in code), the root mean squared error is used to measure the accuracy of a predicted value. Python's tracemalloc function is used to track RAM usage during model training, the peak RAM usage is then reported.

2.3.4 Hardware

All experiments were run on 13th Gen Intel i9-13900K @ 3.00 GHz with 96GB of RAM. The program was also run on 11th Gen Intel i5-1145G7 @ 2.6 GHz with 16GB RAM on occasion, but all experimental results will be computed with the former.

3 Results

Comparing these values to *Gauss–Seidel Extreme Learning Machines* remains difficult. In their study, they tuned data and optimized their respective Gauss-Seidel models to achieve peak accuracy. They label these certain models as "GSELM95" or other variants. In the spirit of a generalization

classifier, no data was tuned and test parameters were as listed above in this paper's experiments.

3.1 Accuracy

Accuracy of classification was consistent, as to be expected from previous implementations of extreme learning machines [10]. The IRIS dataset realized 16 different models that yielded 100% classification accuracy, two of which being Gauss-Seidel iterative methods with only 10 neurons. The GLASS dataset provided a highest accuracy rating of 66.2% from a Gauss-Seidel model. The Gauss-Seidel model also yielded the 14 highest accuracies for the WINE dataset; it produced four models above 90% accuracy with the highest being 94.9%.

Regardless of few accuracy values for explicit parameters in de Frietas et al., the accuracy numbers still align reasonably. Both the WINE and IRIS datasets seem to share the same high accuracies as found in *Gauss–Seidel Extreme Learning Machines*. Accuracies for the GLASS dataset are higher by roughly 15%; however, training times are listed as upwards of 2600 seconds while the best models from this experiment were less than 1 second.

3.2 Training Time and RAM Consumption

It comes as little surprise that training times and RAM consumption are positively correlated. Upon basic inspection, for each dataset there is a point at which the iterative methods become significantly less memory efficient. In the IRIS results, the iterative models with 500 neurons typically consumed around 88MB with a training time ranging from 12-17s while the pseudo-

inverse trained in around 4s with only 20MB of storage allocated. However, recall that the most accurate model for IRIS was the Gauss-Seidel with only 10 neurons. Investigating the point at which the pseudo-inverse is more efficient for a given dataset is a topic for future discussion.

3.3 Miscellaneous Datasets

To test the versatility of the models in their generic form, the application to other datasets ensued. A personal favorite being the application of the classifier to 2023 MLB Statcast data to predict a hit balls resulting play [9]. Statcast data gives a description of every pitched and hit balls spin, positional angles, and speeds for any given play. Features were a batted ball's hit speed, launch angle (hit angle in correlation to ground), and spray angle (the hit's angle with 0 corresponding to directly ahead of batter). The targets were the result of the play being an out, a single, double, triple, or home run. The Gauss-Seidel model with 100 neurons, a tolerance of $1e-5$, a maximum of 100 iterations, and a sigmoid activation function yields between 78-80% accuracy with only 3.54MB of RAM usage in 0.76s training time. To achieve similar accuracy levels using the pseudo-inverse, around 500 neurons are required which takes 82.3MB of RAM with 20.3s training time.

4 Conclusions

Extreme learning machines offer fast training solutions with already low memory allocation needs. Utilizing iterative methods to approximate the linear solutions to output weights can produce models that are even more

efficient in memory allocation under the correct set of parameters for a given dataset. Applications of such models could be in low-memory sensors that require training on-site, whether this application exists is beyond current scope of knowledge. Future works pertaining to tuning of parameters for a given data set, optimization of the iterative methods (ridding the program of the slow PyTorch computations), and RAM usage minimization will follow.

5 Code Listing

5.1 Optimizers/Solvers

```
import torch

class optimizer():
    def __init__(self, model, A, f, iterations, error):
        self.model = model
        self.A = A
        self.f = f
        self.x = torch.zeros(model.hidden_neurons, model.
   size_output)
        self.iterations = iterations
        self.error = error

    def jacobi(self):
        B = torch.diag(self.A)
        R = self.A - torch.diagflat(B)
        B_inv = torch.inverse(torch.diagflat(B))
        for i in range(self.iterations):
```

```
17            self.x = torch.matmul(B_inv, self.f - torch.
    matmul(R,self.x))
18        return self.x
19
20     def element_jacobi(self):
21        A2 = torch.matmul(torch.transpose(self.A, 0, 1), self
    .A)
22        f = torch.matmul(torch.transpose(self.A, 0, 1), self.
    f)
23        for it_count in range(self.iterations):
24            x_new = torch.zeros_like(self.x)
25            for i in range(A2.shape[0]):
26                s1 = torch.matmul(A2[i, :i], self.x[:i])
27                s2 = torch.matmul(A2[i, i + 1:], self.x[i +
    1:])
28                x_new[i] = (f[i] - s1 - s2) / A2[i, i]
29            if torch.allclose(self.x, x_new, atol=self.error)
    :
30                break
31            self.x = x_new
32        return self.x
33
34     def gaussSeidel(self):
35        A2 = torch.matmul(torch.transpose(self.A, 0, 1), self
    .A)
36        f = torch.matmul(torch.transpose(self.A, 0, 1), self.
    f)
37        D = torch.diag(A2)
38        B = torch.tril(A2)
39        R = torch.triu(A2) - torch.diagflat(D)
```

```
40          B_inv = torch.inverse(B)
41          for i in range(self.iterations):
42              self.x = torch.matmul(B_inv, f - torch.matmul(R,
    self.x))
43          return self.x
44
45      def element_gaussSeidel(self):
46          A2 = torch.matmul(torch.transpose(self.A, 0, 1), self
    .A)
47          f = torch.matmul(torch.transpose(self.A, 0, 1), self.
    f)
48          for it_count in range(self.iterations):
49              x_new = torch.zeros_like(self.x)
50              for i in range(A2.shape[0]):
51                  s1 = torch.matmul(A2[i, :i], x_new[:i])
52                  s2 = torch.matmul(A2[i, i + 1 :], self.x[i +
    1 :])
53                  x_new[i] = (f[i] - s1 - s2) / A2[i, i]
54              if torch.allclose(self.x, x_new, atol=self.error)
    :
55                  break
56              self.x = x_new
57          return self.x
58
59      def SOR(self):
60          A2 = torch.matmul(torch.transpose(self.A, 0, 1), self
    .A)
61          f = torch.matmul(torch.transpose(self.A, 0, 1), self.
    f)
62          omega = 0.5
```

```
63          for it_count in range(self.iterations):
64              for i in range(A2.shape[0]):
65                  sigma = 0
66                  for j in range(A2.shape[1]):
67                      if j != i:
68                          sigma += A2[i, j] * self.x[j]
69                  self.x[i] = (1 - omega) * self.x[i] + (omega
    / A2[i, i]) * (f[i] - sigma)
70                  if torch.allclose(self.x[i], self.x[i-1],
    atol=self.error):
71                      break
72              return self.x
73
74      def pseudo_inv(self):
75          B = torch.pinverse(self.A)
76          self.x = torch.matmul(B, self.f)
77          return self.x
78
79      def pinv(self):
80          import numpy as np
81          from math import sqrt
82          from random import normalvariate
83          def random_unit_vector(size):
84              unnormalized = [normalvariate(0, 1) for _ in
    range(size)]
85              norm = sqrt(sum(v * v for v in unnormalized))
86              normalized = [v / norm for v in unnormalized]
87              t = torch.tensor(normalized)
88              return t
89
```

```
90        def power_iterate(X, iter_limit=500, epsilon=1e-12):
91            n, m = X.shape
92            start_v = random_unit_vector(m)
93            prev_eigenvector = None
94            curr_eigenvector = start_v
95            covariance_matrix = torch.matmul(X.T, X)
96            it = 0
97            while True:
98                it += 1
99                prev_eigenvector = curr_eigenvector
100               curr_eigenvector = torch.matmul(
    covariance_matrix, prev_eigenvector)
101               curr_eigenvector = curr_eigenvector / torch.
    norm(curr_eigenvector)
102
103               if torch.allclose(curr_eigenvector,
    prev_eigenvector, atol=epsilon):
104                   return curr_eigenvector
105               if it == iter_limit:
106                   return curr_eigenvector
107
108       def svd(X, epsilon=1e-12):
109           n, m = X.shape
110           change_of_basis = []
111
112           for i in range(m):
113               data_matrix = torch.clone(X)
114
115               for sigma, u, v in change_of_basis[:i]:
116                   data_matrix -= sigma * torch.outer(u, v)
```

```
117
118                 v = power_iterate(data_matrix, epsilon=
    epsilon)
119                 u_sigma = torch.matmul(X, v)
120                 sigma = torch.norm(u_sigma)
121                 u = u_sigma / sigma
122
123                 change_of_basis.append((sigma, u, v))
124
125             sigmas = []
126             us = []
127             v_transposes = []
128             for sv in change_of_basis:
129                 sigmas.append(sv[0].tolist())
130                 us.append(sv[1].tolist())
131                 v_transposes.append(sv[2].tolist())
132             sigmas = torch.tensor(sigmas)
133             us = torch.tensor(us)
134             v_transposes = torch.tensor(v_transposes)
135             return sigmas, us.T, v_transposes
136
137         def moore_penrose_pseudo_inverse(singular_values, U,
    VT):
138             tolerance = 1e-12
139             singular_inv = []
140             for s in singular_values:
141                 if s > tolerance:
142                     singular_inv.append(1/s)
143                 else:
144                     singular_inv.append(0)
```

```
145             singular_inv = torch.diag(torch.tensor(
    singular_inv))
146             return torch.matmul(np.matmul(VT.T, singular_inv)
    , U.T)
147 
148         singular_values, U, VT = svd(self.A)
149         B = moore_penrose_pseudo_inverse(singular_values, U,
    VT)
150         self.x = torch.matmul(B, self.f)
151         return self.x
```

Listing 1: Optimizers

5.2 Extreme Learning Machines

```
1 import tracemalloc
2 import torch
3 import torch.nn as nn
4 #import torchvision
5 #import matplotlib.pyplot as plt
6 from time import time
7 from math import sqrt
8 #from torchvision import datasets, transforms
9 from optimizers import optimizer
10 
11 
12 
13 class randomNet(nn.Module):
14     def __init__(self, size_input, hidden_neurons,
    size_output, activation_func):
15         self.size_input = size_input
```

```
16          self.hidden_neurons = hidden_neurons
17          self.size_output = size_output
18          self.activation_func = activation_func
19
20          super(randomNet, self).__init__()
21          self.layer1 = nn.Linear(size_input, hidden_neurons)
22          if activation_func == torch.nn.functional.leaky_relu:
23              torch.nn.init.xavier_uniform_(self.layer1.weight,
    gain=nn.init.calculate_gain('leaky_relu'))
24          if activation_func == torch.nn.functional.relu:
25              torch.nn.init.xavier_uniform_(self.layer1.weight,
    gain=nn.init.calculate_gain('relu'))
26          else:
27              torch.nn.init.xavier_uniform_(self.layer1.weight,
    gain=1)
28          self.layer2 = nn.Linear(hidden_neurons, size_output,
   bias=False)
29
30      def forward(self, x):
31          x = x.view(x.size(0),-1)
32          x = self.layer1(x)
33          x = self.activation_func(x)
34          x = self.layer2(x)
35          return x
36
37      def forwardToHidden(self, x):
38         x = x.view(x.size(0),-1)
39         x = self.layer1(x)
40         x = self.activation_func(x)
41         return x
```

```
42
43 class classifierELM():
44     def __init__(self, model, train_data, target, test_data,
   test_target, max_iter, error):
45         self.model = model
46         self.train_data = train_data
47         self.target = target
48         self.test_data = test_data
49         self.test_target = test_target
50         self.max_iter = max_iter
51         self.error = error
52
53
54     def fit(self, optimizer_func):
55         init_time = time()
56         hidden = self.model.forwardToHidden(self.train_data)
57         opt = optimizer(self.model, hidden, self.target, self
   .max_iter, self.error)
58         beta = optimizer_call(opt, optimizer_func)
59         with torch.no_grad():
60             self.model.layer2.weight = torch.nn.parameter.
   Parameter(beta.t())
61         output = self.model.forward(self.train_data)
62         end_time = time()
63         train_t = end_time - init_time
64         return output, train_t
65
66     def classify(self):
67         init_time = time()
68         output = self.model.forward(self.test_data)
```

```
69          end_time = time()
70          correct = torch.sum(torch.argmax(output, dim=1) ==
    torch.argmax(self.test_target, dim=1)).item()
71          acc = correct / len(self.test_data)
72          test_t = end_time - init_time
73          return acc, test_t
74
75
76  class regressionELM():
77      def __init__(self, model, train_data, target, test_data,
    test_target, max_iter, error):
78          self.model = model
79          self.train_data = train_data
80          self.target = target
81          self.test_data = test_data
82          self.test_target = test_target
83          self.max_iter = max_iter
84          self.error = error
85
86
87      def fit(self, optimizer_func):
88          init_time = time()
89          hidden = self.model.forwardToHidden(self.train_data)
90          opt = optimizer(self.model, hidden, self.target, self
    .max_iter, self.error)
91          beta = optimizer_call(opt, optimizer_func)
92          with torch.no_grad():
93              self.model.layer2.weight = torch.nn.parameter.
    Parameter(beta.t())
94          output = self.model.forward(self.train_data)
```

```
95          end_time = time()
96          print('Training time:', end_time - init_time)
97          return output
98
99      def classify(self):
100         init_time = time()
101         output = self.model.forward(self.test_data)
102         mse = nn.MSELoss()
103         end_time = time()
104         print('Test time:', end_time - init_time)
105         return sqrt(mse(output, self.test_target))
106
107 # Helper Functions
108 def optimizer_call(optimizer, optimizer_func):
109     if optimizer_func == 'pseudo_inv':
110         beta = optimizer.pseudo_inv()
111     if optimizer_func == 'jacobi':
112         beta = optimizer.jacobi()
113     if optimizer_func == 'element_jacobi':
114         beta = optimizer.element_jacobi()
115     if optimizer_func == 'gaussSeidel':
116         beta = optimizer.gaussSeidel()
117     if optimizer_func == 'element_gaussSeidel':
118         beta = optimizer.element_gaussSeidel()
119     if optimizer_func == 'SOR':
120         beta = optimizer.SOR()
121     if optimizer_func == 'pinv':
122         beta = optimizer.pinv()
123     return beta
```

Listing 2: ELM

5.3 IRIS Data Handling and Experiment

This process was generally repeated for the remaining datasets.

```
import pandas as pd
import torch
import tracemalloc
from extreme_learning_machines import randomNet,
    classifierELM
from ucimlrepo import fetch_ucirepo
from sklearn.preprocessing import OneHotEncoder

# fetch dataset
iris = fetch_ucirepo(id=53)

# data (as pandas dataframes)
X = iris.data.features
y = iris.data.targets

enc = OneHotEncoder(handle_unknown='ignore')
enc.fit(y)
y_onehot = enc.transform(y).toarray()


features = torch.from_numpy(pd.DataFrame(X).to_numpy(dtype=
    float)).type(torch.float)
targets = torch.from_numpy(y_onehot).type(torch.float)

tensor_dataset = torch.utils.data.TensorDataset(features,
    targets)
```

```
trainloader = torch.utils.data.DataLoader(tensor_dataset,
    batch_size=len(tensor_dataset)//3, shuffle=True)
valloader = torch.utils.data.DataLoader(tensor_dataset,
    batch_size=len(tensor_dataset)//3, shuffle=True)

dataiter = iter(trainloader)
markers, flower = next(dataiter)


test_dataiter = iter(valloader)
test_markers, test_flower = next(test_dataiter)


optimizers = ['element_gaussSeidel', 'element_jacobi', 'SOR',
     'pseudo_inv', 'pinv']
neuron = [10, 100, 500]
tols = [1e-1, 1e-3, 1e-5]
activation = [torch.nn.functional.sigmoid, torch.nn.
    functional.tanh, torch.sin]
max_iter = [50, 100, 500]
results = pd.DataFrame(columns=['Optimizer', 'Neurons', '
    Activation Func', 'Max Iterations',
                                'Training Time (s)', '
    Testing Time (s)', 'RAM Usage (MB)', 'Testing Accuracy'])
opt_dict = {'element_gaussSeidel': 'GS', 'element_jacobi': '
    Jac', 'SOR': 'SOR', 'pseudo_inv':'MP Psuedo-Inv Built-In',
     'pinv':'MP Psuedo-Inv Hard Code'}
act_dict = {torch.nn.functional.sigmoid:'Sigmoid', torch.nn.
    functional.tanh:'tanh', torch.sin:'sin'}
i = 0
```

```
for opt in optimizers:
    for neurons in neuron:
        for activations in activation:
            for max_iters in max_iter:
                for tol in tols:
                    tracemalloc.start()
                    model = randomNet(markers.size()[1], neurons,  flower.size()[1], activations)
                    elm = classifierELM(model, markers, flower, test_markers, test_flower, max_iters, tol)
                    init, train_t = elm.fit(opt)
                    acc, test_t = elm.classify()
                    peak_ram = tracemalloc.get_traced_memory()[1]/1000000
                    tracemalloc.stop()

                    new_row = {'Optimizer':opt_dict[opt], 'Neurons':neurons,'Activation Func': act_dict[activations], 'Max Iterations':max_iters,
                                'Tolerance':tol, 'Training Time (s)':train_t, 'Testing Time (s)':test_t,
                                'RAM Usage (MB)':peak_ram, 'Testing Accuracy':acc}
                    results = pd.concat([results, pd.DataFrame([new_row])], ignore_index=True)
                    i+=1
                    if i % 10 == 0:
                        print(i)
```

Listing 3: IRIS

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6 Data from Trials

Follow the Google Drive link to a folder containing the CSV files for all results.

https://drive.google.com/drive/folders/1qxhy_TrscdgyOdxRPVDFUG6zT6hR5KRo?usp=sharing

6.1 WINE

	Neurons	Activation Func	Max Iterations	Training Time (s)	Testing Time (s)	RAM Usage (MB)	Testing Accuracy	Tolerance
0	10	Sigmoid	50	0.03	0.00	24.86	0.25	0.10
1	10	Sigmoid	50	0.03	0.00	0.19	0.25	0.00
2	10	Sigmoid	50	0.03	0.00	0.19	0.25	0.00
3	10	Sigmoid	100	0.06	0.00	0.37	0.25	0.10
4	10	Sigmoid	100	0.06	0.00	0.37	0.25	0.00
5	10	Sigmoid	100	0.06	0.00	0.52	0.25	0.00
6	10	Sigmoid	500	0.31	0.00	1.96	0.25	0.10
7	10	Sigmoid	500	0.31	0.00	1.96	0.25	

0.00							
8	10	Sigmoid	500	0.30	0.00	1.96	0.25
0.00							
9	10	tanh	50	0.00	0.00	0.16	0.37
0.10							
10	10	tanh	50	0.00	0.00	0.02	0.47
0.00							
11	10	tanh	50	0.03	0.00	0.19	0.37
0.00							
12	10	tanh	100	0.03	0.00	0.02	0.37
0.10							
13	10	tanh	100	0.00	0.00	0.02	0.37
0.00							
14	10	tanh	100	0.02	0.00	0.10	0.37
0.00							
15	10	tanh	500	0.00	0.00	0.02	0.37
0.10							
16	10	tanh	500	0.00	0.00	0.02	0.37
0.00							
17	10	tanh	500	0.33	0.00	1.96	0.37
0.00							
18	10	sin	50	0.00	0.00	0.16	0.42
0.10							
19	10	sin	50	0.02	0.00	0.03	0.47
0.00							
20	10	sin	50	0.00	0.00	0.05	0.51
0.00							

21	10	sin	100	0.00	0.00	0.02	0.37
0.10							
22	10	sin	100	0.02	0.00	0.03	0.42
0.00							
23	10	sin	100	0.00	0.00	0.04	0.51
0.00							
24	10	sin	500	0.00	0.00	0.02	0.41
0.10							
25	10	sin	500	0.00	0.00	0.03	0.41
0.00							
26	10	sin	500	0.00	0.00	0.05	0.42
0.00							
27	100	Sigmoid	50	0.30	0.00	1.92	0.25
0.10							
28	100	Sigmoid	50	0.86	0.00	1.92	0.25
0.00							
29	100	Sigmoid	50	0.30	0.00	1.92	0.25
0.00							
30	100	Sigmoid	100	0.58	0.00	3.69	0.25
0.10							
31	100	Sigmoid	100	0.58	0.00	3.69	0.25
0.00							
32	100	Sigmoid	100	0.56	0.00	3.69	0.25
0.00							
33	100	Sigmoid	500	2.87	0.00	17.80	0.25
0.10							
34	100	Sigmoid	500	2.86	0.00	17.80	0.25

0.00							
35	100	Sigmoid	500	2.85	0.00	17.80	0.25
0.00							
36	100	tanh	50	0.02	0.00	0.26	0.37
0.10							
37	100	tanh	50	0.28	0.00	1.92	0.53
0.00							
38	100	tanh	50	0.28	0.00	1.92	0.53
0.00							
39	100	tanh	100	0.02	0.00	0.23	0.54
0.10							
40	100	tanh	100	0.58	0.00	3.69	0.51
0.00							
41	100	tanh	100	0.58	0.00	3.69	0.53
0.00							
42	100	tanh	500	0.03	0.00	0.26	0.53
0.10							
43	100	tanh	500	0.09	0.00	0.64	0.51
0.00							
44	100	tanh	500	1.92	0.00	11.84	0.56
0.00							
45	100	sin	50	0.03	0.00	0.26	0.59
0.10							
46	100	sin	50	0.18	0.00	1.25	0.58
0.00							
47	100	sin	50	0.30	0.00	1.92	0.63
0.00							

48	100	sin	100	0.02	0.00	0.26	0.61	0.10
49	100	sin	100	0.22	0.00	1.50	0.54	0.00
50	100	sin	100	0.50	0.00	3.19	0.66	0.00
51	100	sin	500	0.02	0.00	0.26	0.71	0.10
52	100	sin	500	0.17	0.00	1.03	0.59	0.00
53	100	sin	500	0.64	0.00	4.00	0.69	0.00
54	500	Sigmoid	50	1.48	0.00	8.96	0.86	0.10
55	500	Sigmoid	50	1.50	0.00	8.96	0.88	0.00
56	500	Sigmoid	50	1.53	0.02	8.96	0.92	0.00
57	500	Sigmoid	100	3.00	0.00	17.77	0.88	0.10
58	500	Sigmoid	100	3.07	0.00	17.77	0.92	0.00
59	500	Sigmoid	100	3.07	0.00	17.77	0.95	0.00
60	500	Sigmoid	500	15.79	0.00	88.20	0.86	0.10
61	500	Sigmoid	500	13.50	0.00	88.20	0.86	

0.00								
62	500	Sigmoid	500	14.76	0.00	88.20	0.86	
0.00								
63	500	tanh	50	0.06	0.00	0.51	0.63	
0.10								
64	500	tanh	50	1.45	0.00	8.96	0.86	
0.00								
65	500	tanh	50	1.39	0.00	8.96	0.86	
0.00								
66	500	tanh	100	0.08	0.02	0.69	0.61	
0.10								
67	500	tanh	100	2.81	0.00	17.77	0.88	
0.00								
68	500	tanh	100	2.77	0.00	17.77	0.85	
0.00								
69	500	tanh	500	0.06	0.00	0.51	0.69	
0.10								
70	500	tanh	500	13.86	0.00	88.20	0.95	
0.00								
71	500	tanh	500	14.07	0.00	88.20	0.88	
0.00								
72	500	sin	50	0.05	0.00	0.51	0.71	
0.10								
73	500	sin	50	0.50	0.00	3.33	0.71	
0.00								
74	500	sin	50	1.44	0.00	8.96	0.63	
0.00								

75	500	sin	100	0.06	0.00	0.51	0.75
0.10							
76	500	sin	100	0.48	0.00	3.15	0.68
0.00							
77	500	sin	100	1.58	0.00	10.02	0.68
0.00							
78	500	sin	500	0.06	0.00	0.51	0.69
0.10							
79	500	sin	500	0.44	0.00	2.97	0.68
0.00							
80	500	sin	500	1.56	0.00	10.19	0.64
0.00							
81	10	Sigmoid	50	0.03	0.00	0.34	0.25
0.10							
82	10	Sigmoid	50	0.03	0.00	0.19	0.25
0.00							
83	10	Sigmoid	50	0.02	0.00	0.19	0.25
0.00							
84	10	Sigmoid	100	0.05	0.00	0.37	0.25
0.10							
85	10	Sigmoid	100	0.05	0.00	0.37	0.25
0.00							
86	10	Sigmoid	100	0.05	0.00	0.52	0.25
0.00							
87	10	Sigmoid	500	0.30	0.00	1.96	0.25
0.10							
88	10	Sigmoid	500	0.19	0.00	1.96	0.25

0.00							
89	10	Sigmoid	500	0.20	0.00	1.96	0.25
0.00							
90	10	tanh	50	0.02	0.00	0.34	0.25
0.10							
91	10	tanh	50	0.02	0.00	0.19	0.25
0.00							
92	10	tanh	50	0.03	0.00	0.19	0.25
0.00							
93	10	tanh	100	0.05	0.00	0.37	0.25
0.10							
94	10	tanh	100	0.05	0.00	0.37	0.25
0.00							
95	10	tanh	100	0.05	0.00	0.52	0.25
0.00							
96	10	tanh	500	0.22	0.00	1.96	0.25
0.10							
97	10	tanh	500	0.20	0.00	1.96	0.25
0.00							
98	10	tanh	500	0.20	0.00	1.96	0.25
0.00							
99	10	sin	50	0.00	0.00	0.17	0.37
0.10							
100	10	sin	50	0.02	0.00	0.09	0.51
0.00							
101	10	sin	50	0.00	0.00	0.12	0.44
0.00							

102	10	sin	100	0.00	0.00	0.02	0.44
0.10							
103	10	sin	100	0.00	0.00	0.08	0.36
0.00							
104	10	sin	100	0.05	0.00	0.37	0.36
0.00							
105	10	sin	500	0.00	0.00	0.02	0.32
0.10							
106	10	sin	500	0.00	0.00	0.10	0.46
0.00							
107	10	sin	500	0.00	0.00	0.07	0.32
0.00							
108	100	Sigmoid	50	0.20	0.00	1.92	0.25
0.10							
109	100	Sigmoid	50	0.20	0.00	1.92	0.25
0.00							
110	100	Sigmoid	50	0.19	0.00	1.92	0.25
0.00							
111	100	Sigmoid	100	0.47	0.00	3.69	0.25
0.10							
112	100	Sigmoid	100	0.39	0.00	3.69	0.25
0.00							
113	100	Sigmoid	100	0.39	0.00	3.69	0.25
0.00							
114	100	Sigmoid	500	3.89	0.00	17.80	0.25
0.10							
115	100	Sigmoid	500	1.94	0.00	17.80	0.25

0.00							
116	100	Sigmoid	500	1.94	0.00	17.80	0.25
0.00							
117	100	tanh	50	0.20	0.00	1.92	0.25
0.10							
118	100	tanh	50	0.19	0.00	1.92	0.25
0.00							
119	100	tanh	50	0.19	0.00	1.92	0.25
0.00							
120	100	tanh	100	0.73	0.00	3.69	0.25
0.10							
121	100	tanh	100	0.39	0.00	3.69	0.25
0.00							
122	100	tanh	100	0.39	0.02	3.69	0.25
0.00							
123	100	tanh	500	1.94	0.00	17.80	0.25
0.10							
124	100	tanh	500	1.92	0.00	17.80	0.25
0.00							
125	100	tanh	500	1.95	0.00	17.80	0.25
0.00							
126	100	sin	50	0.20	0.00	1.92	0.25
0.10							
127	100	sin	50	0.20	0.00	1.92	0.41
0.00							
128	100	sin	50	0.19	0.00	1.92	0.32
0.00							

129	100	sin	100	0.39	0.00	3.69	0.25	0.10
130	100	sin	100	0.41	0.00	3.69	0.25	0.00
131	100	sin	100	0.41	0.00	3.69	0.25	0.00
132	100	sin	500	1.97	0.00	17.80	0.25	0.10
133	100	sin	500	1.96	0.00	17.80	0.25	0.00
134	100	sin	500	1.94	0.00	17.80	0.25	0.00
135	500	Sigmoid	50	1.02	0.00	8.96	0.25	0.10
136	500	Sigmoid	50	1.02	0.00	8.96	0.25	0.00
137	500	Sigmoid	50	1.02	0.00	8.96	0.25	0.00
138	500	Sigmoid	100	2.05	0.00	17.77	0.25	0.10
139	500	Sigmoid	100	2.00	0.00	17.77	0.25	0.00
140	500	Sigmoid	100	2.00	0.00	17.77	0.25	0.00
141	500	Sigmoid	500	15.47	0.00	88.20	0.25	0.10
142	500	Sigmoid	500	12.14	0.00	88.20	0.25	

0.00							
143	500	Sigmoid	500	10.55	0.00	88.20	0.25
0.00							
144	500	tanh	50	1.03	0.00	8.96	0.25
0.10							
145	500	tanh	50	1.04	0.00	8.96	0.25
0.00							
146	500	tanh	50	1.05	0.00	8.96	0.25
0.00							
147	500	tanh	100	2.06	0.00	17.77	0.25
0.10							
148	500	tanh	100	2.06	0.00	17.77	0.25
0.00							
149	500	tanh	100	2.03	0.00	17.77	0.25
0.00							
150	500	tanh	500	10.41	0.00	88.20	0.25
0.10							
151	500	tanh	500	11.65	0.00	88.20	0.25
0.00							
152	500	tanh	500	10.50	0.00	88.20	0.25
0.00							
153	500	sin	50	1.02	0.00	8.96	0.25
0.10							
154	500	sin	50	1.02	0.00	8.96	0.25
0.00							
155	500	sin	50	1.03	0.00	8.96	0.25
0.00							

156	500	sin	100	2.06	0.00	17.77	0.25	0.10
157	500	sin	100	2.06	0.00	17.77	0.25	0.00
158	500	sin	100	2.07	0.00	17.77	0.25	0.00
159	500	sin	500	10.66	0.00	88.20	0.25	0.10
160	500	sin	500	10.46	0.00	88.20	0.25	0.00
161	500	sin	500	11.75	0.00	88.20	0.25	0.00
162	10	Sigmoid	50	0.02	0.00	0.17	0.25	0.10
163	10	Sigmoid	50	0.00	0.00	0.03	0.25	0.00
164	10	Sigmoid	50	0.00	0.00	0.03	0.25	0.00
165	10	Sigmoid	100	0.00	0.00	0.03	0.25	0.10
166	10	Sigmoid	100	0.00	0.00	0.03	0.25	0.00
167	10	Sigmoid	100	0.02	0.00	0.03	0.25	0.00
168	10	Sigmoid	500	0.00	0.00	0.03	0.25	0.10
169	10	Sigmoid	500	0.00	0.00	0.03	0.25	

0.00							
170	10	Sigmoid	500	0.00	0.00	0.03	0.25
0.00							
171	10	tanh	50	0.00	0.00	0.01	0.39
0.10							
172	10	tanh	50	0.00	0.00	0.03	0.37
0.00							
173	10	tanh	50	0.02	0.00	0.03	0.54
0.00							
174	10	tanh	100	0.00	0.00	0.02	0.37
0.10							
175	10	tanh	100	0.00	0.00	0.03	0.37
0.00							
176	10	tanh	100	0.00	0.00	0.03	0.37
0.00							
177	10	tanh	500	0.00	0.00	0.02	0.37
0.10							
178	10	tanh	500	0.00	0.00	0.03	0.37
0.00							
179	10	tanh	500	0.00	0.00	0.03	0.37
0.00							
180	10	sin	50	0.02	0.00	0.01	0.36
0.10							
181	10	sin	50	0.00	0.00	0.03	0.31
0.00							
182	10	sin	50	0.00	0.00	0.03	0.42
0.00							

183	10	sin	100	0.00	0.00	0.02	0.39	0.10
184	10	sin	100	0.00	0.00	0.03	0.36	0.00
185	10	sin	100	0.00	0.00	0.03	0.46	0.00
186	10	sin	500	0.00	0.00	0.01	0.31	0.10
187	10	sin	500	0.02	0.00	0.03	0.34	0.00
188	10	sin	500	0.00	0.00	0.03	0.41	0.00
189	100	Sigmoid	50	0.11	0.00	1.76	0.25	0.10
190	100	Sigmoid	50	0.12	0.00	1.91	0.25	0.00
191	100	Sigmoid	50	0.11	0.00	1.91	0.25	0.00
192	100	Sigmoid	100	0.13	0.00	1.91	0.25	0.10
193	100	Sigmoid	100	0.11	0.00	1.91	0.25	0.00
194	100	Sigmoid	100	0.11	0.00	1.91	0.25	0.00
195	100	Sigmoid	500	0.11	0.00	1.91	0.25	0.10
196	100	Sigmoid	500	0.13	0.00	1.91	0.25	

0.00							
197	100	Sigmoid	500	0.13	0.00	1.91	0.25
0.00							
198	100	tanh	50	0.02	0.00	0.07	0.37
0.10							
199	100	tanh	50	0.02	0.00	0.23	0.37
0.00							
200	100	tanh	50	0.03	0.00	0.44	0.37
0.00							
201	100	tanh	100	0.00	0.00	0.05	0.37
0.10							
202	100	tanh	100	0.02	0.00	0.23	0.53
0.00							
203	100	tanh	100	0.03	0.00	0.61	0.37
0.00							
204	100	tanh	500	0.00	0.00	0.24	0.37
0.10							
205	100	tanh	500	0.02	0.00	0.18	0.37
0.00							
206	100	tanh	500	0.03	0.00	0.32	0.37
0.00							
207	100	sin	50	0.00	0.00	0.02	0.41
0.10							
208	100	sin	50	0.11	0.00	1.76	0.61
0.00							
209	100	sin	50	0.13	0.00	1.91	0.71
0.00							

210	100	sin	100	0.02	0.00	0.20	0.36
0.10							
211	100	sin	100	0.11	0.00	1.76	0.61
0.00							
212	100	sin	100	0.12	0.00	1.91	0.58
0.00							
213	100	sin	500	0.00	0.00	0.17	0.47
0.10							
214	100	sin	500	0.13	0.00	1.76	0.56
0.00							
215	100	sin	500	0.13	0.00	1.91	0.58
0.00							
216	500	Sigmoid	50	0.05	0.00	0.73	0.37
0.10							
217	500	Sigmoid	50	0.30	0.00	4.78	0.54
0.00							
218	500	Sigmoid	50	1.52	0.00	24.49	0.51
0.00							
219	500	Sigmoid	100	0.06	0.00	0.85	0.37
0.10							
220	500	Sigmoid	100	0.12	0.00	1.99	0.37
0.00							
221	500	Sigmoid	100	2.76	0.00	44.11	0.25
0.00							
222	500	Sigmoid	500	0.05	0.00	0.73	0.37
0.10							
223	500	Sigmoid	500	0.09	0.00	1.37	0.42

0.00							
224	500	Sigmoid	500	2.77	0.00	44.11	0.25
0.00							
225	500	tanh	50	0.02	0.00	0.47	0.37
0.10							
226	500	tanh	50	0.06	0.00	0.93	0.37
0.00							
227	500	tanh	50	0.20	0.00	3.28	0.37
0.00							
228	500	tanh	100	0.03	0.00	0.47	0.37
0.10							
229	500	tanh	100	0.05	0.02	0.85	0.37
0.00							
230	500	tanh	100	0.17	0.00	2.67	0.37
0.00							
231	500	tanh	500	0.02	0.00	0.38	0.37
0.10							
232	500	tanh	500	0.04	0.00	0.85	0.37
0.00							
233	500	tanh	500	0.17	0.00	3.02	0.53
0.00							
234	500	sin	50	0.02	0.00	0.47	0.56
0.10							
235	500	sin	50	3.65	0.00	39.98	0.76
0.00							
236	500	sin	50	3.55	0.00	44.11	0.78
0.00							

237	500	sin	100	0.02	0.00	0.20	0.25	0.10
238	500	sin	100	3.57	0.00	44.11	0.71	0.00
239	500	sin	100	5.01	0.02	44.11	0.69	0.00
240	500	sin	500	0.02	0.00	0.20	0.44	0.10
241	500	sin	500	2.09	0.00	25.02	0.73	0.00
242	500	sin	500	3.72	0.00	44.11	0.68	0.00
243	10	Sigmoid	50	0.02	0.00	0.16	0.37	0.10
244	10	Sigmoid	50	0.00	0.00	0.01	0.37	0.00
245	10	Sigmoid	50	0.02	0.00	0.01	0.37	0.00
246	10	Sigmoid	100	0.00	0.00	0.01	0.53	0.10
247	10	Sigmoid	100	0.00	0.00	0.01	0.31	0.00
248	10	Sigmoid	100	0.00	0.00	0.01	0.37	0.00
249	10	Sigmoid	500	0.00	0.00	0.01	0.41	0.10
250	10	Sigmoid	500	0.00	0.00	0.01	0.37	

0.00							
251	10	Sigmoid	500	0.00	0.00	0.01	0.25
0.00							
252	10	tanh	50	0.00	0.00	0.01	0.29
0.10							
253	10	tanh	50	0.00	0.00	0.01	0.25
0.00							
254	10	tanh	50	0.00	0.00	0.01	0.37
0.00							
255	10	tanh	100	0.00	0.00	0.01	0.25
0.10							
256	10	tanh	100	0.00	0.00	0.01	0.37
0.00							
257	10	tanh	100	0.00	0.00	0.01	0.37
0.00							
258	10	tanh	500	0.00	0.00	0.01	0.54
0.10							
259	10	tanh	500	0.00	0.00	0.01	0.37
0.00							
260	10	tanh	500	0.00	0.00	0.01	0.37
0.00							
261	10	sin	50	0.00	0.00	0.01	0.51
0.10							
262	10	sin	50	0.00	0.00	0.01	0.37
0.00							
263	10	sin	50	0.00	0.00	0.01	0.46
0.00							

264	10	sin	100	0.00	0.00	0.01	0.37
0.10							
265	10	sin	100	0.00	0.00	0.01	0.46
0.00							
266	10	sin	100	0.00	0.00	0.01	0.39
0.00							
267	10	sin	500	0.00	0.00	0.01	0.42
0.10							
268	10	sin	500	0.00	0.00	0.01	0.36
0.00							
269	10	sin	500	0.00	0.00	0.01	0.44
0.00							
270	100	Sigmoid	50	0.02	0.00	0.01	0.58
0.10							
271	100	Sigmoid	50	0.00	0.00	0.01	0.69
0.00							
272	100	Sigmoid	50	0.00	0.00	0.01	0.63
0.00							
273	100	Sigmoid	100	0.00	0.00	0.01	0.51
0.10							
274	100	Sigmoid	100	0.00	0.00	0.01	0.78
0.00							
275	100	Sigmoid	100	0.00	0.00	0.01	0.58
0.00							
276	100	Sigmoid	500	0.00	0.00	0.01	0.86
0.10							
277	100	Sigmoid	500	0.00	0.00	0.01	0.64

0.00							
278	100	Sigmoid	500	0.00	0.00	0.01	0.53
0.00							
279	100	tanh	50	0.00	0.00	0.01	0.66
0.10							
280	100	tanh	50	0.00	0.00	0.01	0.54
0.00							
281	100	tanh	50	0.00	0.00	0.01	0.54
0.00							
282	100	tanh	100	0.00	0.00	0.01	0.56
0.10							
283	100	tanh	100	0.00	0.00	0.01	0.54
0.00							
284	100	tanh	100	0.00	0.00	0.01	0.41
0.00							
285	100	tanh	500	0.00	0.00	0.01	0.46
0.10							
286	100	tanh	500	0.02	0.00	0.01	0.34
0.00							
287	100	tanh	500	0.00	0.00	0.01	0.41
0.00							
288	100	sin	50	0.00	0.00	0.01	0.54
0.10							
289	100	sin	50	0.00	0.00	0.01	0.63
0.00							
290	100	sin	50	0.00	0.00	0.01	0.54
0.00							

291	100	sin	100	0.00	0.00	0.01	0.59
0.10							
292	100	sin	100	0.02	0.00	0.01	0.59
0.00							
293	100	sin	100	0.00	0.00	0.01	0.54
0.00							
294	100	sin	500	0.00	0.00	0.01	0.66
0.10							
295	100	sin	500	0.00	0.00	0.01	0.64
0.00							
296	100	sin	500	0.00	0.00	0.01	0.59
0.00							
297	500	Sigmoid	50	0.02	0.00	0.01	0.68
0.10							
298	500	Sigmoid	50	0.00	0.00	0.01	0.69
0.00							
299	500	Sigmoid	50	0.02	0.00	0.01	0.73
0.00							
300	500	Sigmoid	100	0.00	0.00	0.01	0.75
0.10							
301	500	Sigmoid	100	0.00	0.00	0.01	0.66
0.00							
302	500	Sigmoid	100	0.02	0.00	0.01	0.61
0.00							
303	500	Sigmoid	500	0.00	0.00	0.01	0.66
0.10							
304	500	Sigmoid	500	0.02	0.00	0.16	0.73

0.00							
305	500	Sigmoid	500	0.02	0.00	0.16	0.66
0.00							
306	500	tanh	50	0.00	0.00	0.01	0.69
0.10							
307	500	tanh	50	0.02	0.00	0.01	0.63
0.00							
308	500	tanh	50	0.00	0.00	0.01	0.56
0.00							
309	500	tanh	100	0.02	0.00	0.01	0.59
0.10							
310	500	tanh	100	0.00	0.00	0.01	0.64
0.00							
311	500	tanh	100	0.02	0.00	0.01	0.59
0.00							
312	500	tanh	500	0.00	0.00	0.01	0.61
0.10							
313	500	tanh	500	0.00	0.00	0.01	0.61
0.00							
314	500	tanh	500	0.02	0.00	0.01	0.68
0.00							
315	500	sin	50	0.00	0.00	0.01	0.64
0.10							
316	500	sin	50	0.02	0.00	0.16	0.68
0.00							
317	500	sin	50	0.00	0.00	0.01	0.71
0.00							

318	500	sin	100	0.02	0.00	0.01	0.71
0.10							
319	500	sin	100	0.00	0.00	0.01	0.68
0.00							
320	500	sin	100	0.02	0.00	0.01	0.71
0.00							
321	500	sin	500	0.00	0.00	0.01	0.71
0.10							
322	500	sin	500	0.00	0.00	0.01	0.69
0.00							
323	500	sin	500	0.02	0.00	0.01	0.69
0.00							
324	10	Sigmoid	50	0.01	0.00	0.05	0.37
0.10							
325	10	Sigmoid	50	0.00	0.00	0.05	0.39
0.00							
326	10	Sigmoid	50	0.14	0.00	1.38	0.25
0.00							
327	10	Sigmoid	100	0.00	0.00	0.19	0.37
0.10							
328	10	Sigmoid	100	0.00	0.00	0.05	0.37
0.00							
329	10	Sigmoid	100	0.00	0.00	0.05	0.37
0.00							
330	10	Sigmoid	500	0.00	0.00	0.05	0.37
0.10							
331	10	Sigmoid	500	0.00	0.00	0.05	0.37

0.00							
332	10	Sigmoid	500	0.02	0.00	0.05	0.37
0.00							
333	10	tanh	50	0.00	0.00	0.05	0.37
0.10							
334	10	tanh	50	0.00	0.00	0.05	0.37
0.00							
335	10	tanh	50	0.00	0.00	0.05	0.37
0.00							
336	10	tanh	100	0.00	0.00	0.05	0.37
0.10							
337	10	tanh	100	0.00	0.00	0.05	0.37
0.00							
338	10	tanh	100	0.00	0.00	0.05	0.37
0.00							
339	10	tanh	500	0.00	0.00	0.05	0.37
0.10							
340	10	tanh	500	0.00	0.00	0.05	0.37
0.00							
341	10	tanh	500	0.00	0.00	0.05	0.36
0.00							
342	10	sin	50	0.03	0.00	0.32	0.34
0.10							
343	10	sin	50	0.02	0.00	0.28	0.39
0.00							
344	10	sin	50	0.03	0.00	0.33	0.36
0.00							

345	10	sin	100	0.03	0.00	0.33	0.37	0.10
346	10	sin	100	0.03	0.00	0.49	0.29	0.00
347	10	sin	100	0.03	0.00	0.45	0.42	0.00
348	10	sin	500	0.03	0.00	0.24	0.39	0.10
349	10	sin	500	0.02	0.00	0.29	0.41	0.00
350	10	sin	500	0.03	0.00	0.26	0.31	0.00
351	100	Sigmoid	50	0.22	0.00	1.30	0.34	0.10
352	100	Sigmoid	50	0.17	0.00	1.30	0.56	0.00
353	100	Sigmoid	50	0.17	0.00	1.28	0.36	0.00
354	100	Sigmoid	100	0.17	0.00	1.29	0.37	0.10
355	100	Sigmoid	100	0.23	0.00	1.29	0.37	0.00
356	100	Sigmoid	100	0.17	0.00	1.27	0.34	0.00
357	100	Sigmoid	500	0.17	0.00	1.31	0.54	0.10
358	100	Sigmoid	500	0.19	0.00	1.29	0.37	

0.00							
359	100	Sigmoid	500	0.17	0.00	1.27	0.34
0.00							
360	100	tanh	50	0.14	0.00	1.29	0.34
0.10							
361	100	tanh	50	0.14	0.00	1.29	0.37
0.00							
362	100	tanh	50	0.14	0.00	1.26	0.32
0.00							
363	100	tanh	100	0.14	0.00	1.26	0.37
0.10							
364	100	tanh	100	0.13	0.00	1.27	0.37
0.00							
365	100	tanh	100	0.13	0.00	1.33	0.42
0.00							
366	100	tanh	500	0.14	0.00	1.27	0.41
0.10							
367	100	tanh	500	0.13	0.00	1.25	0.36
0.00							
368	100	tanh	500	0.13	0.00	1.30	0.56
0.00							
369	100	sin	50	0.62	0.00	4.99	0.34
0.10							
370	100	sin	50	0.52	0.00	4.77	0.51
0.00							
371	100	sin	50	0.55	0.00	4.86	0.39
0.00							

372	100	sin	100	0.55	0.00	5.07	0.51	0.10
373	100	sin	100	0.53	0.00	4.87	0.61	0.00
374	100	sin	100	0.52	0.00	4.86	0.51	0.00
375	100	sin	500	0.50	0.00	4.66	0.37	0.10
376	100	sin	500	0.52	0.00	4.76	0.46	0.00
377	100	sin	500	0.52	0.00	4.91	0.34	0.00
378	500	Sigmoid	50	19.76	0.00	21.78	0.39	0.10
379	500	Sigmoid	50	6.09	0.00	21.82	0.42	0.00
380	500	Sigmoid	50	4.80	0.00	21.71	0.41	0.00
381	500	Sigmoid	100	4.69	0.00	21.52	0.36	0.10
382	500	Sigmoid	100	4.86	0.00	21.48	0.39	0.00
383	500	Sigmoid	100	5.17	0.00	21.70	0.37	0.00
384	500	Sigmoid	500	4.95	0.00	21.71	0.36	0.10
385	500	Sigmoid	500	4.91	0.00	21.55	0.36	

0.00							
386	500	Sigmoid	500	4.77	0.00	21.59	0.39
0.00							
387	500	tanh	50	4.52	0.00	21.59	0.34
0.10							
388	500	tanh	50	4.62	0.00	21.77	0.34
0.00							
389	500	tanh	50	4.59	0.00	21.24	0.37
0.00							
390	500	tanh	100	4.44	0.00	21.37	0.37
0.10							
391	500	tanh	100	4.44	0.00	21.37	0.37
0.00							
392	500	tanh	100	4.77	0.00	21.28	0.37
0.00							
393	500	tanh	500	4.36	0.00	21.34	0.32
0.10							
394	500	tanh	500	4.27	0.00	21.41	0.37
0.00							
395	500	tanh	500	4.28	0.00	21.37	0.34
0.00							
396	500	sin	50	5.31	0.00	24.36	0.31
0.10							
397	500	sin	50	5.38	0.00	24.34	0.53
0.00							
398	500	sin	50	5.14	0.00	24.30	0.42
0.00							

399	500	sin	100	5.46	0.00	24.55	0.29	0.10
400	500	sin	100	5.24	0.00	24.12	0.37	0.00
401	500	sin	100	5.13	0.00	24.33	0.31	0.00
402	500	sin	500	5.31	0.00	24.12	0.34	0.10
403	500	sin	500	6.52	0.00	24.16	0.41	0.00
404	500	sin	500	5.14	0.00	24.23	0.22	0.00

6.2 GLASS

Tolerance	Neurons	Activation Func	Max Iterations	Training Time (s)	Testing Time (s)	RAM Usage (MB)	Testing Accuracy
0	10	Sigmoid	50	0.03	0.00	0.19	0.46
0.10							
1	10	Sigmoid	50	0.03	0.00	0.34	0.48
0.00							
2	10	Sigmoid	50	0.03	0.00	0.19	0.44
0.00							
3	10	Sigmoid	100	0.05	0.00	0.37	0.48
0.10							

4	10	Sigmoid	100	0.05	0.00	0.37	0.54
0.00							
5	10	Sigmoid	100	0.05	0.00	0.52	0.48
0.00							
6	10	Sigmoid	500	0.33	0.00	1.81	0.52
0.10							
7	10	Sigmoid	500	0.30	0.00	1.81	0.51
0.00							
8	10	Sigmoid	500	0.23	0.00	1.81	0.51
0.00							
9	10	tanh	50	0.00	0.00	0.02	0.25
0.10							
10	10	tanh	50	0.00	0.00	0.16	0.25
0.00							
11	10	tanh	50	0.00	0.00	0.02	0.25
0.00							
12	10	tanh	100	0.00	0.02	0.02	0.25
0.10							
13	10	tanh	100	0.05	0.00	0.37	0.31
0.00							
14	10	tanh	100	0.05	0.00	0.37	0.45
0.00							
15	10	tanh	500	0.00	0.00	0.02	0.25
0.10							
16	10	tanh	500	0.03	0.00	0.23	0.42
0.00							
17	10	tanh	500	0.23	0.00	1.96	0.27

0.00							
18	10	sin	50	0.00	0.00	0.02	0.41
0.10							
19	10	sin	50	0.03	0.00	0.19	0.56
0.00							
20	10	sin	50	0.02	0.00	0.34	0.51
0.00							
21	10	sin	100	0.02	0.00	0.02	0.61
0.10							
22	10	sin	100	0.05	0.00	0.37	0.58
0.00							
23	10	sin	100	0.05	0.00	0.37	0.66
0.00							
24	10	sin	500	0.00	0.00	0.02	0.52
0.10							
25	10	sin	500	0.05	0.00	0.35	0.59
0.00							
26	10	sin	500	0.09	0.00	0.76	0.52
0.00							
27	100	Sigmoid	50	0.34	0.00	1.92	0.58
0.10							
28	100	Sigmoid	50	0.28	0.00	1.77	0.54
0.00							
29	100	Sigmoid	50	0.28	0.00	1.77	0.55
0.00							
30	100	Sigmoid	100	0.55	0.00	3.69	0.66
0.10							

31	100	Sigmoid	100	0.55	0.00	3.54	0.61
0.00							
32	100	Sigmoid	100	0.55	0.00	3.54	0.59
0.00							
33	100	Sigmoid	500	3.17	0.00	17.65	0.58
0.10							
34	100	Sigmoid	500	2.83	0.00	17.65	0.59
0.00							
35	100	Sigmoid	500	2.84	0.00	17.80	0.59
0.00							
36	100	tanh	50	0.02	0.00	0.08	0.34
0.10							
37	100	tanh	50	0.28	0.00	1.77	0.45
0.00							
38	100	tanh	50	0.30	0.00	1.77	0.55
0.00							
39	100	tanh	100	0.02	0.00	0.08	0.48
0.10							
40	100	tanh	100	0.58	0.00	3.69	0.54
0.00							
41	100	tanh	100	0.59	0.00	3.54	0.38
0.00							
42	100	tanh	500	0.02	0.00	0.12	0.49
0.10							
43	100	tanh	500	2.71	0.00	17.65	0.61
0.00							
44	100	tanh	500	2.73	0.00	17.65	0.51

0.00							
45	100	sin	50	0.02	0.02	0.12	0.51
0.10							
46	100	sin	50	0.30	0.00	1.77	0.56
0.00							
47	100	sin	50	0.27	0.00	1.77	0.58
0.00							
48	100	sin	100	0.03	0.00	0.12	0.52
0.10							
49	100	sin	100	0.53	0.00	3.54	0.59
0.00							
50	100	sin	100	0.53	0.00	3.69	0.55
0.00							
51	100	sin	500	0.00	0.00	0.08	0.46
0.10							
52	100	sin	500	2.72	0.00	17.65	0.61
0.00							
53	100	sin	500	3.08	0.00	17.65	0.59
0.00							
54	500	Sigmoid	50	1.38	0.00	8.81	0.56
0.10							
55	500	Sigmoid	50	1.38	0.00	8.81	0.55
0.00							
56	500	Sigmoid	50	1.42	0.00	8.96	0.51
0.00							
57	500	Sigmoid	100	2.83	0.00	17.62	0.56
0.10							

58	500	Sigmoid	100	2.83	0.00	17.62	0.58
0.00							
59	500	Sigmoid	100	2.80	0.00	17.62	0.58
0.00							
60	500	Sigmoid	500	14.57	0.00	88.20	0.63
0.10							
61	500	Sigmoid	500	14.62	0.00	88.20	0.62
0.00							
62	500	Sigmoid	500	17.13	0.00	88.20	0.62
0.00							
63	500	tanh	50	0.13	0.00	0.71	0.51
0.10							
64	500	tanh	50	1.42	0.00	8.81	0.55
0.00							
65	500	tanh	50	1.48	0.00	8.81	0.55
0.00							
66	500	tanh	100	0.10	0.00	0.54	0.51
0.10							
67	500	tanh	100	2.80	0.02	17.77	0.52
0.00							
68	500	tanh	100	2.93	0.00	17.62	0.54
0.00							
69	500	tanh	500	0.13	0.00	0.71	0.51
0.10							
70	500	tanh	500	14.39	0.00	88.20	0.63
0.00							
71	500	tanh	500	14.50	0.00	88.20	0.61

0.00							
72	500	sin	50	0.09	0.00	0.54	0.51
0.10							
73	500	sin	50	1.48	0.00	8.81	0.56
0.00							
74	500	sin	50	1.41	0.00	8.81	0.55
0.00							
75	500	sin	100	0.09	0.00	0.54	0.51
0.10							
76	500	sin	100	2.89	0.02	17.62	0.55
0.00							
77	500	sin	100	2.81	0.02	17.77	0.55
0.00							
78	500	sin	500	0.09	0.00	0.54	0.52
0.10							
79	500	sin	500	14.60	0.00	88.20	0.56
0.00							
80	500	sin	500	14.37	0.00	88.20	0.55
0.00							
81	10	Sigmoid	50	0.03	0.00	0.19	0.25
0.10							
82	10	Sigmoid	50	0.02	0.00	0.19	0.25
0.00							
83	10	Sigmoid	50	0.02	0.00	0.19	0.25
0.00							
84	10	Sigmoid	100	0.05	0.00	0.37	0.25
0.10							

85	10	Sigmoid	100	0.05	0.00	0.37	0.25
0.00							
86	10	Sigmoid	100	0.05	0.00	0.37	0.25
0.00							
87	10	Sigmoid	500	0.33	0.00	1.81	0.25
0.10							
88	10	Sigmoid	500	0.20	0.00	1.81	0.25
0.00							
89	10	Sigmoid	500	0.20	0.00	1.81	0.25
0.00							
90	10	tanh	50	0.02	0.00	0.34	0.25
0.10							
91	10	tanh	50	0.02	0.00	0.19	0.25
0.00							
92	10	tanh	50	0.02	0.00	0.19	0.25
0.00							
93	10	tanh	100	0.03	0.00	0.37	0.25
0.10							
94	10	tanh	100	0.03	0.00	0.37	0.25
0.00							
95	10	tanh	100	0.05	0.00	0.52	0.25
0.00							
96	10	tanh	500	0.22	0.00	1.81	0.25
0.10							
97	10	tanh	500	0.20	0.00	1.81	0.25
0.00							
98	10	tanh	500	0.20	0.00	1.81	0.25

0.00							
99	10	sin	50	0.03	0.00	0.19	0.06
0.10							
100	10	sin	50	0.03	0.00	0.34	0.04
0.00							
101	10	sin	50	0.02	0.00	0.19	0.01
0.00							
102	10	sin	100	0.05	0.00	0.37	0.25
0.10							
103	10	sin	100	0.03	0.00	0.37	0.25
0.00							
104	10	sin	100	0.05	0.00	0.52	0.25
0.00							
105	10	sin	500	0.22	0.00	1.81	0.25
0.10							
106	10	sin	500	0.20	0.00	1.81	0.25
0.00							
107	10	sin	500	0.20	0.00	1.81	0.25
0.00							
108	100	Sigmoid	50	0.20	0.00	1.77	0.25
0.10							
109	100	Sigmoid	50	0.19	0.00	1.77	0.25
0.00							
110	100	Sigmoid	50	0.20	0.00	1.92	0.25
0.00							
111	100	Sigmoid	100	0.53	0.00	3.54	0.25
0.10							

112	100	Sigmoid	100	0.41	0.00	3.54	0.25
0.00							
113	100	Sigmoid	100	0.39	0.00	3.54	0.25
0.00							
114	100	Sigmoid	500	2.74	0.00	17.80	0.25
0.10							
115	100	Sigmoid	500	1.95	0.00	17.65	0.25
0.00							
116	100	Sigmoid	500	4.02	0.00	17.65	0.25
0.00							
117	100	tanh	50	0.20	0.00	1.77	0.25
0.10							
118	100	tanh	50	0.20	0.00	1.77	0.25
0.00							
119	100	tanh	50	0.20	0.00	1.77	0.25
0.00							
120	100	tanh	100	0.39	0.00	3.69	0.25
0.10							
121	100	tanh	100	0.39	0.00	3.54	0.25
0.00							
122	100	tanh	100	0.39	0.00	3.54	0.25
0.00							
123	100	tanh	500	1.95	0.02	17.80	0.25
0.10							
124	100	tanh	500	1.95	0.00	17.65	0.25
0.00							
125	100	tanh	500	1.95	0.00	17.65	0.25

0.00							
126	100	sin	50	0.19	0.00	1.77	0.25
0.10							
127	100	sin	50	0.19	0.00	1.77	0.25
0.00							
128	100	sin	50	0.19	0.00	1.77	0.25
0.00							
129	100	sin	100	0.39	0.00	3.54	0.25
0.10							
130	100	sin	100	0.39	0.00	3.69	0.25
0.00							
131	100	sin	100	0.39	0.00	3.54	0.25
0.00							
132	100	sin	500	1.94	0.00	17.80	0.25
0.10							
133	100	sin	500	1.94	0.00	17.65	0.25
0.00							
134	100	sin	500	1.94	0.00	17.65	0.25
0.00							
135	500	Sigmoid	50	1.00	0.00	8.81	0.25
0.10							
136	500	Sigmoid	50	1.02	0.00	8.81	0.25
0.00							
137	500	Sigmoid	50	1.02	0.00	8.81	0.25
0.00							
138	500	Sigmoid	100	2.02	0.02	17.77	0.25
0.10							

139	500	Sigmoid	100	2.00	0.00	17.62	0.25
0.00							
140	500	Sigmoid	100	2.00	0.00	17.77	0.25
0.00							
141	500	Sigmoid	500	13.76	0.00	88.20	0.25
0.10							
142	500	Sigmoid	500	10.25	0.00	88.20	0.25
0.00							
143	500	Sigmoid	500	10.36	0.01	88.20	0.25
0.00							
144	500	tanh	50	0.99	0.00	8.81	0.25
0.10							
145	500	tanh	50	1.00	0.00	8.81	0.25
0.00							
146	500	tanh	50	1.00	0.00	8.81	0.25
0.00							
147	500	tanh	100	2.02	0.01	17.77	0.25
0.10							
148	500	tanh	100	2.03	0.00	17.62	0.25
0.00							
149	500	tanh	100	2.02	0.00	17.62	0.25
0.00							
150	500	tanh	500	10.29	0.00	88.20	0.25
0.10							
151	500	tanh	500	12.52	0.00	88.20	0.25
0.00							
152	500	tanh	500	10.28	0.00	88.20	0.25

0.00							
153	500	sin	50	1.00	0.00	8.81	0.25
0.10							
154	500	sin	50	1.00	0.00	8.81	0.25
0.00							
155	500	sin	50	1.02	0.02	8.81	0.25
0.00							
156	500	sin	100	2.00	0.00	17.62	0.25
0.10							
157	500	sin	100	2.00	0.00	17.62	0.25
0.00							
158	500	sin	100	2.00	0.00	17.62	0.25
0.00							
159	500	sin	500	10.22	0.00	88.20	0.25
0.10							
160	500	sin	500	10.22	0.00	88.20	0.25
0.00							
161	500	sin	500	10.31	0.00	88.20	0.25
0.00							
162	10	Sigmoid	50	0.00	0.00	0.02	0.28
0.10							
163	10	Sigmoid	50	0.02	0.00	0.03	0.34
0.00							
164	10	Sigmoid	50	0.00	0.00	0.03	0.35
0.00							
165	10	Sigmoid	100	0.00	0.00	0.01	0.32
0.10							

166	10	Sigmoid	100	0.00	0.00	0.03	0.31
0.00							
167	10	Sigmoid	100	0.00	0.00	0.03	0.35
0.00							
168	10	Sigmoid	500	0.00	0.00	0.02	0.34
0.10							
169	10	Sigmoid	500	0.02	0.00	0.03	0.37
0.00							
170	10	Sigmoid	500	0.00	0.00	0.17	0.34
0.00							
171	10	tanh	50	0.00	0.00	0.02	0.25
0.10							
172	10	tanh	50	0.00	0.00	0.03	0.25
0.00							
173	10	tanh	50	0.00	0.00	0.03	0.25
0.00							
174	10	tanh	100	0.00	0.00	0.01	0.25
0.10							
175	10	tanh	100	0.02	0.00	0.03	0.25
0.00							
176	10	tanh	100	0.00	0.00	0.03	0.25
0.00							
177	10	tanh	500	0.00	0.00	0.01	0.25
0.10							
178	10	tanh	500	0.00	0.00	0.03	0.32
0.00							
179	10	tanh	500	0.00	0.00	0.03	0.25

0.00							
180	10	sin	50	0.00	0.00	0.02	0.35
0.10							
181	10	sin	50	0.00	0.00	0.03	0.48
0.00							
182	10	sin	50	0.00	0.00	0.03	0.44
0.00							
183	10	sin	100	0.00	0.00	0.02	0.39
0.10							
184	10	sin	100	0.00	0.00	0.03	0.37
0.00							
185	10	sin	100	0.00	0.00	0.03	0.44
0.00							
186	10	sin	500	0.00	0.00	0.01	0.31
0.10							
187	10	sin	500	0.00	0.00	0.03	0.31
0.00							
188	10	sin	500	0.02	0.00	0.03	0.34
0.00							
189	100	Sigmoid	50	0.02	0.00	0.19	0.34
0.10							
190	100	Sigmoid	50	0.05	0.00	0.86	0.37
0.00							
191	100	Sigmoid	50	0.13	0.00	1.91	0.37
0.00							
192	100	Sigmoid	100	0.02	0.00	0.21	0.30
0.10							

193	100	Sigmoid	100	0.02	0.00	0.21	0.25
0.00							
194	100	Sigmoid	100	0.11	0.00	1.76	0.37
0.00							
195	100	Sigmoid	500	0.02	0.00	0.16	0.31
0.10							
196	100	Sigmoid	500	0.11	0.00	1.76	0.37
0.00							
197	100	Sigmoid	500	0.11	0.00	1.76	0.37
0.00							
198	100	tanh	50	0.00	0.00	0.04	0.25
0.10							
199	100	tanh	50	0.02	0.00	0.16	0.25
0.00							
200	100	tanh	50	0.03	0.00	0.59	0.32
0.00							
201	100	tanh	100	0.00	0.00	0.05	0.25
0.10							
202	100	tanh	100	0.03	0.00	0.16	0.25
0.00							
203	100	tanh	100	0.02	0.00	0.39	0.34
0.00							
204	100	tanh	500	0.00	0.00	0.05	0.25
0.10							
205	100	tanh	500	0.02	0.00	0.21	0.30
0.00							
206	100	tanh	500	0.06	0.00	0.85	0.28

0.00							
207	100	sin	50	0.02	0.00	0.16	0.32
0.10							
208	100	sin	50	0.11	0.00	1.91	0.48
0.00							
209	100	sin	50	0.11	0.00	1.76	0.51
0.00							
210	100	sin	100	0.02	0.00	0.24	0.48
0.10							
211	100	sin	100	0.11	0.01	1.76	0.52
0.00							
212	100	sin	100	0.11	0.00	1.91	0.48
0.00							
213	100	sin	500	0.00	0.00	0.04	0.32
0.10							
214	100	sin	500	0.13	0.00	1.76	0.49
0.00							
215	100	sin	500	0.11	0.00	1.76	0.49
0.00							
216	500	Sigmoid	50	0.05	0.00	0.58	0.25
0.10							
217	500	Sigmoid	50	0.16	0.00	2.61	0.35
0.00							
218	500	Sigmoid	50	2.67	0.02	43.97	0.46
0.00							
219	500	Sigmoid	100	0.11	0.00	1.46	0.35
0.10							

220	500	Sigmoid	100	0.11	0.00	1.87	0.31
0.00							
221	500	Sigmoid	100	2.70	0.00	44.11	0.37
0.00							
222	500	Sigmoid	500	0.05	0.00	0.58	0.25
0.10							
223	500	Sigmoid	500	0.59	0.00	9.21	0.37
0.00							
224	500	Sigmoid	500	2.73	0.00	44.11	0.39
0.00							
225	500	tanh	50	0.02	0.00	0.23	0.25
0.10							
226	500	tanh	50	0.11	0.00	1.11	0.25
0.00							
227	500	tanh	50	0.80	0.00	7.71	0.35
0.00							
228	500	tanh	100	0.03	0.00	0.23	0.25
0.10							
229	500	tanh	100	0.17	0.00	1.64	0.30
0.00							
230	500	tanh	100	3.27	0.00	31.18	0.49
0.00							
231	500	tanh	500	0.03	0.00	0.32	0.25
0.10							
232	500	tanh	500	0.11	0.00	1.20	0.32
0.00							
233	500	tanh	500	0.58	0.00	6.92	0.37

0.00							
234	500	sin	50	0.05	0.00	0.49	0.31
0.10							
235	500	sin	50	1.99	0.00	22.58	0.48
0.00							
236	500	sin	50	5.93	0.00	44.11	0.51
0.00							
237	500	sin	100	0.02	0.00	0.14	0.44
0.10							
238	500	sin	100	1.44	0.01	16.77	0.49
0.00							
239	500	sin	100	3.78	0.00	44.11	0.51
0.00							
240	500	sin	500	0.09	0.00	1.17	0.37
0.10							
241	500	sin	500	1.53	0.00	17.98	0.46
0.00							
242	500	sin	500	3.69	0.00	43.97	0.48
0.00							
243	10	Sigmoid	50	0.02	0.00	0.01	0.32
0.10							
244	10	Sigmoid	50	0.00	0.00	0.01	0.44
0.00							
245	10	Sigmoid	50	0.00	0.00	0.01	0.14
0.00							
246	10	Sigmoid	100	0.00	0.00	0.01	0.25
0.10							

247	10	Sigmoid	100	0.00	0.00	0.01	0.39	0.00
248	10	Sigmoid	100	0.00	0.00	0.01	0.06	0.00
249	10	Sigmoid	500	0.00	0.00	0.01	0.25	0.10
250	10	Sigmoid	500	0.00	0.00	0.16	0.37	0.00
251	10	Sigmoid	500	0.00	0.00	0.01	0.44	0.00
252	10	tanh	50	0.00	0.00	0.01	0.44	0.10
253	10	tanh	50	0.00	0.00	0.01	0.35	0.00
254	10	tanh	50	0.00	0.00	0.01	0.06	0.00
255	10	tanh	100	0.00	0.00	0.01	0.06	0.10
256	10	tanh	100	0.00	0.00	0.01	0.14	0.00
257	10	tanh	100	0.00	0.00	0.01	0.25	0.00
258	10	tanh	500	0.00	0.00	0.01	0.06	0.10
259	10	tanh	500	0.00	0.00	0.01	0.06	0.00
260	10	tanh	500	0.00	0.00	0.01	0.32	

0.00							
261	10	sin	50	0.00	0.00	0.01	0.58
0.10							
262	10	sin	50	0.00	0.00	0.01	0.61
0.00							
263	10	sin	50	0.00	0.00	0.01	0.62
0.00							
264	10	sin	100	0.00	0.00	0.01	0.54
0.10							
265	10	sin	100	0.00	0.00	0.01	0.63
0.00							
266	10	sin	100	0.00	0.00	0.01	0.62
0.00							
267	10	sin	500	0.00	0.00	0.01	0.55
0.10							
268	10	sin	500	0.00	0.00	0.01	0.56
0.00							
269	10	sin	500	0.00	0.00	0.01	0.63
0.00							
270	100	Sigmoid	50	0.00	0.00	0.01	0.56
0.10							
271	100	Sigmoid	50	0.00	0.00	0.01	0.62
0.00							
272	100	Sigmoid	50	0.00	0.00	0.01	0.59
0.00							
273	100	Sigmoid	100	0.00	0.00	0.01	0.59
0.10							

274	100	Sigmoid	100	0.02	0.00	0.01	0.52
0.00							
275	100	Sigmoid	100	0.00	0.00	0.01	0.58
0.00							
276	100	Sigmoid	500	0.00	0.00	0.01	0.65
0.10							
277	100	Sigmoid	500	0.00	0.00	0.01	0.63
0.00							
278	100	Sigmoid	500	0.00	0.00	0.01	0.54
0.00							
279	100	tanh	50	0.00	0.00	0.01	0.45
0.10							
280	100	tanh	50	0.00	0.00	0.01	0.45
0.00							
281	100	tanh	50	0.00	0.00	0.01	0.62
0.00							
282	100	tanh	100	0.00	0.00	0.01	0.46
0.10							
283	100	tanh	100	0.00	0.00	0.01	0.59
0.00							
284	100	tanh	100	0.00	0.00	0.01	0.58
0.00							
285	100	tanh	500	0.00	0.00	0.01	0.55
0.10							
286	100	tanh	500	0.00	0.00	0.01	0.51
0.00							
287	100	tanh	500	0.02	0.00	0.01	0.61

0.00							
288	100	sin	50	0.00	0.00	0.01	0.56
0.10							
289	100	sin	50	0.00	0.00	0.01	0.51
0.00							
290	100	sin	50	0.00	0.00	0.01	0.54
0.00							
291	100	sin	100	0.00	0.00	0.01	0.54
0.10							
292	100	sin	100	0.00	0.00	0.01	0.54
0.00							
293	100	sin	100	0.00	0.00	0.01	0.55
0.00							
294	100	sin	500	0.00	0.00	0.01	0.56
0.10							
295	100	sin	500	0.00	0.00	0.01	0.58
0.00							
296	100	sin	500	0.00	0.00	0.01	0.52
0.00							
297	500	Sigmoid	50	0.02	0.00	0.01	0.62
0.10							
298	500	Sigmoid	50	0.00	0.00	0.01	0.59
0.00							
299	500	Sigmoid	50	0.02	0.00	0.01	0.59
0.00							
300	500	Sigmoid	100	0.02	0.00	0.01	0.58
0.10							

301	500	Sigmoid	100	0.00	0.00	0.01	0.59
0.00							
302	500	Sigmoid	100	0.02	0.00	0.01	0.58
0.00							
303	500	Sigmoid	500	0.02	0.00	0.01	0.59
0.10							
304	500	Sigmoid	500	0.00	0.00	0.01	0.55
0.00							
305	500	Sigmoid	500	0.02	0.00	0.01	0.54
0.00							
306	500	tanh	50	0.02	0.00	0.16	0.55
0.10							
307	500	tanh	50	0.02	0.00	0.01	0.58
0.00							
308	500	tanh	50	0.00	0.00	0.01	0.54
0.00							
309	500	tanh	100	0.02	0.00	0.01	0.48
0.10							
310	500	tanh	100	0.02	0.00	0.16	0.51
0.00							
311	500	tanh	100	0.00	0.00	0.01	0.51
0.00							
312	500	tanh	500	0.01	0.00	0.01	0.56
0.10							
313	500	tanh	500	0.02	0.00	0.01	0.56
0.00							
314	500	tanh	500	0.00	0.00	0.01	0.52

0.00							
315	500	sin	50	0.00	0.00	0.01	0.51
0.10							
316	500	sin	50	0.02	0.00	0.01	0.52
0.00							
317	500	sin	50	0.00	0.00	0.01	0.55
0.00							
318	500	sin	100	0.01	0.00	0.01	0.55
0.10							
319	500	sin	100	0.01	0.00	0.01	0.56
0.00							
320	500	sin	100	0.00	0.00	0.01	0.56
0.00							
321	500	sin	500	0.02	0.00	0.01	0.54
0.10							
322	500	sin	500	0.02	0.00	0.01	0.52
0.00							
323	500	sin	500	0.00	0.00	0.01	0.51
0.00							
324	10	Sigmoid	50	0.02	0.00	0.06	0.32
0.10							
325	10	Sigmoid	50	0.00	0.00	0.06	0.30
0.00							
326	10	Sigmoid	50	0.00	0.00	0.06	0.28
0.00							
327	10	Sigmoid	100	0.02	0.00	0.05	0.25
0.10							

328	10	Sigmoid	100	0.00	0.00	0.05	0.27	0.00
329	10	Sigmoid	100	0.00	0.00	0.05	0.25	0.00
330	10	Sigmoid	500	0.02	0.00	0.06	0.28	0.10
331	10	Sigmoid	500	0.00	0.00	0.05	0.25	0.00
332	10	Sigmoid	500	0.00	0.00	0.05	0.45	0.00
333	10	tanh	50	0.00	0.00	0.05	0.27	0.10
334	10	tanh	50	0.02	0.00	0.17	0.27	0.00
335	10	tanh	50	0.00	0.00	0.05	0.25	0.00
336	10	tanh	100	0.00	0.00	0.05	0.25	0.10
337	10	tanh	100	0.00	0.00	0.05	0.38	0.00
338	10	tanh	100	0.00	0.00	0.05	0.25	0.00
339	10	tanh	500	0.00	0.00	0.06	0.35	0.10
340	10	tanh	500	0.00	0.00	0.20	0.25	0.00
341	10	tanh	500	0.02	0.00	0.05	0.25	

0.00								
342	10	sin	50	0.00	0.00	0.12	0.49	
0.10								
343	10	sin	50	0.02	0.00	0.10	0.56	
0.00								
344	10	sin	50	0.02	0.00	0.12	0.54	
0.00								
345	10	sin	100	0.02	0.00	0.18	0.59	
0.10								
346	10	sin	100	0.02	0.00	0.15	0.45	
0.00								
347	10	sin	100	0.00	0.00	0.10	0.55	
0.00								
348	10	sin	500	0.02	0.00	0.17	0.61	
0.10								
349	10	sin	500	0.00	0.00	0.11	0.55	
0.00								
350	10	sin	500	0.02	0.00	0.13	0.61	
0.00								
351	100	Sigmoid	50	0.20	0.00	1.40	0.35	
0.10								
352	100	Sigmoid	50	0.14	0.00	1.24	0.25	
0.00								
353	100	Sigmoid	50	0.17	0.00	1.48	0.35	
0.00								
354	100	Sigmoid	100	0.17	0.00	1.31	0.41	
0.10								

355	100	Sigmoid	100	0.14	0.00	1.31	0.27
0.00							
356	100	Sigmoid	100	0.16	0.00	1.31	0.27
0.00							
357	100	Sigmoid	500	0.16	0.00	1.25	0.48
0.10							
358	100	Sigmoid	500	0.16	0.00	1.25	0.42
0.00							
359	100	Sigmoid	500	0.13	0.00	1.22	0.31
0.00							
360	100	tanh	50	0.19	0.00	1.63	0.34
0.10							
361	100	tanh	50	0.17	0.00	1.56	0.28
0.00							
362	100	tanh	50	0.16	0.00	1.27	0.25
0.00							
363	100	tanh	100	0.14	0.00	1.22	0.44
0.10							
364	100	tanh	100	0.14	0.00	1.24	0.25
0.00							
365	100	tanh	100	0.14	0.00	1.28	0.28
0.00							
366	100	tanh	500	0.16	0.00	1.34	0.30
0.10							
367	100	tanh	500	0.16	0.00	1.34	0.27
0.00							
368	100	tanh	500	0.14	0.00	1.24	0.27

0.00								
369	100	sin	50	0.22	0.00	1.78	0.28	
0.10								
370	100	sin	50	0.21	0.00	1.97	0.34	
0.00								
371	100	sin	50	0.22	0.00	1.92	0.28	
0.00								
372	100	sin	100	0.22	0.00	1.84	0.32	
0.10								
373	100	sin	100	0.22	0.00	1.97	0.23	
0.00								
374	100	sin	100	0.22	0.00	1.82	0.27	
0.00								
375	100	sin	500	0.20	0.00	1.85	0.45	
0.10								
376	100	sin	500	0.22	0.00	1.81	0.32	
0.00								
377	100	sin	500	0.20	0.00	1.80	0.41	
0.00								
378	500	Sigmoid	50	30.85	0.00	21.22	0.42	
0.10								
379	500	Sigmoid	50	18.36	0.00	21.20	0.27	
0.00								
380	500	Sigmoid	50	18.36	0.00	21.23	0.25	
0.00								
381	500	Sigmoid	100	18.01	0.00	21.19	0.34	
0.10								

382	500	Sigmoid	100	17.24	0.00	21.28	0.41
0.00							
383	500	Sigmoid	100	16.99	0.00	21.19	0.25
0.00							
384	500	Sigmoid	500	16.84	0.00	21.28	0.52
0.10							
385	500	Sigmoid	500	17.35	0.00	21.20	0.25
0.00							
386	500	Sigmoid	500	16.94	0.00	21.20	0.25
0.00							
387	500	tanh	50	17.11	0.00	21.35	0.38
0.10							
388	500	tanh	50	17.40	0.00	21.29	0.34
0.00							
389	500	tanh	50	18.19	0.00	21.30	0.25
0.00							
390	500	tanh	100	17.92	0.00	21.41	0.21
0.10							
391	500	tanh	100	17.70	0.00	21.43	0.20
0.00							
392	500	tanh	100	18.93	0.00	21.44	0.41
0.00							
393	500	tanh	500	18.05	0.00	21.38	0.25
0.10							
394	500	tanh	500	17.50	0.00	21.23	0.27
0.00							
395	500	tanh	500	16.37	0.00	21.28	0.48

0.00							
396	500	sin	50	17.05	0.00	21.53	0.24
0.10							
397	500	sin	50	16.79	0.00	21.58	0.25
0.00							
398	500	sin	50	18.47	0.00	21.68	0.21
0.00							
399	500	sin	100	17.56	0.00	21.61	0.25
0.10							
400	500	sin	100	16.67	0.00	21.67	0.21
0.00							
401	500	sin	100	16.17	0.00	21.54	0.25
0.00							
402	500	sin	500	16.28	0.00	21.51	0.23
0.10							
403	500	sin	500	17.29	0.00	21.51	0.28
0.00							
404	500	sin	500	17.35	0.00	21.67	0.24
0.00							

6.3 IRIS

Tolerance	Neurons	Activation Func	Max Iterations	Training Time (s)	Testing Time (s)	RAM Usage (MB)	Testing Accuracy
0	10	Sigmoid	50	0.03	0.00	0.19	0.96

0.10							
1	10	Sigmoid	50	0.03	0.00	0.34	0.86
0.00							
2	10	Sigmoid	50	0.02	0.00	0.19	0.96
0.00							
3	10	Sigmoid	100	0.05	0.00	0.37	0.80
0.10							
4	10	Sigmoid	100	0.05	0.00	0.37	0.92
0.00							
5	10	Sigmoid	100	0.05	0.00	0.37	0.90
0.00							
6	10	Sigmoid	500	0.08	0.00	0.83	0.92
0.10							
7	10	Sigmoid	500	0.22	0.00	1.81	0.96
0.00							
8	10	Sigmoid	500	0.20	0.00	1.81	0.94
0.00							
9	10	tanh	50	0.00	0.00	0.03	0.76
0.10							
10	10	tanh	50	0.02	0.00	0.34	1.00
0.00							
11	10	tanh	50	0.03	0.00	0.19	0.76
0.00							
12	10	tanh	100	0.00	0.00	0.05	0.84
0.10							
13	10	tanh	100	0.05	0.00	0.37	0.92
0.00							

14	10	tanh	100	0.04	0.00	0.37	0.98	0.00
15	10	tanh	500	0.00	0.00	0.03	0.78	0.10
16	10	tanh	500	0.22	0.00	1.96	0.86	0.00
17	10	tanh	500	0.20	0.00	1.81	0.82	0.00
18	10	sin	50	0.00	0.00	0.03	0.94	0.10
19	10	sin	50	0.03	0.00	0.19	0.94	0.00
20	10	sin	50	0.03	0.00	0.34	0.92	0.00
21	10	sin	100	0.02	0.00	0.03	0.92	0.10
22	10	sin	100	0.08	0.00	0.37	1.00	0.00
23	10	sin	100	0.06	0.00	0.37	0.98	0.00
24	10	sin	500	0.00	0.00	0.03	0.92	0.10
25	10	sin	500	0.31	0.00	1.96	0.96	0.00
26	10	sin	500	0.33	0.00	1.81	0.98	0.00
27	100	Sigmoid	50	0.06	0.00	0.33	0.76	

0.10							
28	100	Sigmoid	50	0.30	0.00	1.77	0.86
0.00							
29	100	Sigmoid	50	0.30	0.00	1.77	0.88
0.00							
30	100	Sigmoid	100	0.06	0.00	0.47	0.76
0.10							
31	100	Sigmoid	100	0.60	0.00	3.69	0.94
0.00							
32	100	Sigmoid	100	0.64	0.00	3.54	0.94
0.00							
33	100	Sigmoid	500	0.00	0.00	0.08	0.70
0.10							
34	100	Sigmoid	500	2.91	0.00	17.65	0.98
0.00							
35	100	Sigmoid	500	2.89	0.00	17.65	0.98
0.00							
36	100	tanh	50	0.05	0.00	0.40	0.92
0.10							
37	100	tanh	50	0.30	0.00	1.77	0.96
0.00							
38	100	tanh	50	0.30	0.00	1.77	0.98
0.00							
39	100	tanh	100	0.05	0.00	0.29	0.90
0.10							
40	100	tanh	100	0.60	0.00	3.69	0.98
0.00							

41	100	tanh	100	0.56	0.00	3.54	0.98
0.00							
42	100	tanh	500	0.03	0.00	0.22	0.86
0.10							
43	100	tanh	500	3.03	0.02	17.65	0.98
0.00							
44	100	tanh	500	2.88	0.00	17.65	0.98
0.00							
45	100	sin	50	0.03	0.00	0.19	0.90
0.10							
46	100	sin	50	0.31	0.00	1.77	0.98
0.00							
47	100	sin	50	0.30	0.00	1.77	0.98
0.00							
48	100	sin	100	0.11	0.00	0.68	0.96
0.10							
49	100	sin	100	0.58	0.00	3.54	0.98
0.00							
50	100	sin	100	0.59	0.00	3.69	0.98
0.00							
51	100	sin	500	0.02	0.00	0.15	0.82
0.10							
52	100	sin	500	3.00	0.01	17.80	0.98
0.00							
53	100	sin	500	2.92	0.02	17.65	0.98
0.00							
54	500	Sigmoid	50	0.06	0.00	0.36	0.72

0.10							
55	500	Sigmoid	50	1.48	0.00	8.81	0.82
0.00							
56	500	Sigmoid	50	1.52	0.00	8.81	0.80
0.00							
57	500	Sigmoid	100	0.06	0.00	0.36	0.66
0.10							
58	500	Sigmoid	100	3.03	0.00	17.77	0.84
0.00							
59	500	Sigmoid	100	3.06	0.00	17.62	0.82
0.00							
60	500	Sigmoid	500	0.06	0.00	0.51	0.68
0.10							
61	500	Sigmoid	500	15.12	0.00	88.20	0.88
0.00							
62	500	Sigmoid	500	17.63	0.00	88.20	0.88
0.00							
63	500	tanh	50	0.09	0.00	0.54	0.82
0.10							
64	500	tanh	50	1.51	0.00	8.81	0.96
0.00							
65	500	tanh	50	1.51	0.00	8.96	0.96
0.00							
66	500	tanh	100	0.12	0.00	0.71	0.82
0.10							
67	500	tanh	100	3.04	0.00	17.62	0.98
0.00							

68	500	tanh	100	3.08	0.00	17.62	0.98	0.00
69	500	tanh	500	0.28	0.00	1.59	0.84	0.10
70	500	tanh	500	15.36	0.02	88.20	0.98	0.00
71	500	tanh	500	15.48	0.00	88.20	0.98	0.00
72	500	sin	50	0.11	0.00	0.54	0.82	0.10
73	500	sin	50	1.55	0.00	8.96	0.94	0.00
74	500	sin	50	1.59	0.00	8.81	0.94	0.00
75	500	sin	100	0.14	0.00	0.71	0.82	0.10
76	500	sin	100	3.19	0.02	17.62	0.94	0.00
77	500	sin	100	3.12	0.00	17.62	0.98	0.00
78	500	sin	500	0.11	0.00	0.54	0.80	0.10
79	500	sin	500	15.64	0.00	88.20	0.98	0.00
80	500	sin	500	15.92	0.00	88.20	0.98	0.00
81	10	Sigmoid	50	0.03	0.00	0.19	0.34	

0.10							
82	10	Sigmoid	50	0.02	0.00	0.19	0.34
0.00							
83	10	Sigmoid	50	0.03	0.00	0.19	0.34
0.00							
84	10	Sigmoid	100	0.06	0.00	0.37	0.34
0.10							
85	10	Sigmoid	100	0.05	0.00	0.37	0.34
0.00							
86	10	Sigmoid	100	0.05	0.00	0.37	0.34
0.00							
87	10	Sigmoid	500	0.31	0.00	1.81	0.34
0.10							
88	10	Sigmoid	500	0.20	0.00	1.81	0.34
0.00							
89	10	Sigmoid	500	0.20	0.00	1.81	0.34
0.00							
90	10	tanh	50	0.02	0.00	0.34	0.34
0.10							
91	10	tanh	50	0.03	0.00	0.19	0.34
0.00							
92	10	tanh	50	0.02	0.00	0.19	0.34
0.00							
93	10	tanh	100	0.03	0.00	0.37	0.34
0.10							
94	10	tanh	100	0.05	0.00	0.37	0.34
0.00							

95	10	tanh	100	0.05	0.00	0.52	0.34	0.00
96	10	tanh	500	0.22	0.00	1.81	0.34	0.10
97	10	tanh	500	0.20	0.00	1.81	0.34	0.00
98	10	tanh	500	0.20	0.00	1.81	0.34	0.00
99	10	sin	50	0.02	0.00	0.19	0.46	0.10
100	10	sin	50	0.03	0.00	0.34	0.34	0.00
101	10	sin	50	0.02	0.00	0.19	0.00	0.00
102	10	sin	100	0.03	0.00	0.37	0.34	0.10
103	10	sin	100	0.03	0.00	0.37	0.34	0.00
104	10	sin	100	0.05	0.00	0.52	0.34	0.00
105	10	sin	500	0.20	0.00	1.81	0.34	0.10
106	10	sin	500	0.20	0.00	1.81	0.34	0.00
107	10	sin	500	0.20	0.00	1.81	0.34	0.00
108	100	Sigmoid	50	0.20	0.00	1.77	0.34	

0.10								
109	100	Sigmoid	50	0.20	0.00	1.77	0.34	
0.00								
110	100	Sigmoid	50	0.19	0.00	1.92	0.34	
0.00								
111	100	Sigmoid	100	0.52	0.00	3.54	0.34	
0.10								
112	100	Sigmoid	100	0.39	0.00	3.54	0.34	
0.00								
113	100	Sigmoid	100	0.39	0.00	3.54	0.34	
0.00								
114	100	Sigmoid	500	5.19	0.00	17.80	0.34	
0.10								
115	100	Sigmoid	500	2.41	0.00	17.65	0.34	
0.00								
116	100	Sigmoid	500	1.95	0.00	17.65	0.34	
0.00								
117	100	tanh	50	0.20	0.00	1.77	0.34	
0.10								
118	100	tanh	50	0.19	0.00	1.77	0.34	
0.00								
119	100	tanh	50	0.20	0.00	1.77	0.34	
0.00								
120	100	tanh	100	0.41	0.00	3.69	0.34	
0.10								
121	100	tanh	100	0.39	0.00	3.54	0.34	
0.00								

122	100	tanh	100	0.39	0.00	3.54	0.34
0.00							
123	100	tanh	500	1.97	0.00	17.80	0.34
0.10							
124	100	tanh	500	1.94	0.00	17.65	0.34
0.00							
125	100	tanh	500	1.95	0.00	17.65	0.34
0.00							
126	100	sin	50	0.20	0.00	1.77	0.34
0.10							
127	100	sin	50	0.20	0.00	1.77	0.34
0.00							
128	100	sin	50	0.20	0.00	1.77	0.34
0.00							
129	100	sin	100	0.39	0.00	3.54	0.34
0.10							
130	100	sin	100	0.39	0.00	3.69	0.34
0.00							
131	100	sin	100	0.39	0.00	3.54	0.34
0.00							
132	100	sin	500	1.97	0.00	17.80	0.34
0.10							
133	100	sin	500	1.96	0.00	17.65	0.34
0.00							
134	100	sin	500	1.94	0.00	17.65	0.34
0.00							
135	500	Sigmoid	50	1.00	0.00	8.81	0.34

0.10							
136	500	Sigmoid	50	1.00	0.00	8.81	0.34
0.00							
137	500	Sigmoid	50	1.02	0.00	8.81	0.34
0.00							
138	500	Sigmoid	100	2.03	0.00	17.77	0.34
0.10							
139	500	Sigmoid	100	2.02	0.00	17.62	0.34
0.00							
140	500	Sigmoid	100	2.05	0.00	17.77	0.34
0.00							
141	500	Sigmoid	500	14.34	0.00	88.20	0.34
0.10							
142	500	Sigmoid	500	13.36	0.00	88.20	0.34
0.00							
143	500	Sigmoid	500	10.22	0.00	88.20	0.34
0.00							
144	500	tanh	50	1.03	0.00	8.96	0.34
0.10							
145	500	tanh	50	0.99	0.00	8.81	0.34
0.00							
146	500	tanh	50	1.00	0.00	8.81	0.34
0.00							
147	500	tanh	100	2.00	0.00	17.62	0.34
0.10							
148	500	tanh	100	2.00	0.00	17.62	0.34
0.00							

149	500	tanh	100	1.98	0.00	17.62	0.34	0.00
150	500	tanh	500	10.24	0.00	88.20	0.34	0.10
151	500	tanh	500	10.25	0.00	88.20	0.34	0.00
152	500	tanh	500	10.28	0.02	88.20	0.34	0.00
153	500	sin	50	0.99	0.00	8.81	0.34	0.10
154	500	sin	50	1.00	0.00	8.81	0.34	0.00
155	500	sin	50	1.00	0.00	8.81	0.34	0.00
156	500	sin	100	2.02	0.00	17.77	0.34	0.10
157	500	sin	100	2.00	0.00	17.62	0.34	0.00
158	500	sin	100	1.98	0.00	17.62	0.34	0.00
159	500	sin	500	10.50	0.00	88.20	0.34	0.10
160	500	sin	500	10.26	0.00	88.20	0.34	0.00
161	500	sin	500	10.22	0.00	88.20	0.34	0.00
162	10	Sigmoid	50	0.00	0.00	0.02	0.72	

0.10								
163	10	Sigmoid	50	0.02	0.00	0.03	0.88	
0.00								
164	10	Sigmoid	50	0.00	0.00	0.03	0.74	
0.00								
165	10	Sigmoid	100	0.00	0.00	0.02	0.60	
0.10								
166	10	Sigmoid	100	0.00	0.00	0.03	0.62	
0.00								
167	10	Sigmoid	100	0.00	0.00	0.03	0.92	
0.00								
168	10	Sigmoid	500	0.00	0.00	0.03	0.62	
0.10								
169	10	Sigmoid	500	0.00	0.00	0.03	0.78	
0.00								
170	10	Sigmoid	500	0.00	0.00	0.17	0.88	
0.00								
171	10	tanh	50	0.00	0.00	0.02	0.72	
0.10								
172	10	tanh	50	0.00	0.00	0.03	0.70	
0.00								
173	10	tanh	50	0.00	0.00	0.03	0.56	
0.00								
174	10	tanh	100	0.00	0.00	0.02	0.70	
0.10								
175	10	tanh	100	0.00	0.00	0.03	0.96	
0.00								

176	10	tanh	100	0.00	0.00	0.03	0.68
0.00							
177	10	tanh	500	0.00	0.00	0.02	0.62
0.10							
178	10	tanh	500	0.00	0.00	0.03	0.62
0.00							
179	10	tanh	500	0.00	0.00	0.03	0.58
0.00							
180	10	sin	50	0.00	0.00	0.02	0.92
0.10							
181	10	sin	50	0.02	0.00	0.03	0.90
0.00							
182	10	sin	50	0.00	0.00	0.03	0.92
0.00							
183	10	sin	100	0.00	0.00	0.02	0.72
0.10							
184	10	sin	100	0.00	0.00	0.03	0.94
0.00							
185	10	sin	100	0.00	0.00	0.03	0.94
0.00							
186	10	sin	500	0.00	0.00	0.02	0.66
0.10							
187	10	sin	500	0.02	0.00	0.03	0.96
0.00							
188	10	sin	500	0.00	0.00	0.03	0.92
0.00							
189	100	Sigmoid	50	0.00	0.00	0.05	0.70

0.10							
190	100	Sigmoid	50	0.09	0.00	1.53	0.68
0.00							
191	100	Sigmoid	50	0.11	0.00	1.91	0.68
0.00							
192	100	Sigmoid	100	0.02	0.00	0.07	0.34
0.10							
193	100	Sigmoid	100	0.11	0.00	1.76	0.70
0.00							
194	100	Sigmoid	100	0.11	0.00	1.76	0.68
0.00							
195	100	Sigmoid	500	0.00	0.00	0.05	0.34
0.10							
196	100	Sigmoid	500	0.11	0.00	1.76	0.68
0.00							
197	100	Sigmoid	500	0.13	0.00	1.76	0.68
0.00							
198	100	tanh	50	0.00	0.01	0.14	0.62
0.10							
199	100	tanh	50	0.11	0.00	1.76	0.82
0.00							
200	100	tanh	50	0.13	0.00	1.91	0.82
0.00							
201	100	tanh	100	0.02	0.00	0.19	0.62
0.10							
202	100	tanh	100	0.13	0.00	1.91	0.76
0.00							

203	100	tanh	100	0.11	0.00	1.76	0.78
0.00							
204	100	tanh	500	0.02	0.00	0.09	0.62
0.10							
205	100	tanh	500	0.11	0.00	1.71	0.82
0.00							
206	100	tanh	500	0.11	0.00	1.76	0.78
0.00							
207	100	sin	50	0.02	0.00	0.07	0.62
0.10							
208	100	sin	50	0.11	0.01	1.76	0.80
0.00							
209	100	sin	50	0.11	0.01	1.76	0.84
0.00							
210	100	sin	100	0.01	0.00	0.34	0.66
0.10							
211	100	sin	100	0.12	0.00	1.76	0.84
0.00							
212	100	sin	100	0.13	0.00	1.91	0.82
0.00							
213	100	sin	500	0.02	0.00	0.18	0.74
0.10							
214	100	sin	500	0.11	0.00	1.76	0.82
0.00							
215	100	sin	500	0.13	0.00	1.76	0.84
0.00							
216	500	Sigmoid	50	0.03	0.00	0.41	0.34

0.10								
217	500	Sigmoid	50	2.39	0.00	39.48	0.66	
0.00								
218	500	Sigmoid	50	2.69	0.00	43.97	0.66	
0.00								
219	500	Sigmoid	100	0.02	0.00	0.14	0.34	
0.10								
220	500	Sigmoid	100	2.63	0.00	42.79	0.68	
0.00								
221	500	Sigmoid	100	7.33	0.00	43.97	0.68	
0.00								
222	500	Sigmoid	500	0.03	0.00	0.23	0.34	
0.10								
223	500	Sigmoid	500	1.44	0.00	16.57	0.64	
0.00								
224	500	Sigmoid	500	4.06	0.00	43.97	0.66	
0.00								
225	500	tanh	50	0.09	0.00	0.76	0.62	
0.10								
226	500	tanh	50	1.69	0.00	19.41	0.76	
0.00								
227	500	tanh	50	3.99	0.00	44.11	0.82	
0.00								
228	500	tanh	100	0.11	0.00	1.11	0.76	
0.10								
229	500	tanh	100	0.81	0.00	8.77	0.78	
0.00								

230	500	tanh	100	4.02	0.00	44.11	0.82	0.00
231	500	tanh	500	0.14	0.00	1.20	0.66	0.10
232	500	tanh	500	0.85	0.00	8.94	0.74	0.00
233	500	tanh	500	4.34	0.00	44.11	0.84	0.00
234	500	sin	50	0.03	0.00	0.32	0.76	0.10
235	500	sin	50	1.44	0.00	16.07	0.80	0.00
236	500	sin	50	4.06	0.00	43.97	0.84	0.00
237	500	sin	100	0.05	0.00	0.49	0.64	0.10
238	500	sin	100	1.11	0.00	11.49	0.78	0.00
239	500	sin	100	6.51	0.00	44.11	0.82	0.00
240	500	sin	500	0.06	0.00	0.73	0.62	0.10
241	500	sin	500	1.16	0.00	10.41	0.76	0.00
242	500	sin	500	5.10	0.00	44.11	0.80	0.00
243	10	Sigmoid	50	0.00	0.00	0.01	0.98	

0.10							
244	10	Sigmoid	50	0.00	0.00	0.01	0.98
0.00							
245	10	Sigmoid	50	0.00	0.00	0.01	0.98
0.00							
246	10	Sigmoid	100	0.00	0.00	0.01	0.98
0.10							
247	10	Sigmoid	100	0.00	0.00	0.01	0.98
0.00							
248	10	Sigmoid	100	0.00	0.00	0.01	1.00
0.00							
249	10	Sigmoid	500	0.00	0.00	0.01	0.98
0.10							
250	10	Sigmoid	500	0.00	0.00	0.16	1.00
0.00							
251	10	Sigmoid	500	0.00	0.00	0.01	0.98
0.00							
252	10	tanh	50	0.00	0.00	0.01	1.00
0.10							
253	10	tanh	50	0.00	0.00	0.01	0.94
0.00							
254	10	tanh	50	0.00	0.00	0.01	0.94
0.00							
255	10	tanh	100	0.00	0.00	0.01	0.96
0.10							
256	10	tanh	100	0.00	0.00	0.01	0.98
0.00							

257	10	tanh	100	0.00	0.00	0.01	0.92	0.00
258	10	tanh	500	0.00	0.00	0.01	1.00	0.10
259	10	tanh	500	0.00	0.00	0.01	0.96	0.00
260	10	tanh	500	0.00	0.00	0.01	1.00	0.00
261	10	sin	50	0.00	0.00	0.01	1.00	0.10
262	10	sin	50	0.00	0.00	0.01	0.98	0.00
263	10	sin	50	0.00	0.00	0.01	0.98	0.00
264	10	sin	100	0.00	0.00	0.01	0.94	0.10
265	10	sin	100	0.00	0.00	0.01	1.00	0.00
266	10	sin	100	0.00	0.00	0.01	0.98	0.00
267	10	sin	500	0.00	0.00	0.01	0.98	0.10
268	10	sin	500	0.00	0.00	0.01	0.98	0.00
269	10	sin	500	0.00	0.00	0.01	0.98	0.00
270	100	Sigmoid	50	0.00	0.00	0.01	0.84	

0.10							
271	100	Sigmoid	50	0.00	0.00	0.01	0.76
0.00							
272	100	Sigmoid	50	0.00	0.00	0.01	0.86
0.00							
273	100	Sigmoid	100	0.00	0.00	0.01	0.80
0.10							
274	100	Sigmoid	100	0.00	0.00	0.01	0.80
0.00							
275	100	Sigmoid	100	0.00	0.00	0.01	0.88
0.00							
276	100	Sigmoid	500	0.00	0.00	0.01	0.78
0.10							
277	100	Sigmoid	500	0.00	0.00	0.01	0.84
0.00							
278	100	Sigmoid	500	0.00	0.00	0.01	0.82
0.00							
279	100	tanh	50	0.00	0.00	0.01	0.90
0.10							
280	100	tanh	50	0.00	0.00	0.01	0.88
0.00							
281	100	tanh	50	0.01	0.00	0.01	0.88
0.00							
282	100	tanh	100	0.00	0.00	0.01	0.92
0.10							
283	100	tanh	100	0.00	0.00	0.01	0.88
0.00							

284	100	tanh	100	0.00	0.00	0.01	0.84	0.00
285	100	tanh	500	0.00	0.00	0.01	0.84	0.10
286	100	tanh	500	0.00	0.00	0.01	0.80	0.00
287	100	tanh	500	0.00	0.00	0.01	0.88	0.00
288	100	sin	50	0.02	0.00	0.01	0.86	0.10
289	100	sin	50	0.00	0.00	0.01	0.80	0.00
290	100	sin	50	0.00	0.00	0.01	0.82	0.00
291	100	sin	100	0.00	0.00	0.01	0.88	0.10
292	100	sin	100	0.00	0.00	0.01	0.84	0.00
293	100	sin	100	0.00	0.00	0.01	0.86	0.00
294	100	sin	500	0.00	0.00	0.01	0.86	0.10
295	100	sin	500	0.00	0.00	0.01	0.88	0.00
296	100	sin	500	0.00	0.00	0.01	0.86	0.00
297	500	Sigmoid	50	0.00	0.00	0.01	0.84	

0.10							
298	500	Sigmoid	50	0.02	0.00	0.01	0.90
0.00							
299	500	Sigmoid	50	0.00	0.00	0.01	0.84
0.00							
300	500	Sigmoid	100	0.02	0.00	0.01	0.90
0.10							
301	500	Sigmoid	100	0.00	0.00	0.01	0.84
0.00							
302	500	Sigmoid	100	0.02	0.00	0.01	0.88
0.00							
303	500	Sigmoid	500	0.00	0.00	0.01	0.84
0.10							
304	500	Sigmoid	500	0.02	0.00	0.01	0.88
0.00							
305	500	Sigmoid	500	0.00	0.00	0.01	0.90
0.00							
306	500	tanh	50	0.02	0.00	0.01	0.84
0.10							
307	500	tanh	50	0.00	0.00	0.01	0.88
0.00							
308	500	tanh	50	0.00	0.00	0.01	0.86
0.00							
309	500	tanh	100	0.00	0.00	0.01	0.84
0.10							
310	500	tanh	100	0.00	0.00	0.16	0.90
0.00							

311	500	tanh	100	0.02	0.00	0.01	0.88
0.00							
312	500	tanh	500	0.00	0.00	0.01	0.90
0.10							
313	500	tanh	500	0.01	0.00	0.01	0.86
0.00							
314	500	tanh	500	0.00	0.00	0.01	0.90
0.00							
315	500	sin	50	0.02	0.00	0.01	0.86
0.10							
316	500	sin	50	0.00	0.00	0.01	0.80
0.00							
317	500	sin	50	0.02	0.00	0.01	0.86
0.00							
318	500	sin	100	0.00	0.00	0.01	0.86
0.10							
319	500	sin	100	0.02	0.00	0.01	0.82
0.00							
320	500	sin	100	0.02	0.00	0.16	0.82
0.00							
321	500	sin	500	0.00	0.00	0.01	0.74
0.10							
322	500	sin	500	0.01	0.00	0.01	0.80
0.00							
323	500	sin	500	0.00	0.00	0.01	0.84
0.00							
324	10	Sigmoid	50	0.02	0.00	0.10	0.96

0.10							
325	10	Sigmoid	50	0.00	0.00	0.07	1.00
0.00							
326	10	Sigmoid	50	0.02	0.00	0.08	0.98
0.00							
327	10	Sigmoid	100	0.00	0.00	0.08	0.96
0.10							
328	10	Sigmoid	100	0.02	0.00	0.08	0.96
0.00							
329	10	Sigmoid	100	0.00	0.00	0.07	0.98
0.00							
330	10	Sigmoid	500	0.00	0.02	0.07	1.00
0.10							
331	10	Sigmoid	500	0.00	0.00	0.07	0.94
0.00							
332	10	Sigmoid	500	0.00	0.00	0.07	1.00
0.00							
333	10	tanh	50	0.02	0.00	0.07	0.98
0.10							
334	10	tanh	50	0.00	0.00	0.07	0.86
0.00							
335	10	tanh	50	0.00	0.00	0.07	1.00
0.00							
336	10	tanh	100	0.00	0.00	0.07	0.96
0.10							
337	10	tanh	100	0.02	0.00	0.19	0.92
0.00							

338	10	tanh	100	0.02	0.00	0.07	1.00	0.00
339	10	tanh	500	0.00	0.00	0.08	0.92	0.10
340	10	tanh	500	0.01	0.00	0.09	1.00	0.00
341	10	tanh	500	0.01	0.00	0.06	0.96	0.00
342	10	sin	50	0.01	0.00	0.08	0.94	0.10
343	10	sin	50	0.00	0.00	0.09	0.98	0.00
344	10	sin	50	0.01	0.00	0.07	0.98	0.00
345	10	sin	100	0.00	0.00	0.24	1.00	0.10
346	10	sin	100	0.02	0.00	0.08	0.98	0.00
347	10	sin	100	0.01	0.00	0.08	0.98	0.00
348	10	sin	500	0.01	0.00	0.09	0.96	0.10
349	10	sin	500	0.00	0.00	0.09	0.94	0.00
350	10	sin	500	0.00	0.00	0.23	1.00	0.00
351	100	Sigmoid	50	0.25	0.00	1.34	0.28	

0.10							
352	100	Sigmoid	50	0.16	0.00	1.20	0.54
0.00							
353	100	Sigmoid	50	0.14	0.00	1.20	0.32
0.00							
354	100	Sigmoid	100	0.16	0.00	1.29	0.46
0.10							
355	100	Sigmoid	100	0.14	0.00	1.16	0.34
0.00							
356	100	Sigmoid	100	0.14	0.00	1.17	0.50
0.00							
357	100	Sigmoid	500	0.14	0.00	1.19	0.36
0.10							
358	100	Sigmoid	500	0.15	0.00	1.20	0.34
0.00							
359	100	Sigmoid	500	0.13	0.00	1.15	0.54
0.00							
360	100	tanh	50	0.19	0.00	1.58	0.60
0.10							
361	100	tanh	50	0.16	0.00	1.47	0.34
0.00							
362	100	tanh	50	0.16	0.00	1.28	0.36
0.00							
363	100	tanh	100	0.19	0.00	1.44	0.72
0.10							
364	100	tanh	100	0.16	0.00	1.40	0.40
0.00							

365	100	tanh	100	0.16	0.00	1.38	0.62	0.00
366	100	tanh	500	0.16	0.00	1.27	0.36	0.10
367	100	tanh	500	0.16	0.00	1.35	0.46	0.00
368	100	tanh	500	0.16	0.00	1.32	0.64	0.00
369	100	sin	50	0.13	0.00	1.22	0.34	0.10
370	100	sin	50	0.14	0.00	1.39	0.62	0.00
371	100	sin	50	0.16	0.00	1.38	0.48	0.00
372	100	sin	100	0.17	0.00	1.44	0.42	0.10
373	100	sin	100	0.14	0.00	1.25	0.40	0.00
374	100	sin	100	0.16	0.00	1.29	0.38	0.00
375	100	sin	500	0.16	0.00	1.28	0.42	0.10
376	100	sin	500	0.16	0.00	1.30	0.34	0.00
377	100	sin	500	0.16	0.00	1.27	0.54	0.00
378	500	Sigmoid	50	17.35	0.00	20.74	0.40	

0.10							
379	500	Sigmoid	50	4.31	0.00	20.65	0.34
0.00							
380	500	Sigmoid	50	3.86	0.02	20.74	0.32
0.00							
381	500	Sigmoid	100	3.87	0.00	20.60	0.34
0.10							
382	500	Sigmoid	100	3.91	0.00	20.61	0.42
0.00							
383	500	Sigmoid	100	3.94	0.00	20.75	0.48
0.00							
384	500	Sigmoid	500	3.87	0.00	20.53	0.34
0.10							
385	500	Sigmoid	500	3.86	0.00	20.74	0.34
0.00							
386	500	Sigmoid	500	3.86	0.00	20.61	0.28
0.00							
387	500	tanh	50	3.91	0.00	20.68	0.54
0.10							
388	500	tanh	50	3.92	0.00	20.90	0.34
0.00							
389	500	tanh	50	3.93	0.00	20.70	0.38
0.00							
390	500	tanh	100	3.99	0.00	20.96	0.46
0.10							
391	500	tanh	100	3.94	0.00	20.71	0.32
0.00							

392	500	tanh	100	3.88	0.00	20.71	0.34	0.00
393	500	tanh	500	3.92	0.00	20.93	0.46	0.10
394	500	tanh	500	3.90	0.00	20.72	0.40	0.00
395	500	tanh	500	3.92	0.00	20.86	0.50	0.00
396	500	sin	50	3.89	0.00	20.68	0.36	0.10
397	500	sin	50	3.89	0.00	20.71	0.34	0.00
398	500	sin	50	3.91	0.00	20.81	0.64	0.00
399	500	sin	100	3.85	0.00	20.69	0.36	0.10
400	500	sin	100	3.92	0.00	20.86	0.28	0.00
401	500	sin	100	3.95	0.00	20.95	0.28	0.00
402	500	sin	500	3.98	0.00	20.78	0.34	0.10
403	500	sin	500	3.93	0.00	20.87	0.44	0.00
404	500	sin	500	3.99	0.00	20.72	0.44	0.00