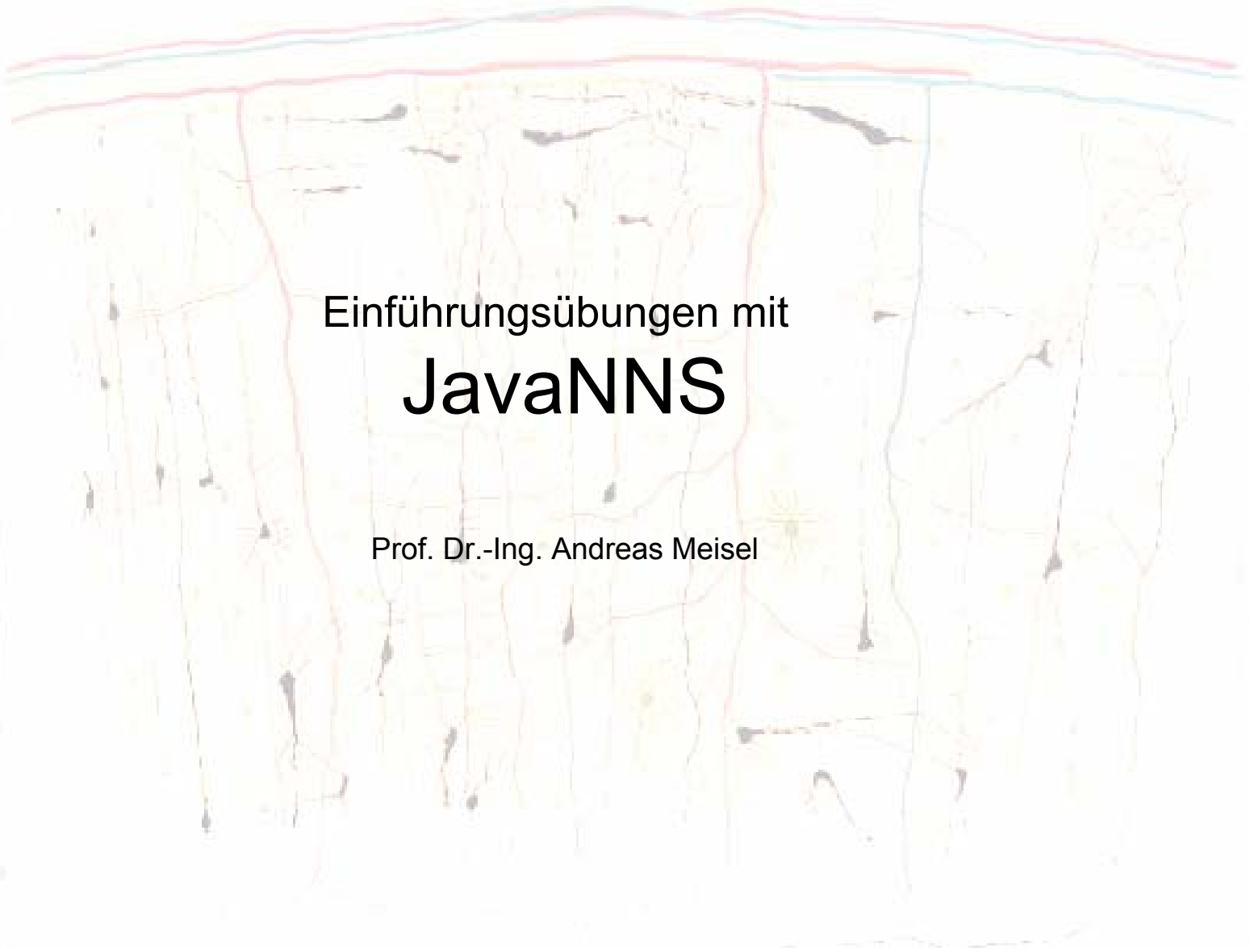


Einführungsübungen mit
JavaNNS

Prof. Dr.-Ing. Andreas Meisel

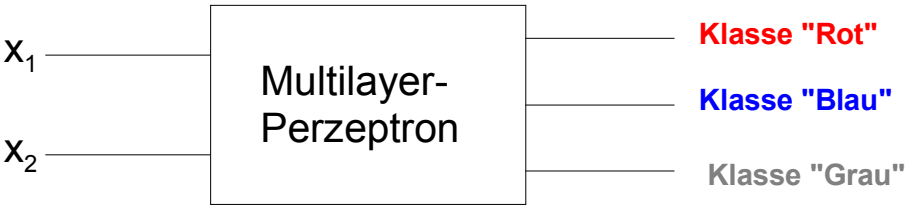
ÜBUNG 1:

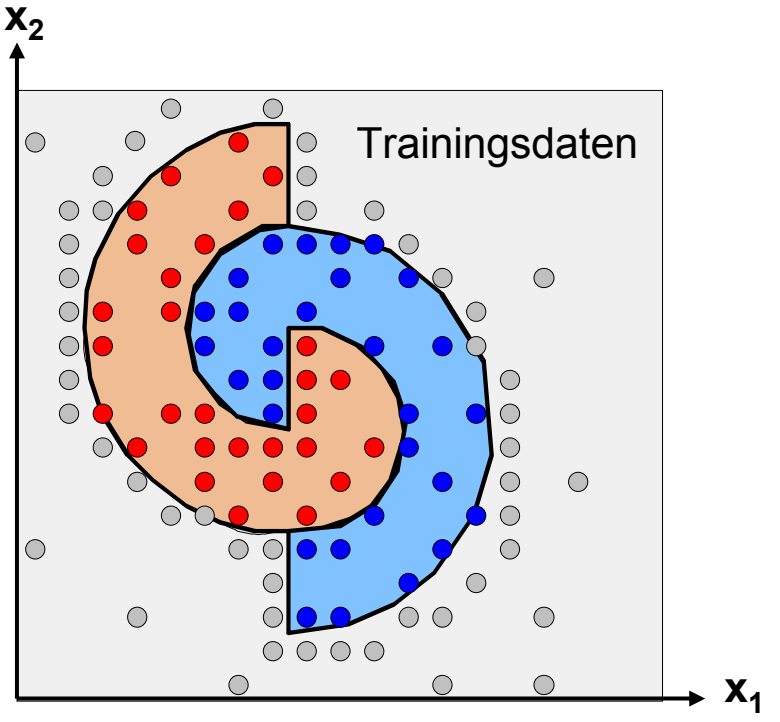
Netztyp: Multilayer-Perzeptron mit

2 Input-Neuronen
20 Hidden1-Neuronen
10 Hidden2-Neuronen
3 Output-Neuronen

Trainingsalgorithmus:
Resilient-Propagation

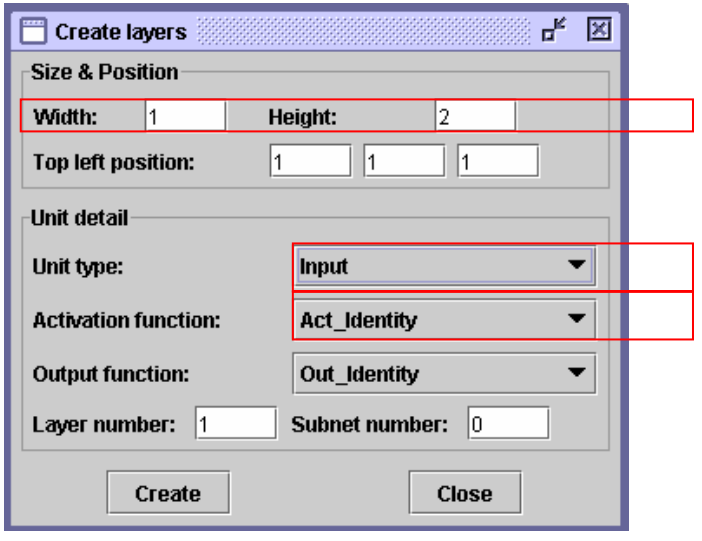
Zu lösende Aufgabe:
Spiralproblem



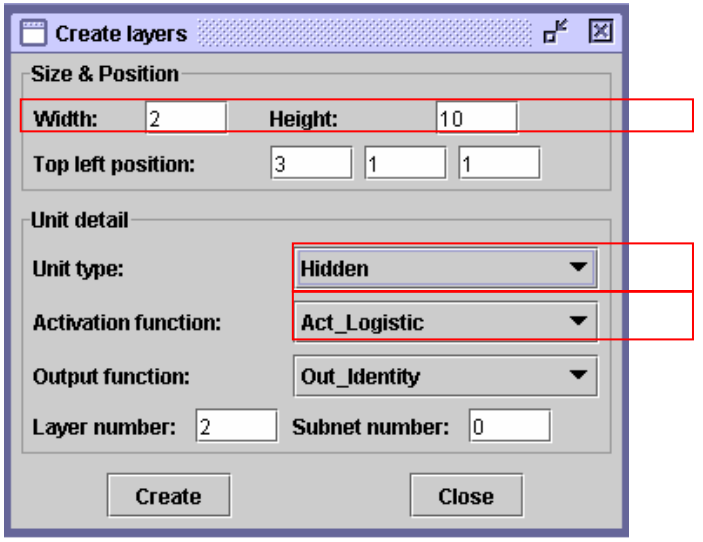


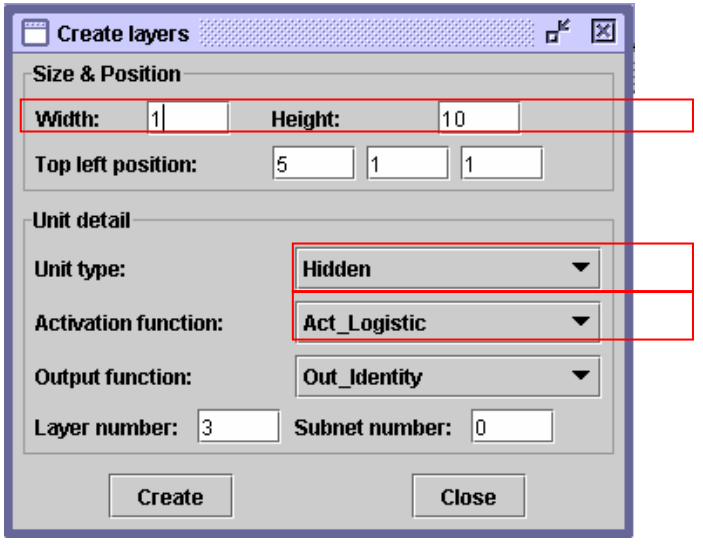
Neuronales Netz erzeugen: Erzeugen des Input-Layer

[File] → [New]
[Tools] → [Create] → [Layers...]

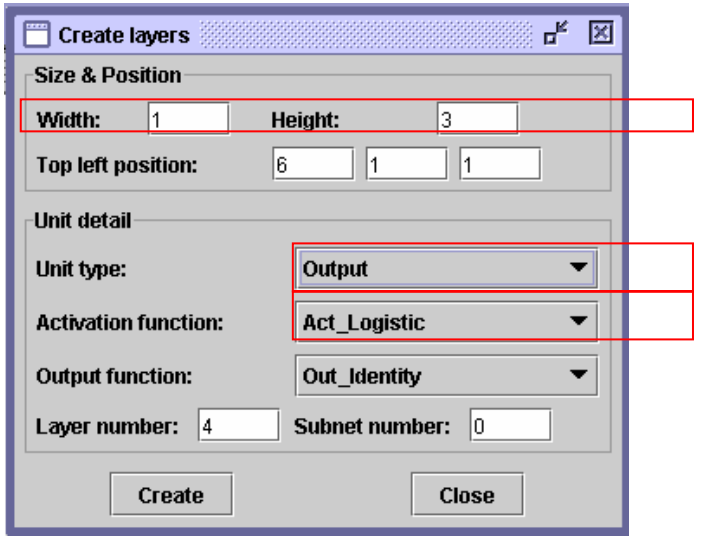


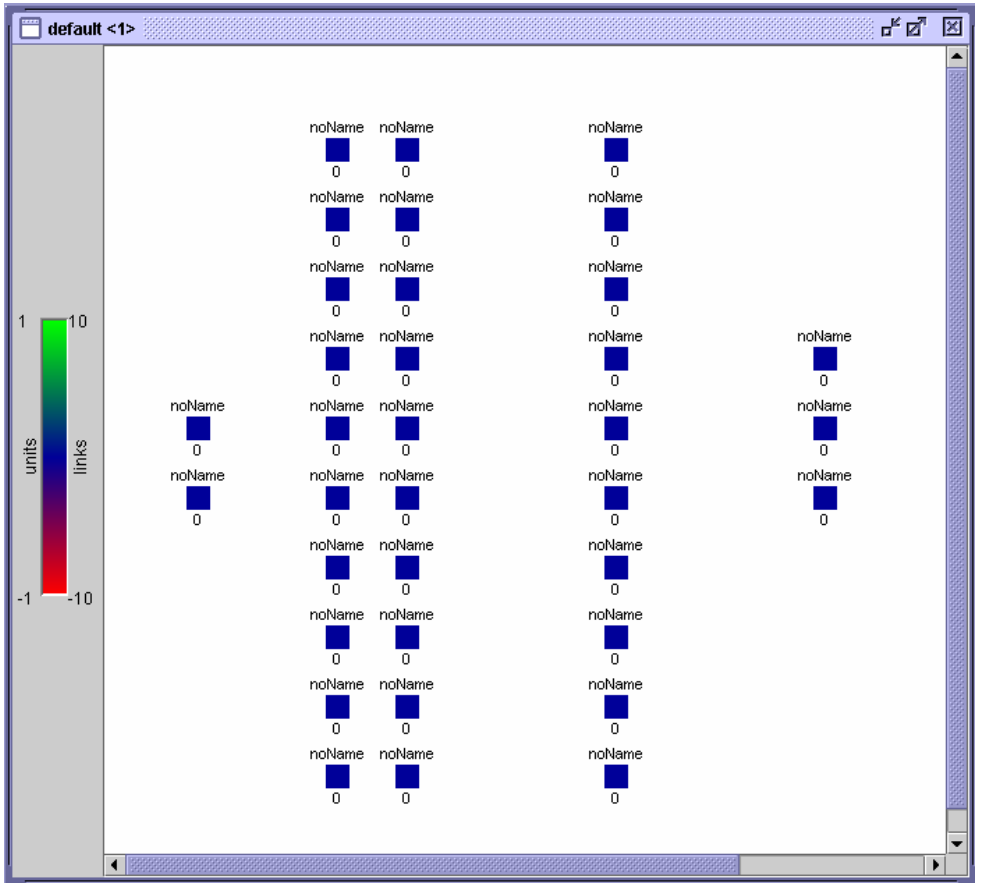
Neuronales Netz erzeugen: Erzeugen der Hidden-Layer





Neuronales Netz erzeugen: Erzeugen des Output-Layer

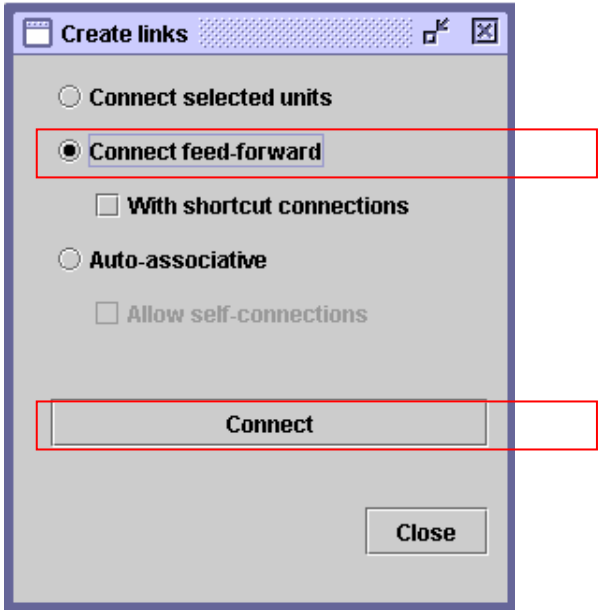


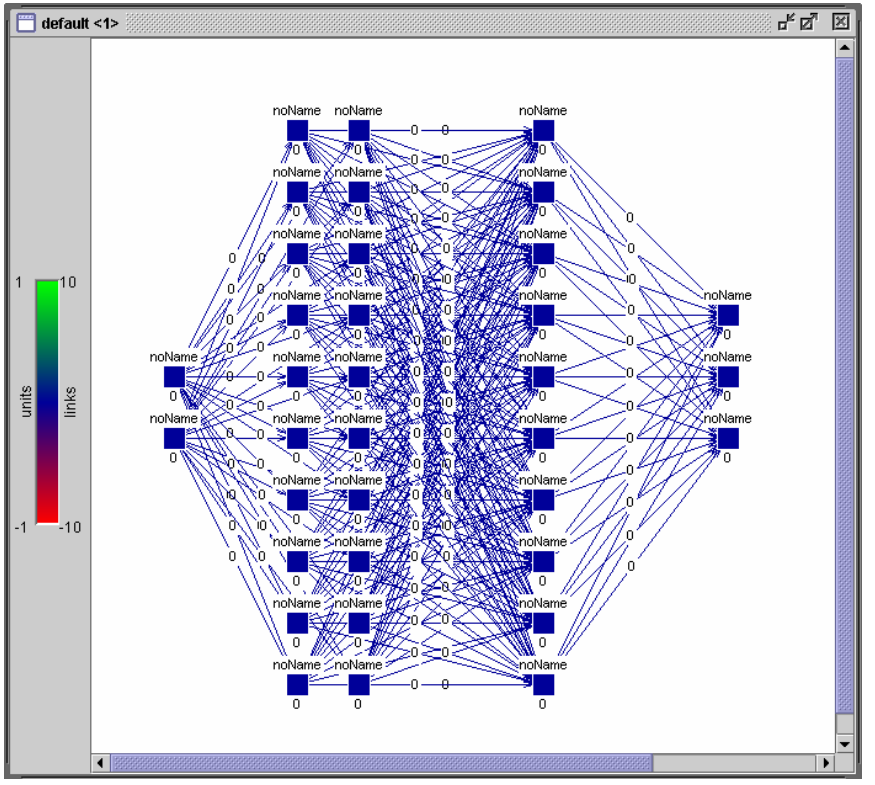


Nach etwas Hin- und Herschieben sieht es dann so aus.

Neuronales Netz erzeugen: Verbindungen anlegen

Alle Neuronen auswählen (werden dann gelb angezeigt).
[Tools] → [Create] → [Connections...]

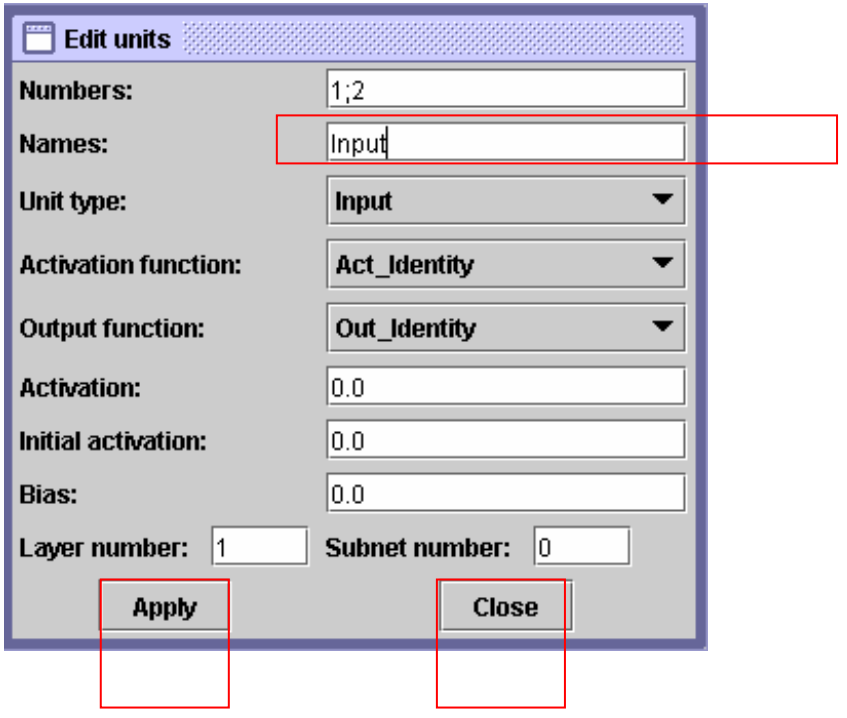




Neuronales Netz erzeugen: Beschriften der Neuronen

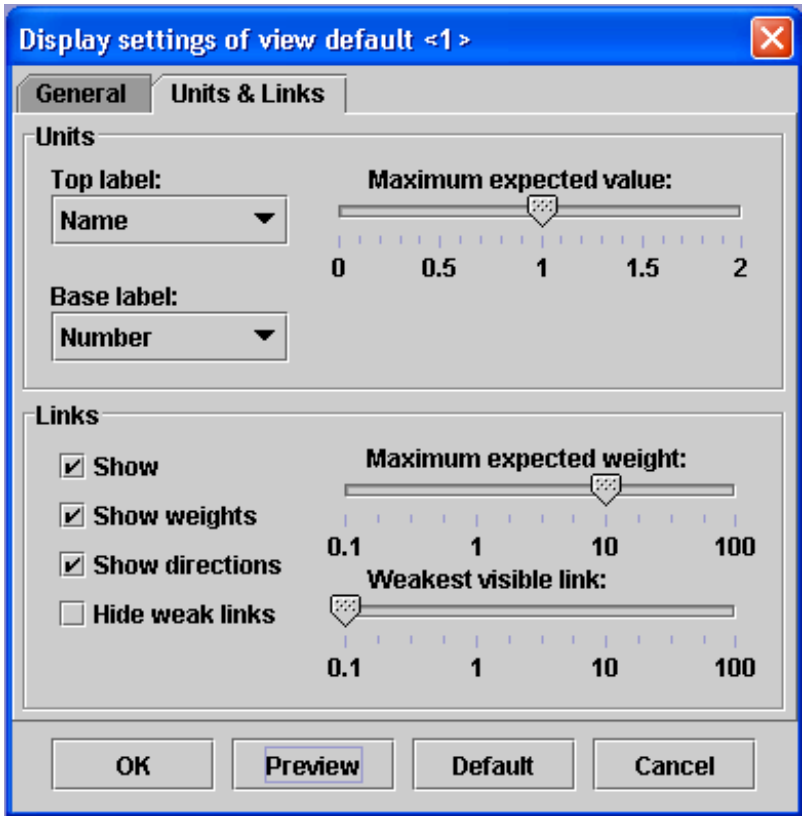
Input-Neuronen anwählen

rechte Maustaste → Popup-Menü erscheint → [EditUnits...]



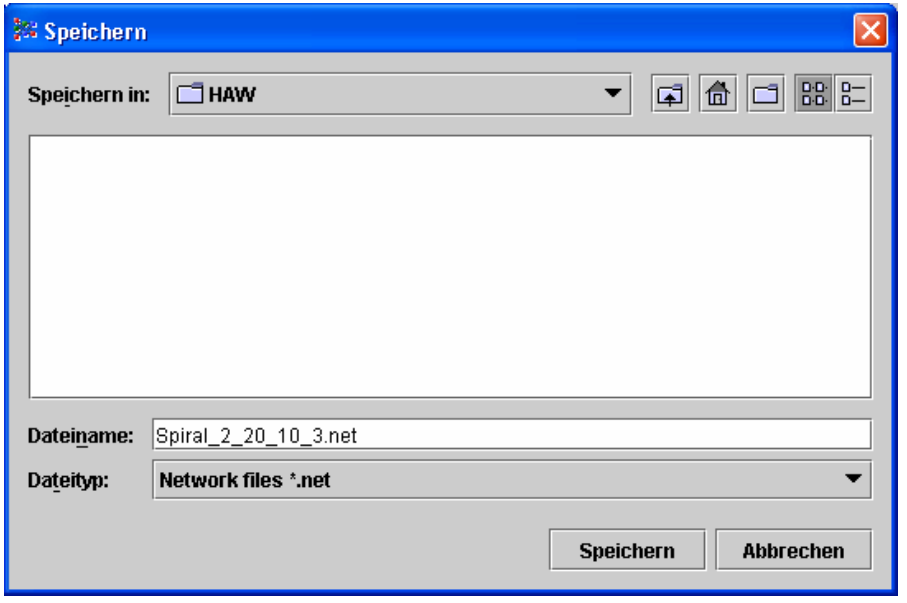
Neuronales Netz erzeugen: Anzeigeoptionen einstellen

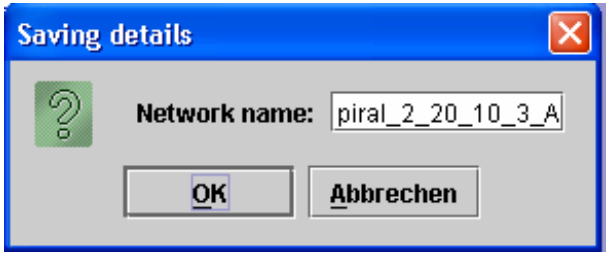
[View] → [Display Settings]



Neuronales Netz erzeugen: Netzwerk abspeichern

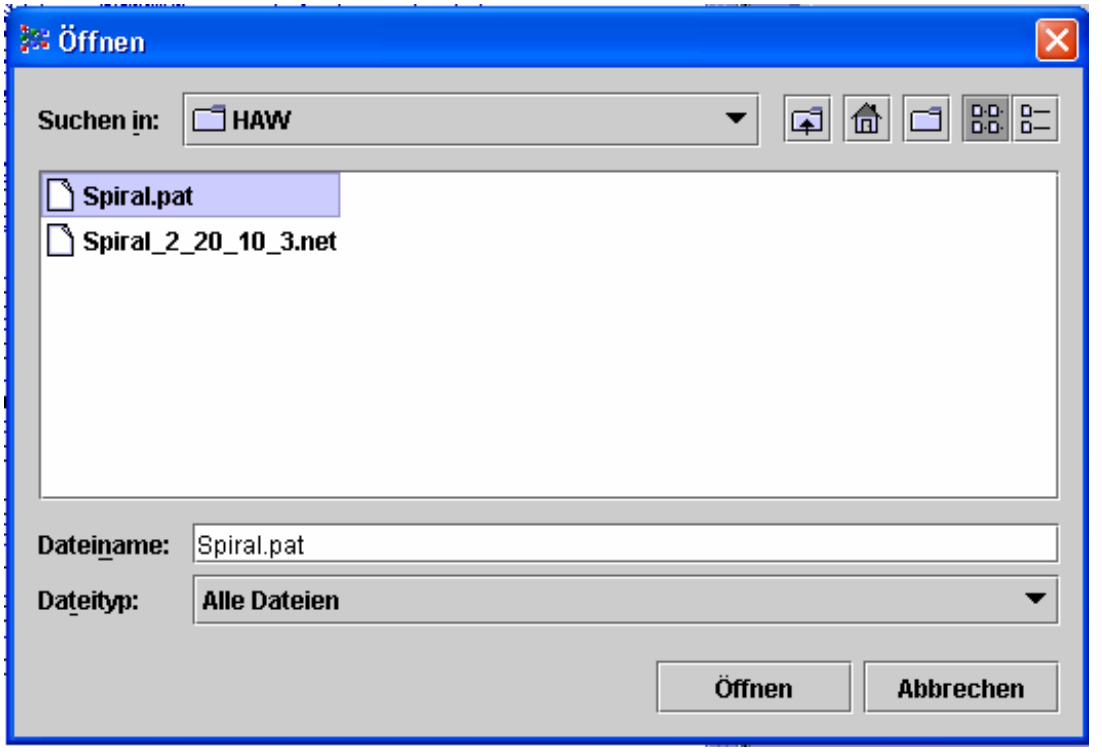
[File] → [Save]





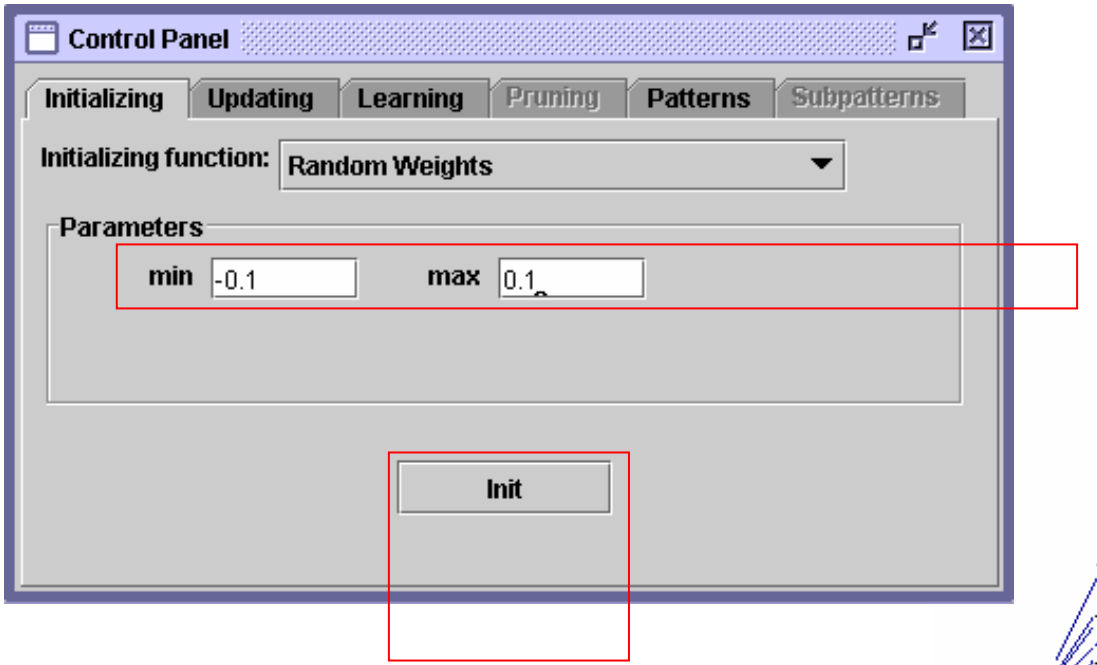
Training: Existierende Trainingsdaten laden

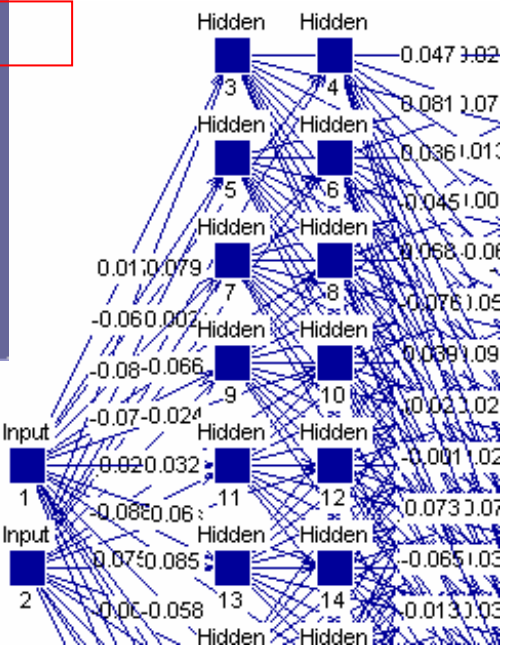
[File] → [Open]



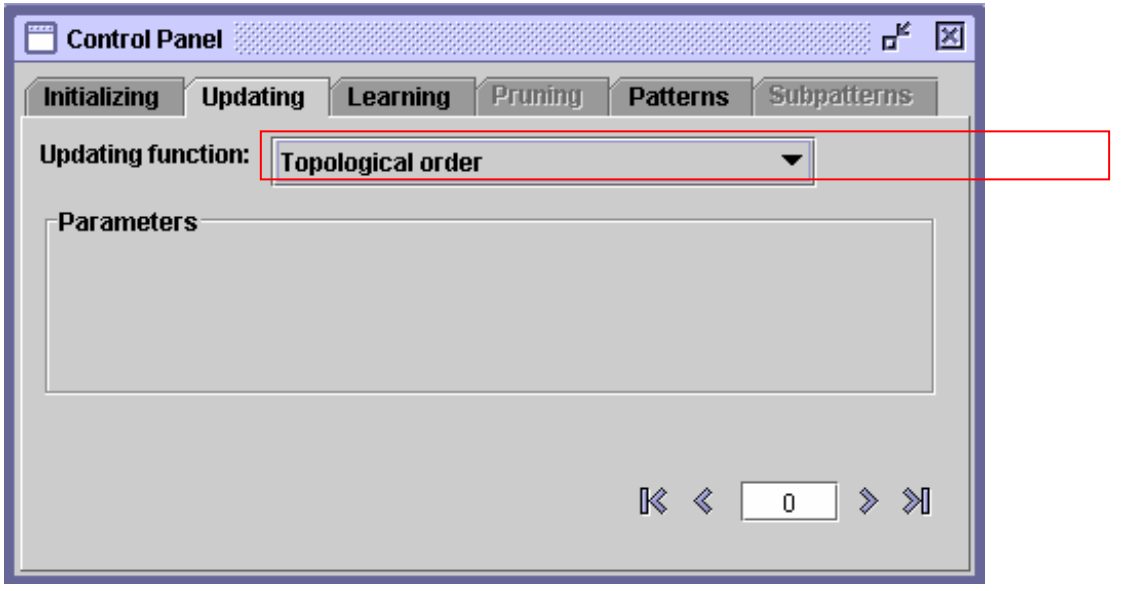
Training: Netzgewichte mit Zufallswerten initialisieren

[Tools]→[Control]

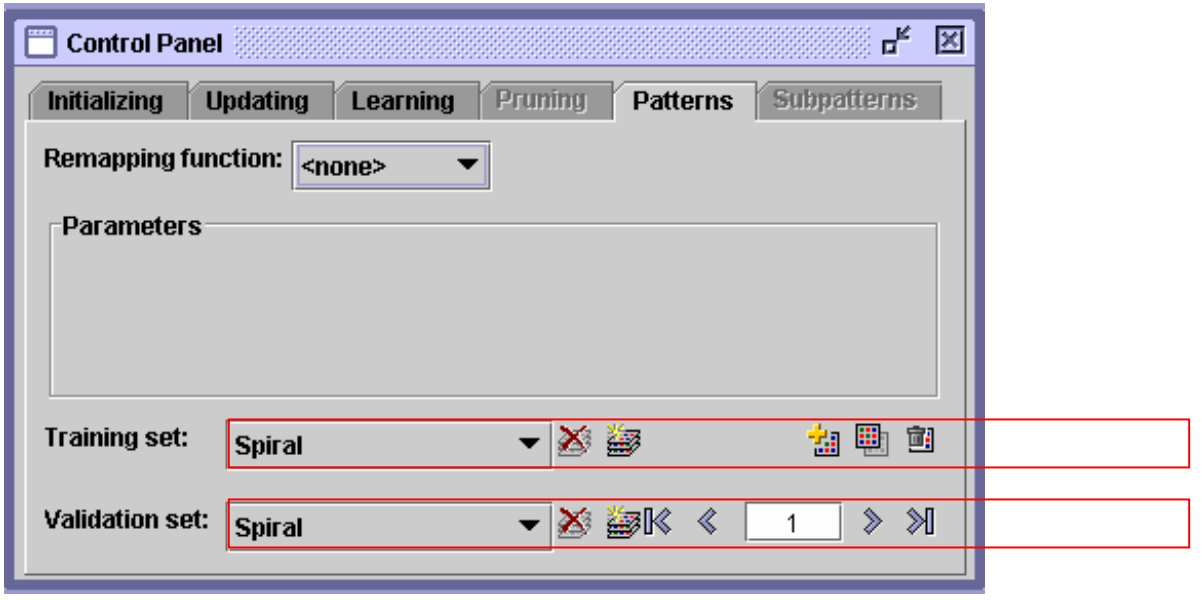




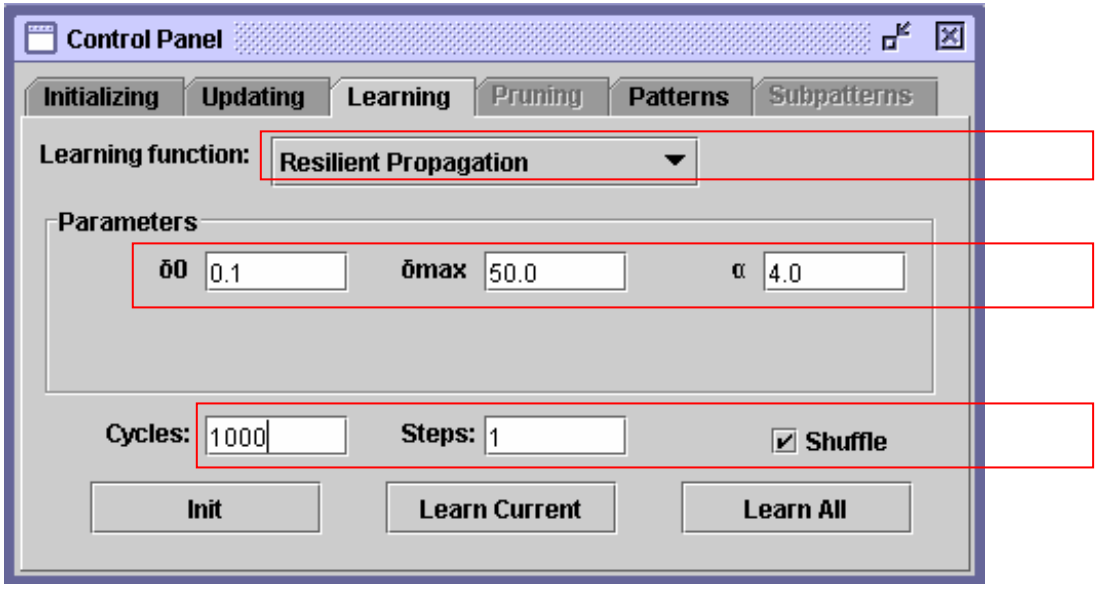
Training: Trainingsreihenfolge einstellen



Training: Trainings- und Testdatensatz festlegen

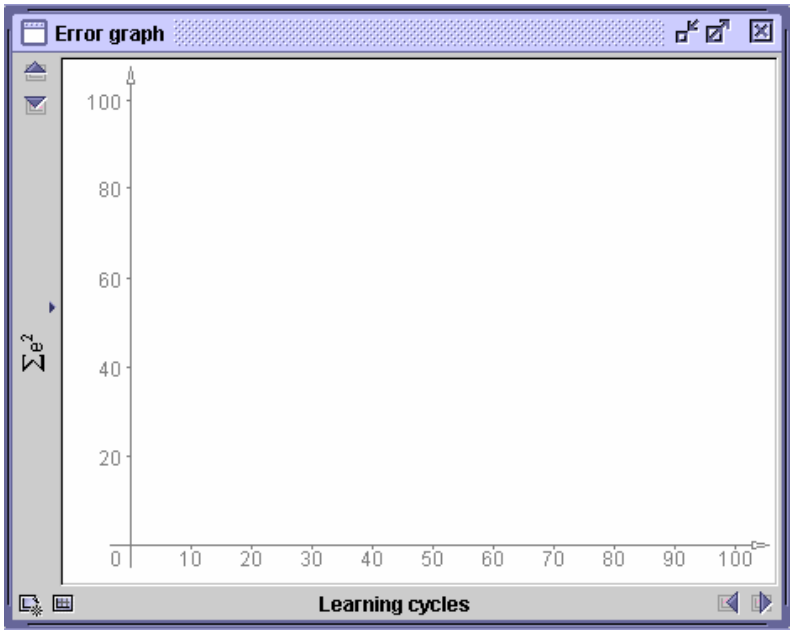


Training: Lernalgorithmus und –parameter einstellen

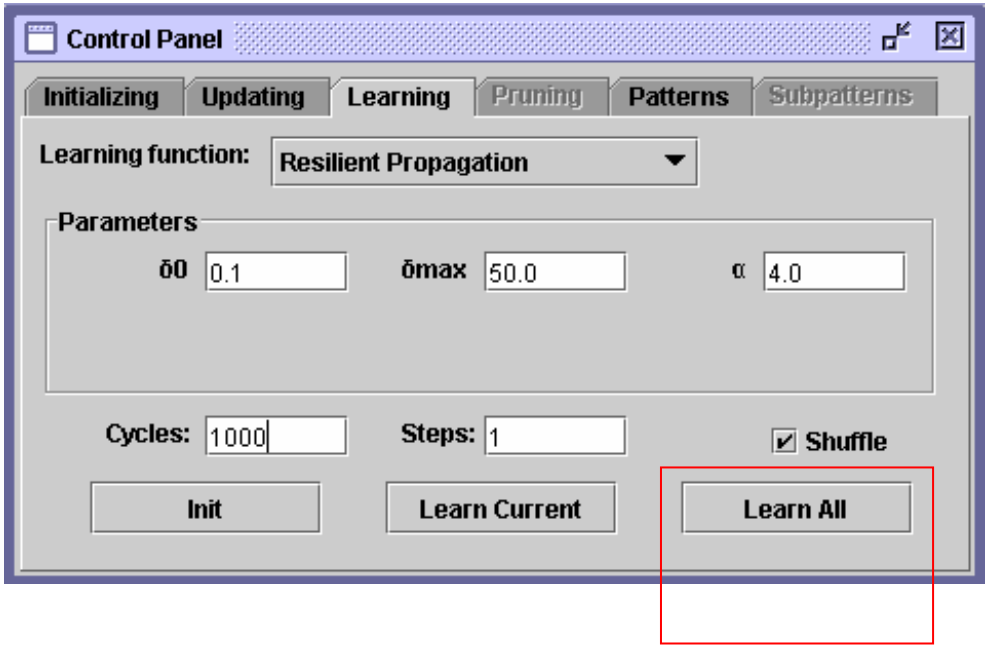


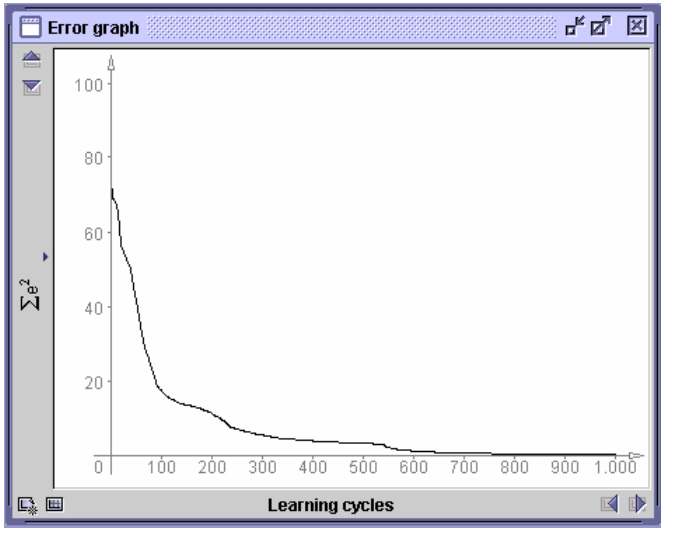
Training: Anzeigen des Fehlergraphen

[View] → [Error Graph]

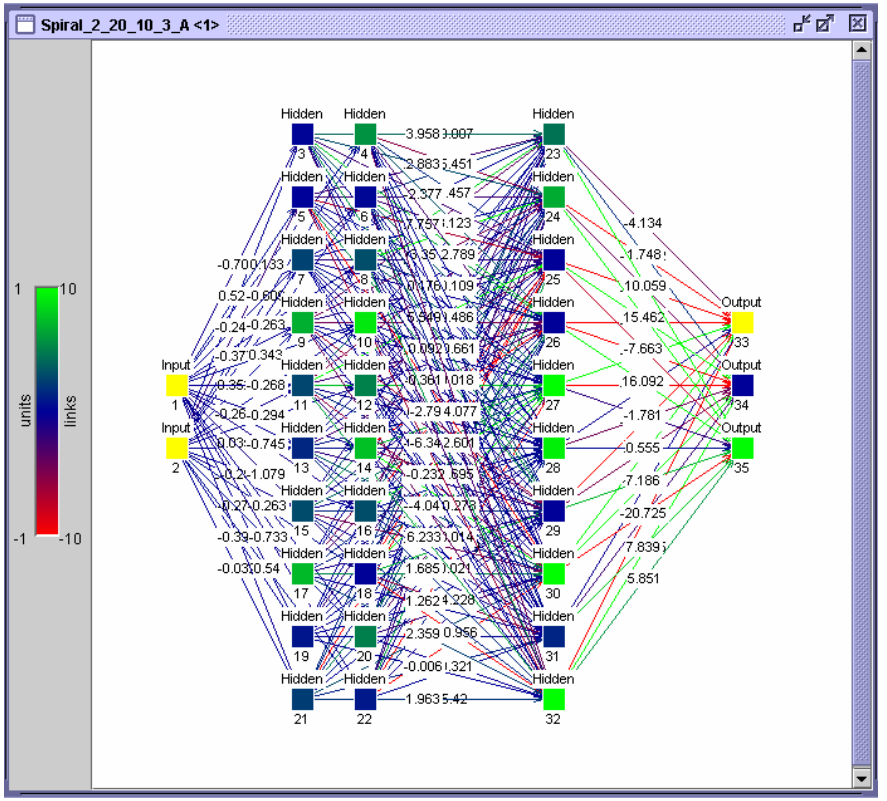


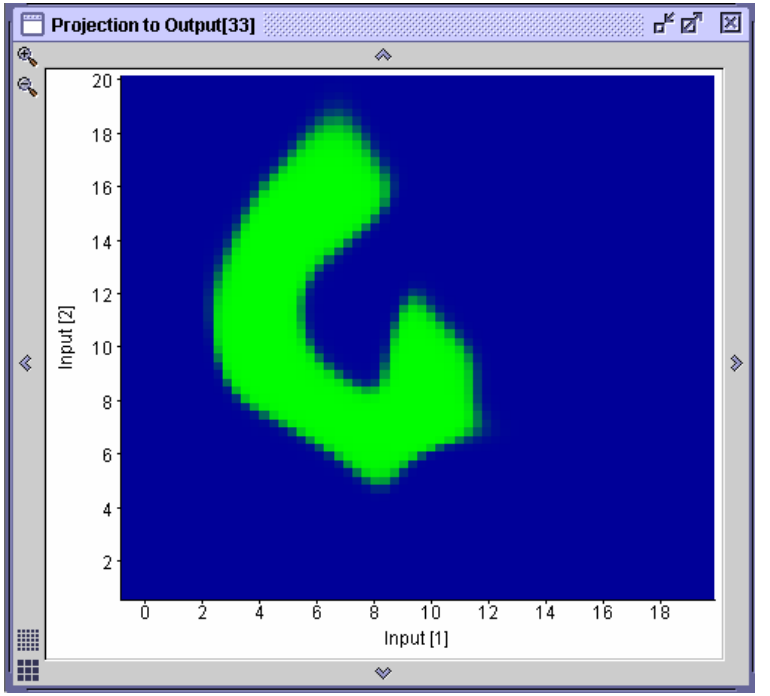
Training: Start des Trainings





Training: Projektion ansehen





ÜBUNG 2:

Netztyp: Multilayer-Perzeptron mit

160 Input-Neuronen (10 x 16)

50 Hidden1-Neuronen

32 Hidden2-Neuronen

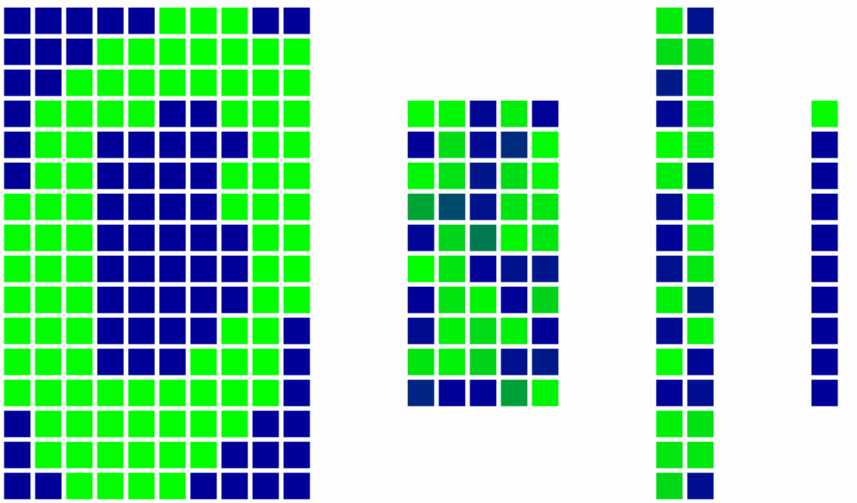
10 Output-Neuronen

Trainingsalgorithmus:

Backpropagation-Momentum / Resilient Propagation

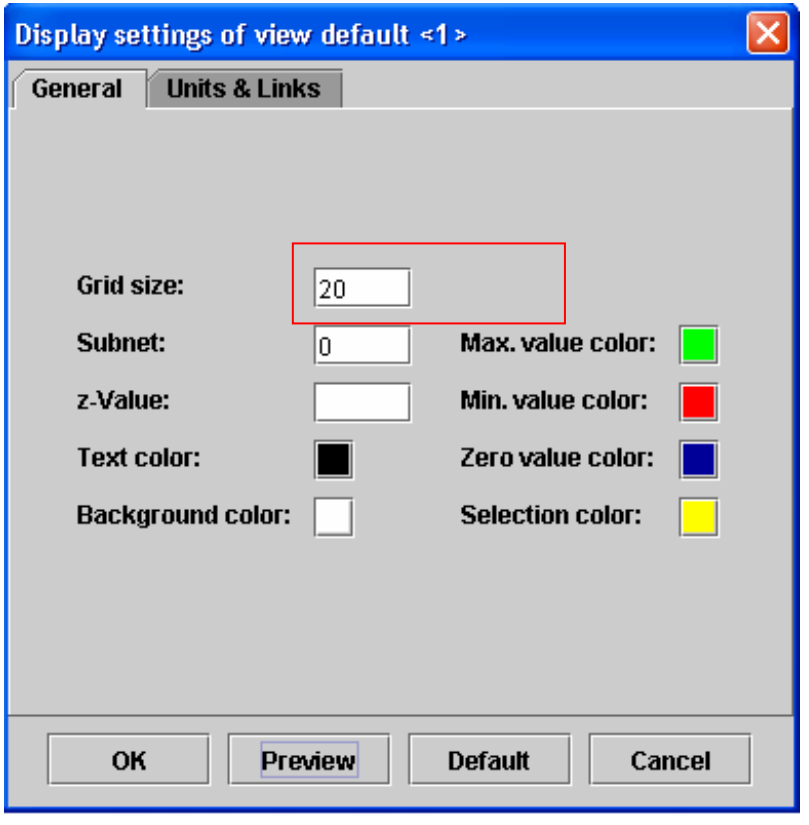
Zu lösende Aufgabe:

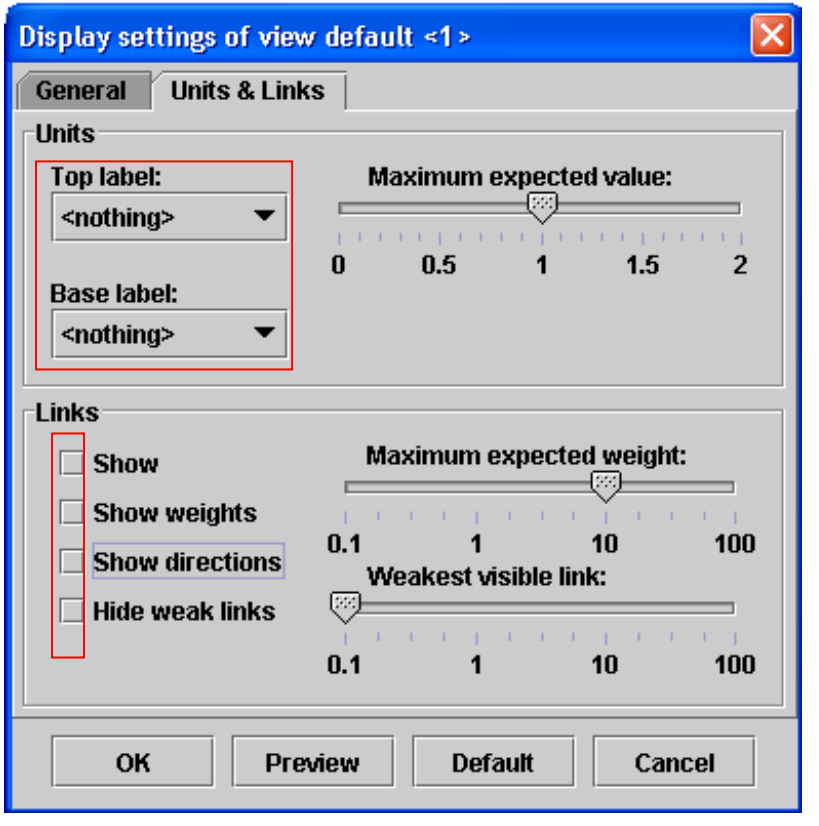
Zeichenklassifikator



Neuronales Netz anlegen: Anzeigeeinstellung festlegen

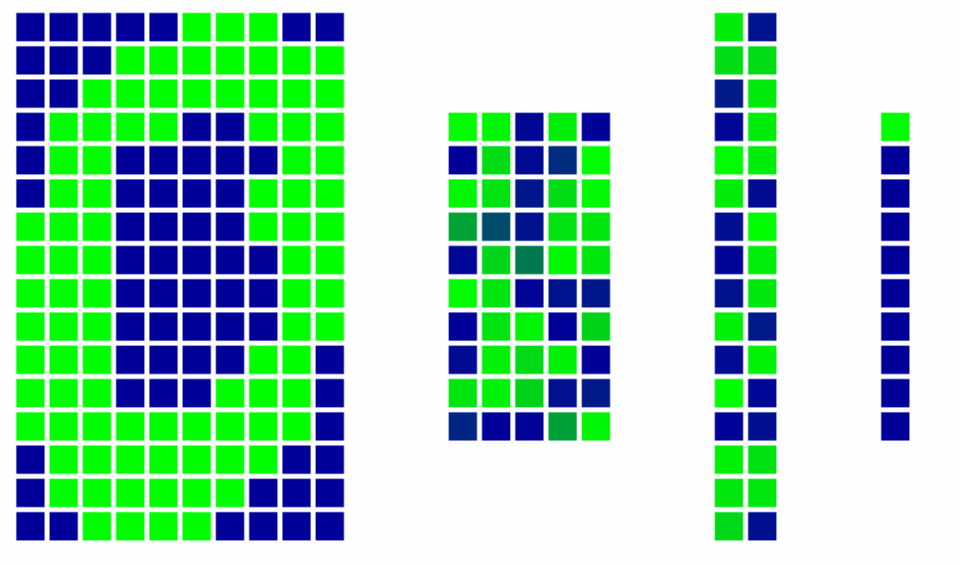
Anzeigeeinstellungen wie folgt einstellen:





Neuronales Netz anlegen: Neuronen und Verbindungsnetz anlegen

Netz anlegen und abspeichern
(Aktivierungs- und Ausgabefunktionen sowie Verbindungsnetz wie in Ü1)



Trainings- und Testdaten laden (`Train.pat + Test.pat`)

Neuronales Netz trainieren: Einstellungen