AIDS Survival Multilayer ANN

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I will be writing a multilayer artificial neural network to classify whether patients with AIDS survived a certain amount of time.

The dataset I will be using <https://archive.ics.uci.edu/dataset/890/aids+clinical+trials+group+study+175>

This is a dataset of integer and binary values, with no missing data or NULL values. It has 2139 instances and 23 features. This is the data from a clinical trial comparing four different drug treatments.

CID is the classifier, failure refers to death and censoring means the patient did not die during their time in the study.

Some of the patients changed or started treatments before joining the study. The feature trt refers to what their current treatment is, and the features oprior, z30, zprior, and preanti refer to what the patient’s treatment was before starting the trial (ACTGS-175). CD4 and CD8 are lab results, referring to a type of white blood cell and a glycoprotein respectively. These are both indicators of immune system health.

**Features**

|  |  |  |
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| **Name** | **Type** | **Description** |
| pidnum | Integer | Patient ID number – this will not be used |
| cid | Binary | Censoring indicator (1 = failure, 0 = censoring) – This is the classifier |
| time | Integer | Time to failure or censoring |
| trt | Integer | treatment indicator (0 = ZDV only; 1 = ZDV + ddI, 2 = ZDV + Zal, 3 = ddI only) – what type of treatment the patient was receiving during the study |
| age | Integer | Age in years at the start of the study |
| wtkg | Float | Weight in kg at the start of the study |
| hemo | Binary | Whether the patient has hemophilia (0 = no, 1 = yes) |
| homo | Binary | Homosexual activity (0 = no, 1 = yes) |
| drugs | Binary | History of IV drug use (0=no, 1 = yes) |
| karnof | Integer | Karnofsky scale, from 0 – 100 (indicates how well a patient is functioning in their daily lives) |
| oprior | Binary | Non-ZDV antiretroviral therapy pre-175 (0=no, 1=yes) |
| z30 | Binary | ZDV in the 30 days prior to 175 (0=no, 1=yes) |
| zprior | Binary | ZDV prior to 175 (0 =no, 1=yes) |
| preanti | Integer | # of days pre-175 anti-retroviral therapy |
| race | Integer | Race (0=White, 1=non-white) |
| gender | Binary | Gender (0=female, 1=male) |
| str2 | Binary | Antiretroviral history (0=naïve, 1=experienced) |
| strat | Integer | antiretroviral history stratification (1='Antiretroviral Naive',2='> 1 but <= 52 weeks of prior antiretroviral therapy',3='> 52 weeks) |
| symptom | Binary | symptomatic indicator (0=asymptomatic, 1=symptomatic) |
| treat | Binary | treatment indicator (0=ZDV only, 1=others) |
| offtrt | Binary | indicator of off-treatment before 96+/-5 weeks (0=no,1=yes) |
| cd40 | Integer | CD4 at baseline |
| cd420 | Integer | CD4 at 20 +/-5 weeks |
| cd80 | Integer | CD8 at baseline |
| cd820 | Integer | CD8 at 20 +/-5 weeks |