# Optimal Model-parameter Determination for Feedforward Artificial Neural Networks

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The very large tables in this appendices been removed to reduce the total size of Thesis. The full appendices can be found in the accompanying GitHub repository: Optimal-Model-parameter-Determination-for-Feedforward-Artificial-Neural-Networks.

# Appendix A

# Regression Problems Summary

Table A.1: Regression Problems Summary.

| Dataset Name | # Attributes (R/I/N) | # Samples |
| --- | --- | --- |
| abalone | 8 (7/1/0) | 4177 |
| ANACALT | 7 (7/0/0) | 4052 |
| autoMPG6 | 5 (2/3/0) | 392 |
| autoMPG8 | 7 (2/5/0) | 392 |
| baseball | 16 (2/14/0) | 337 |
| compactiv | 21 (21/0/0) | 8192 |
| concrete | 8 (7/1/0) | 1030 |
| dee | 6 (6/0/0) | 365 |
| delta_ail | 5 (5/0/0) | 7129 |
| delta_elv | 6 (5/1/0) | 9517 |
| diabetes | 2 (2/0/0) | 43 |
| ele1 | 2 (1/1/0) | 495 |
| ele2 | 4 (4/0/0) | 1056 |
| forestFires | 12 (7/5/0) | 517 |
| friedman | 5 (5/0/0) | 1200 |
| laser | 4 (4/0/0) | 993 |
| machineCPU | 6 (0/6/0) | 209 |
| mortgage | 15 (15/0/0) | 1049 |
| plastic | 2 (2/0/0) | 1650 |
| puma32h | 32 (32/0/0) | 8192 |
| quake | 3 (2/1/0) | 2178 |
| stock | 9 (9/0/0) | 950 |
| tic | 85 (0/85/0) | 9822 |
| treasury | 15 (15/0/0) | 1049 |
| wankara | 9 (9/0/0) | 1609 |
| wizmir | 9 (9/0/0) | 1461 |

# Appendix B

# Classification Problems Summary

Table B.1: Classification Problems Summary.

| Dataset Name | # Attributes (R/I/N) | # Samples | # Classes |
|---|---|---|---|
| appendicitis | 7 (7/0/0) | 106 | 2 |
| australian | 14 (3/5/6) | 690 | 2 |
| automobile | 25 (15/0/10) | 150 | 6 |
| balance | 4 (4/0/0) | 625 | 3 |
| bands | 19 (13/6/0) | 365 | 2 |
| breast | 9 (0/0/9) | 277 | 2 |
| bupa | 6 (1/5/0) | 345 | 2 |
| cleveland | 13 (13/0/0) | 297 | 5 |
| crx | 15 (3/3/9) | 653 | 2 |
| ecoli | 7 (7/0/0) | 336 | 8 |
| flare | 11 (0/0/11) | 1066 | 6 |
| german | 20 (0/7/13) | 1000 | 2 |
| glass | 9 (9/0/0) | 214 | 7 |
| haberman | 3 (0/3/0) | 306 | 2 |
| hayesroth | 4 (0/4/0) | 160 | 3 |
| heart | 13 (1/12/0) | 270 | 2 |
| hepatitis | 19 (2/17/0) | 80 | 2 |
| housevotes | 16 (0/0/16) | 232 | 2 |
| ionosphere | 33 (32/1/0) | 351 | 2 |
| iris | 4 (4/0/0) | 150 | 3 |
| led7digit | 7 (7/0/0) | 500 | 10 |
| lymphography | 18 (0/3/15) | 148 | 4 |
| mammographic | 5 (0/5/0) | 830 | 2 |
| monk2 | 6 (0/6/0) | 432 | 2 |
| newthyroid | 5 (4/1/0) | 215 | 3 |
| pima | 8 (8/0/0) | 768 | 2 |
| postoperative | 8 (0/0/8) | 87 | 3 |
| saheart | 9 (5/3/1) | 462 | 2 |
| tae | 5 (0/5/0) | 151 | 3 |
| tictactoe | 9 (0/0/9) | 958 | 2 |
| vehicle | 18 (0/18/0) | 846 | 4 |
| vowel | 13 (10/3/0) | 990 | 11 |
| wine | 13 (13/0/0) | 178 | 3 |
| wisconsin | 9 (0/9/0) | 683 | 2 |
| zoo | 16 (0/0/16) | 101 | 7 |

# Appendix C

# All Regression Results

Table C.1: All Results of regression problems (1/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|---|---|---|---|---|---|---|---|
| Adadelta | ANACALT | 580.705 | 0.29 | N/A | 1000 | 1000 | Tanh |
| Adadelta | ANACALT | 280.449 | 0.101 | N/A | 1000 | 142 | Tanh |
| Adadelta | ANACALT | 216.471 | 0.378 | N/A | 1000 | 1000 | SoftRelu |
| Adadelta | ANACALT | 621.819 | 56.3 | N/A | 1000 | 172 | SoftRelu |
| Adadelta | ANACALT | 767.139 | 0.0774 | N/A | 1000 | 1000 | Relu |
| Adadelta | ANACALT | 698.065 | 4.41 | N/A | 1000 | 200 | Relu |
| Adagrad | ANACALT | 589.535 | 0.0678 | N/A | 1000 | 1000 | Tanh |
| Adagrad | ANACALT | 356.292 | 0.0677 | N/A | 1000 | 142 | Tanh |
| Adagrad | ANACALT | 261.803 | 0.0693 | N/A | 1000 | 1000 | SoftRelu |
| Adagrad | ANACALT | 280.505 | 0.0757 | N/A | 1000 | 172 | SoftRelu |
| Adagrad | ANACALT | 828.377 | 0.0702 | N/A | 1000 | 1000 | Relu |
| Adagrad | ANACALT | 509.936 | 0.0731 | N/A | 1000 | 200 | Relu |
| Adam | ANACALT | 720.45 | 0.068 | N/A | 1000 | 1000 | Tanh |
| Adam | ANACALT | 152.264 | 0.068 | N/A | 1000 | 142 | Tanh |
| Adam | ANACALT | 407.546 | 0.0683 | N/A | 1000 | 1000 | SoftRelu |
| Adam | ANACALT | 401.976 | 0.0685 | N/A | 1000 | 172 | SoftRelu |
| Adam | ANACALT | 868.372 | 0.0686 | N/A | 1000 | 1000 | Relu |
| Adam | ANACALT | 536.851 | 0.0706 | N/A | 1000 | 200 | Relu |
| CSEEM | ANACALT | 2.744 | 0.00148 | 8 | N/A | 170 | Tanh |
| CSEEM | ANACALT | 163.274 | 0.00149 | 8 | N/A | 160 | SoftRelu |
| CSEEM | ANACALT | 544.13 | 0.00161 | 8 | N/A | 167 | Relu |
| CSEEM | ANACALT | 26.011 | 0.00234 | 16 | N/A | 142 | Tanh |
| CSEEM | ANACALT | 787.991 | 0.00118 | 16 | N/A | 172 | SoftRelu |
| CSEEM | ANACALT | 576.666 | 0.00149 | 16 | N/A | 200 | Relu |
| CSEEM | ANACALT | 346.251 | 0.00131 | 32 | N/A | 170 | Tanh |
| CSEEM | ANACALT | 302.342 | 0.00213 | 32 | N/A | 136 | SoftRelu |
| CSEEM | ANACALT | 881.936 | 0.00192 | 32 | N/A | 166 | Relu |
| RMSprop | ANACALT | 771.52 | 0.124 | N/A | 1000 | 1000 | Tanh |

Table C.2: All Results of regression problems (2/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|---|---|---|---|---|---|---|---|
| RMSprop | ANACALT | 8.209 | 0.0692 | N/A | 1000 | 142 | Tanh |
| RMSprop | ANACALT | 747.001 | 104 | N/A | 1000 | 1000 | SoftRelu |
| RMSprop | ANACALT | 404.303 | 47.9 | N/A | 1000 | 172 | SoftRelu |
| RMSprop | ANACALT | 731.554 | 69.4 | N/A | 1000 | 1000 | Relu |
| RMSprop | ANACALT | 543.737 | 41.1 | N/A | 1000 | 200 | Relu |
| SGD | ANACALT | 477.362 | nan | N/A | 1000 | 1000 | Tanh |
| SGD | ANACALT | 830.015 | 0.068 | N/A | 1000 | 142 | Tanh |
| SGD | ANACALT | 183.617 | nan | N/A | 1000 | 1000 | SoftRelu |
| SGD | ANACALT | 355.601 | nan | N/A | 1000 | 172 | SoftRelu |
| SGD | ANACALT | 857.611 | 2.54e+05 | N/A | 1000 | 1000 | Relu |
| SGD | ANACALT | 461.991 | 1.88e+09 | N/A | 1000 | 200 | Relu |
| Adadelta | abalone | 33.266 | 0.911 | N/A | 1000 | 1000 | Tanh |
| Adadelta | abalone | 297.904 | 0.873 | N/A | 1000 | 384 | Tanh |
| Adadelta | abalone | 530.531 | 0.795 | N/A | 1000 | 1000 | SoftRelu |
| Adadelta | abalone | 688.438 | 0.805 | N/A | 1000 | 398 | SoftRelu |
| Adadelta | abalone | 497.215 | 0.909 | N/A | 1000 | 1000 | Relu |
| Adadelta | abalone | 620.234 | 1.01 | N/A | 1000 | 356 | Relu |
| Adagrad | abalone | 112.624 | 0.204 | N/A | 1000 | 1000 | Tanh |
| Adagrad | abalone | 232.232 | 0.283 | N/A | 1000 | 384 | Tanh |
| Adagrad | abalone | 511.479 | 0.0957 | N/A | 1000 | 1000 | SoftRelu |
| Adagrad | abalone | 662.119 | 0.112 | N/A | 1000 | 398 | SoftRelu |
| Adagrad | abalone | 444.317 | 0.406 | N/A | 1000 | 1000 | Relu |
| Adagrad | abalone | 70.905 | 0.551 | N/A | 1000 | 356 | Relu |
| Adam | abalone | 100.821 | 0.0445 | N/A | 1000 | 1000 | Tanh |
| Adam | abalone | 456.648 | 0.048 | N/A | 1000 | 384 | Tanh |
| Adam | abalone | 840.155 | 0.0539 | N/A | 1000 | 1000 | SoftRelu |
| Adam | abalone | 693.838 | 0.058 | N/A | 1000 | 398 | SoftRelu |
| Adam | abalone | 227.978 | 0.0432 | N/A | 1000 | 1000 | Relu |

Table C.3: All Results of regression problems (3/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|--------|---------|----------|---------|-------|--------|-----|---------------|
| Adam | abalone | 53.092 | 0.0452 | N/A | 1000 | 356 | Relu |
| CSEEM | abalone | 747.116 | 0.0413 | 8 | N/A | 333 | Tanh |
| CSEEM | abalone | 793.895 | 0.0398 | 8 | N/A | 346 | SoftRelu |
| CSEEM | abalone | 527.646 | 0.0395 | 8 | N/A | 380 | Relu |
| CSEEM | abalone | 493.441 | 0.0407 | 16 | N/A | 384 | Tanh |
| CSEEM | abalone | 294.555 | 0.0388 | 16 | N/A | 398 | SoftRelu |
| CSEEM | abalone | 633.348 | 0.04 | 16 | N/A | 356 | Relu |
| CSEEM | abalone | 488.342 | 0.0396 | 32 | N/A | 420 | Tanh |
| CSEEM | abalone | 232.411 | 0.038 | 32 | N/A | 432 | SoftRelu |
| CSEEM | abalone | 819.874 | 0.0403 | 32 | N/A | 331 | Relu |
| RMSprop | abalone | 700.127 | 0.0461 | N/A | 1000 | 1000 | Tanh |
| RMSprop | abalone | 232.514 | 0.0451 | N/A | 1000 | 384 | Tanh |
| RMSprop | abalone | 769.721 | 0.0477 | N/A | 1000 | 1000 | SoftRelu |
| RMSprop | abalone | 655.163 | 0.0456 | N/A | 1000 | 398 | SoftRelu |
| RMSprop | abalone | 607.625 | 0.0445 | N/A | 1000 | 1000 | Relu |
| RMSprop | abalone | 848.14 | 0.044 | N/A | 1000 | 356 | Relu |
| SGD | abalone | 8.933 | 0.102 | N/A | 1000 | 1000 | Tanh |
| SGD | abalone | 186.816 | 0.102 | N/A | 1000 | 384 | Tanh |
| SGD | abalone | 418.51 | 0.0894 | N/A | 1000 | 1000 | SoftRelu |
| SGD | abalone | 589.112 | 0.0908 | N/A | 1000 | 398 | SoftRelu |
| SGD | abalone | 710.912 | 0.114 | N/A | 1000 | 1000 | Relu |
| SGD | abalone | 15.695 | 0.109 | N/A | 1000 | 356 | Relu |
| Adadelta | autoMPG6 | 485.194 | 0.782 | N/A | 1000 | 1000 | Tanh |
| Adadelta | autoMPG6 | 265.054 | 1.07 | N/A | 1000 | 38 | Tanh |
| Adadelta | autoMPG6 | 928.73 | 0.265 | N/A | 1000 | 1000 | SoftRelu |
| Adadelta | autoMPG6 | 357.401 | 39.5 | N/A | 1000 | 33 | SoftRelu |
| Adadelta | autoMPG6 | 672.682 | 0.195 | N/A | 1000 | 1000 | Relu |
| Adadelta | autoMPG6 | 375.451 | 16.3 | N/A | 1000 | 39 | Relu |

Table C.4: All Results of regression problems (4/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|--------|---------|----------|---------|-------|--------|-----|---------------|
| Adagrad | autoMPG6 | 457.331 | 0.0843 | N/A | 1000 | 1000 | Tanh |
| Adagrad | autoMPG6 | 247.957 | 0.698 | N/A | 1000 | 38 | Tanh |
| Adagrad | autoMPG6 | 875.565 | 0.0383 | N/A | 1000 | 1000 | SoftRelu |
| Adagrad | autoMPG6 | 321.259 | 2.2 | N/A | 1000 | 33 | SoftRelu |
| Adagrad | autoMPG6 | 732.427 | 0.0517 | N/A | 1000 | 1000 | Relu |
| Adagrad | autoMPG6 | 448.061 | 1.89 | N/A | 1000 | 39 | Relu |
| Adam | autoMPG6 | 525.986 | 0.0593 | N/A | 1000 | 1000 | Tanh |
| Adam | autoMPG6 | 348.663 | 0.102 | N/A | 1000 | 38 | Tanh |
| Adam | autoMPG6 | 58.878 | 0.0124 | N/A | 1000 | 1000 | SoftRelu |
| Adam | autoMPG6 | 362.528 | 0.14 | N/A | 1000 | 33 | SoftRelu |
| Adam | autoMPG6 | 713.338 | 0.0201 | N/A | 1000 | 1000 | Relu |
| Adam | autoMPG6 | 386.704 | 0.132 | N/A | 1000 | 39 | Relu |
| CSEEM | autoMPG6 | 115.89 | 0.0274 | 8 | N/A | 36 | Tanh |
| CSEEM | autoMPG6 | 116.896 | 0.0266 | 8 | N/A | 25 | SoftRelu |
| CSEEM | autoMPG6 | 113.391 | 0.0238 | 8 | N/A | 45 | Relu |
| CSEEM | autoMPG6 | 172.0 | 0.0306 | 16 | N/A | 38 | Tanh |
| CSEEM | autoMPG6 | 436.007 | 0.0259 | 16 | N/A | 33 | SoftRelu |
| CSEEM | autoMPG6 | 481.987 | 0.0253 | 16 | N/A | 39 | Relu |
| CSEEM | autoMPG6 | 654.961 | 0.0282 | 32 | N/A | 17 | Tanh |
| CSEEM | autoMPG6 | 532.572 | 0.0267 | 32 | N/A | 29 | SoftRelu |
| CSEEM | autoMPG6 | 354.183 | 0.0288 | 32 | N/A | 34 | Relu |
| RMSprop | autoMPG6 | 116.998 | 0.0257 | N/A | 1000 | 1000 | Tanh |
| RMSprop | autoMPG6 | 349.293 | 0.0993 | N/A | 1000 | 38 | Tanh |
| RMSprop | autoMPG6 | 798.0 | 1.72 | N/A | 1000 | 1000 | SoftRelu |
| RMSprop | autoMPG6 | 378.336 | 0.191 | N/A | 1000 | 33 | SoftRelu |
| RMSprop | autoMPG6 | 599.222 | 1.9 | N/A | 1000 | 1000 | Relu |
| RMSprop | autoMPG6 | 406.924 | 0.297 | N/A | 1000 | 39 | Relu |
| SGD | autoMPG6 | 431.124 | 0.0994 | N/A | 1000 | 1000 | Tanh |

Table C.5: All Results of regression problems (5/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|--------|---------|----------|---------|-------|--------|-----|---------------|
| SGD | autoMPG6 | 232.35 | 0.168 | N/A | 1000 | 38 | Tanh |
| SGD | autoMPG6 | 994.217 | 0.972 | N/A | 1000 | 1000 | SoftRelu |
| SGD | autoMPG6 | 314.725 | 9.9 | N/A | 1000 | 33 | SoftRelu |
| SGD | autoMPG6 | 636.694 | 0.334 | N/A | 1000 | 1000 | Relu |
| SGD | autoMPG6 | 364.451 | 45.7 | N/A | 1000 | 39 | Relu |
| Adadelta | autoMPG8 | 618.389 | 0.706 | N/A | 1000 | 1000 | Tanh |
| Adadelta | autoMPG8 | 326.01 | 0.926 | N/A | 1000 | 35 | Tanh |
| Adadelta | autoMPG8 | 984.783 | 0.237 | N/A | 1000 | 1000 | SoftRelu |
| Adadelta | autoMPG8 | 353.089 | 3.7e+03 | N/A | 1000 | 38 | SoftRelu |
| Adadelta | autoMPG8 | 755.185 | 0.435 | N/A | 1000 | 1000 | Relu |
| Adadelta | autoMPG8 | 416.259 | 109 | N/A | 1000 | 36 | Relu |
| Adagrad | autoMPG8 | 493.993 | 0.0822 | N/A | 1000 | 1000 | Tanh |
| Adagrad | autoMPG8 | 251.202 | 0.941 | N/A | 1000 | 35 | Tanh |
| Adagrad | autoMPG8 | 962.37 | 0.053 | N/A | 1000 | 1000 | SoftRelu |
| Adagrad | autoMPG8 | 345.738 | 0.664 | N/A | 1000 | 38 | SoftRelu |
| Adagrad | autoMPG8 | 669.654 | 0.0428 | N/A | 1000 | 1000 | Relu |
| Adagrad | autoMPG8 | 349.372 | 0.418 | N/A | 1000 | 36 | Relu |
| Adam | autoMPG8 | 552.245 | 0.0435 | N/A | 1000 | 1000 | Tanh |
| Adam | autoMPG8 | 291.753 | 0.107 | N/A | 1000 | 35 | Tanh |
| Adam | autoMPG8 | 71.292 | 0.0276 | N/A | 1000 | 1000 | SoftRelu |
| Adam | autoMPG8 | 377.971 | 0.329 | N/A | 1000 | 38 | SoftRelu |
| Adam | autoMPG8 | 731.318 | 0.016 | N/A | 1000 | 1000 | Relu |
| Adam | autoMPG8 | 382.32 | 0.0302 | N/A | 1000 | 36 | Relu |
| CSEEM | autoMPG8 | 147.137 | 0.0359 | 8 | N/A | 34 | Tanh |
| CSEEM | autoMPG8 | 30.142 | 0.0291 | 8 | N/A | 31 | SoftRelu |
| CSEEM | autoMPG8 | 138.522 | 0.03 | 8 | N/A | 39 | Relu |
| CSEEM | autoMPG8 | 156.0 | 0.0321 | 16 | N/A | 35 | Tanh |
| CSEEM | autoMPG8 | 198.997 | 0.025 | 16 | N/A | 38 | SoftRelu |

Table C.6: All Results of regression problems (6/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|---|---|---|---|---|---|---|---|
| CSEEM | autoMPG8 | 90.999 | 0.0335 | 16 | N/A | 36 | Relu |
| CSEEM | autoMPG8 | 269.543 | 0.0343 | 32 | N/A | 36 | Tanh |
| CSEEM | autoMPG8 | 579.453 | 0.0262 | 32 | N/A | 35 | SoftRelu |
| CSEEM | autoMPG8 | 802.118 | 0.0276 | 32 | N/A | 44 | Relu |
| RMSprop | autoMPG8 | 71.991 | 0.0232 | N/A | 1000 | 1000 | Tanh |
| RMSprop | autoMPG8 | 300.548 | 0.0995 | N/A | 1000 | 35 | Tanh |
| RMSprop | autoMPG8 | 792.001 | 1.6 | N/A | 1000 | 1000 | SoftRelu |
| RMSprop | autoMPG8 | 378.248 | 0.256 | N/A | 1000 | 38 | SoftRelu |
| RMSprop | autoMPG8 | 622.018 | 1.48 | N/A | 1000 | 1000 | Relu |
| RMSprop | autoMPG8 | 383.146 | 0.496 | N/A | 1000 | 36 | Relu |
| SGD | autoMPG8 | 458.81 | 0.0995 | N/A | 1000 | 1000 | Tanh |
| SGD | autoMPG8 | 243.211 | 0.179 | N/A | 1000 | 35 | Tanh |
| SGD | autoMPG8 | 21.247 | 0.875 | N/A | 1000 | 1000 | SoftRelu |
| SGD | autoMPG8 | 303.406 | 7.98 | N/A | 1000 | 38 | SoftRelu |
| SGD | autoMPG8 | 761.942 | 5.82 | N/A | 1000 | 1000 | Relu |
| SGD | autoMPG8 | 334.372 | 2.27 | N/A | 1000 | 36 | Relu |
| Adadelta | baseball | 488.888 | 0.999 | N/A | 1000 | 1000 | Tanh |
| Adadelta | baseball | 315.172 | 0.998 | N/A | 1000 | 81 | Tanh |
| Adadelta | baseball | 567.081 | 0.979 | N/A | 1000 | 1000 | SoftRelu |
| Adadelta | baseball | 410.906 | 0.99 | N/A | 1000 | 65 | SoftRelu |
| Adadelta | baseball | 508.418 | 0.975 | N/A | 1000 | 1000 | Relu |
| Adadelta | baseball | 410.145 | 1.01 | N/A | 1000 | 68 | Relu |
| Adagrad | baseball | 443.044 | 0.995 | N/A | 1000 | 1000 | Tanh |
| Adagrad | baseball | 275.673 | 1 | N/A | 1000 | 81 | Tanh |
| Adagrad | baseball | 615.767 | 0.883 | N/A | 1000 | 1000 | SoftRelu |
| Adagrad | baseball | 377.954 | 0.995 | N/A | 1000 | 65 | SoftRelu |
| Adagrad | baseball | 459.87 | 0.867 | N/A | 1000 | 1000 | Relu |
| Adagrad | baseball | 409.866 | 0.916 | N/A | 1000 | 68 | Relu |

Table C.7: All Results of regression problems (7/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|---|---|---|---|---|---|---|---|
| Adam | baseball | 572.121 | 0.497 | N/A | 1000 | 1000 | Tanh |
| Adam | baseball | 362.18 | 0.931 | N/A | 1000 | 81 | Tanh |
| Adam | baseball | 725.389 | 0.161 | N/A | 1000 | 1000 | SoftRelu |
| Adam | baseball | 446.761 | 0.235 | N/A | 1000 | 65 | SoftRelu |
| Adam | baseball | 544.206 | 0.187 | N/A | 1000 | 1000 | Relu |
| Adam | baseball | 467.954 | 0.24 | N/A | 1000 | 68 | Relu |
| CSEEM | baseball | 231.778 | 0.147 | 8 | N/A | 56 | Tanh |
| CSEEM | baseball | 228.281 | 0.118 | 8 | N/A | 52 | SoftRelu |
| CSEEM | baseball | 288.669 | 0.107 | 8 | N/A | 73 | Relu |
| CSEEM | baseball | 231.993 | 0.131 | 16 | N/A | 81 | Tanh |
| CSEEM | baseball | 122.998 | 0.112 | 16 | N/A | 65 | SoftRelu |
| CSEEM | baseball | 404.998 | 0.113 | 16 | N/A | 68 | Relu |
| CSEEM | baseball | 407.562 | 0.126 | 32 | N/A | 80 | Tanh |
| CSEEM | baseball | 555.275 | 0.0871 | 32 | N/A | 87 | SoftRelu |
| CSEEM | baseball | 619.289 | 0.0834 | 32 | N/A | 87 | Relu |
| RMSprop | baseball | 695.434 | 0.446 | N/A | 1000 | 1000 | Tanh |
| RMSprop | baseball | 381.941 | 0.93 | N/A | 1000 | 81 | Tanh |
| RMSprop | baseball | 394.0 | 0.178 | N/A | 1000 | 1000 | SoftRelu |
| RMSprop | baseball | 422.534 | 0.222 | N/A | 1000 | 65 | SoftRelu |
| RMSprop | baseball | 470.0 | 0.186 | N/A | 1000 | 1000 | Relu |
| RMSprop | baseball | 443.558 | 0.23 | N/A | 1000 | 68 | Relu |
| SGD | baseball | 372.474 | 0.989 | N/A | 1000 | 1000 | Tanh |
| SGD | baseball | 242.904 | 1 | N/A | 1000 | 81 | Tanh |
| SGD | baseball | 535.075 | 0.48 | N/A | 1000 | 1000 | SoftRelu |
| SGD | baseball | 405.392 | 0.431 | N/A | 1000 | 65 | SoftRelu |
| SGD | baseball | 397.778 | 0.488 | N/A | 1000 | 1000 | Relu |
| SGD | baseball | 572.507 | 0.523 | N/A | 1000 | 68 | Relu |
| Adadelta | compactiv | 907.757 | 0.955 | N/A | 1000 | 1000 | Tanh |

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Table C.8: All Results of regression problems (8/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|---|---|---|---|---|---|---|---|
| Adadelta | compactiv | 367.899 | 0.994 | N/A | 1000 | 304 | Tanh |
| Adadelta | compactiv | 972.013 | 356 | N/A | 1000 | 1000 | SoftRelu |
| Adadelta | compactiv | 794.391 | 1.45e+04 | N/A | 1000 | 268 | SoftRelu |
| Adadelta | compactiv | 147.601 | 215 | N/A | 1000 | 1000 | Relu |
| Adadelta | compactiv | 124.679 | 1.5e+03 | N/A | 1000 | 283 | Relu |
| Adagrad | compactiv | 810.033 | 0.381 | N/A | 1000 | 1000 | Tanh |
| Adagrad | compactiv | 960.424 | 0.75 | N/A | 1000 | 304 | Tanh |
| Adagrad | compactiv | 76.678 | 6.7 | N/A | 1000 | 1000 | SoftRelu |
| Adagrad | compactiv | 645.332 | 79.9 | N/A | 1000 | 268 | SoftRelu |
| Adagrad | compactiv | 446.011 | 3.03 | N/A | 1000 | 1000 | Relu |
| Adagrad | compactiv | 921.702 | 99.8 | N/A | 1000 | 283 | Relu |
| Adam | compactiv | 946.561 | 0.00849 | N/A | 1000 | 1000 | Tanh |
| Adam | compactiv | 869.529 | 0.011 | N/A | 1000 | 304 | Tanh |
| Adam | compactiv | 224.349 | 0.942 | N/A | 1000 | 1000 | SoftRelu |
| Adam | compactiv | 792.01 | 3.86 | N/A | 1000 | 268 | SoftRelu |
| Adam | compactiv | 455.604 | 0.528 | N/A | 1000 | 1000 | Relu |
| Adam | compactiv | 396.969 | 1.18 | N/A | 1000 | 283 | Relu |
| CSEEM | compactiv | 692.548 | 0.00634 | 8 | N/A | 247 | Tanh |
| CSEEM | compactiv | 956.771 | 0.0019 | 8 | N/A | 324 | SoftRelu |
| CSEEM | compactiv | 177.399 | 0.00186 | 8 | N/A | 346 | Relu |
| CSEEM | compactiv | 604.17 | 0.00549 | 16 | N/A | 304 | Tanh |
| CSEEM | compactiv | 505.635 | 0.00216 | 16 | N/A | 268 | SoftRelu |
| CSEEM | compactiv | 706.825 | 0.00236 | 16 | N/A | 283 | Relu |
| CSEEM | compactiv | 613.636 | 0.00509 | 32 | N/A | 360 | Tanh |
| CSEEM | compactiv | 322.823 | 0.00229 | 32 | N/A | 206 | SoftRelu |
| CSEEM | compactiv | 761.084 | 0.00237 | 32 | N/A | 249 | Relu |
| RMSprop | compactiv | 194.543 | 0.0068 | N/A | 1000 | 1000 | Tanh |
| RMSprop | compactiv | 898.361 | 0.0072 | N/A | 1000 | 304 | Tanh |

Table C.9: All Results of regression problems (9/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|--------|---------|----------|---------|-------|--------|-----|----------------|
| RMSprop | compactiv | 940.999 | 2.44e+04 | N/A | 1000 | 1000 | SoftRelu |
| RMSprop | compactiv | 815.55 | 1.75e+04 | N/A | 1000 | 268 | SoftRelu |
| RMSprop | compactiv | 901.549 | 2.31e+04 | N/A | 1000 | 1000 | Relu |
| RMSprop | compactiv | 456.962 | 1.97e+04 | N/A | 1000 | 283 | Relu |
| SGD | compactiv | 904.73 | 0.0183 | N/A | 1000 | 1000 | Tanh |
| SGD | compactiv | 851.731 | 0.237 | N/A | 1000 | 304 | Tanh |
| SGD | compactiv | 298.866 | nan | N/A | 1000 | 1000 | SoftRelu |
| SGD | compactiv | 643.101 | nan | N/A | 1000 | 268 | SoftRelu |
| SGD | compactiv | 355.591 | nan | N/A | 1000 | 1000 | Relu |
| SGD | compactiv | 941.62 | nan | N/A | 1000 | 283 | Relu |
| Adadelta | concrete | 144.58 | 0.777 | N/A | 1000 | 1000 | Tanh |
| Adadelta | concrete | 498.803 | 0.934 | N/A | 1000 | 128 | Tanh |
| Adadelta | concrete | 914.592 | 0.0873 | N/A | 1000 | 1000 | SoftRelu |
| Adadelta | concrete | 733.468 | 1.65 | N/A | 1000 | 97 | SoftRelu |
| Adadelta | concrete | 241.22 | 0.123 | N/A | 1000 | 1000 | Relu |
| Adadelta | concrete | 834.66 | 5.55 | N/A | 1000 | 108 | Relu |
| Adagrad | concrete | 202.878 | 0.164 | N/A | 1000 | 1000 | Tanh |
| Adagrad | concrete | 501.994 | 0.647 | N/A | 1000 | 128 | Tanh |
| Adagrad | concrete | 870.039 | 0.0494 | N/A | 1000 | 1000 | SoftRelu |
| Adagrad | concrete | 696.4 | 0.128 | N/A | 1000 | 97 | SoftRelu |
| Adagrad | concrete | 304.737 | 0.0494 | N/A | 1000 | 1000 | Relu |
| Adagrad | concrete | 747.499 | 0.1 | N/A | 1000 | 108 | Relu |
| Adam | concrete | 235.128 | 0.0391 | N/A | 1000 | 1000 | Tanh |
| Adam | concrete | 596.362 | 0.146 | N/A | 1000 | 128 | Tanh |
| Adam | concrete | 964.54 | 0.0133 | N/A | 1000 | 1000 | SoftRelu |
| Adam | concrete | 763.817 | 0.0228 | N/A | 1000 | 97 | SoftRelu |
| Adam | concrete | 186.438 | 0.0159 | N/A | 1000 | 1000 | Relu |
| Adam | concrete | 723.469 | 0.0275 | N/A | 1000 | 108 | Relu |

Table C.10: All Results of regression problems (10/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|---|---|---|---|---|---|---|---|
| CSEEM | concrete | 554.716 | 0.0304 | 8 | N/A | 132 | Tanh |
| CSEEM | concrete | 707.098 | 0.0314 | 8 | N/A | 67 | SoftRelu |
| CSEEM | concrete | 500.322 | 0.0238 | 8 | N/A | 116 | Relu |
| CSEEM | concrete | 832.078 | 0.029 | 16 | N/A | 128 | Tanh |
| CSEEM | concrete | 456.999 | 0.0209 | 16 | N/A | 97 | SoftRelu |
| CSEEM | concrete | 577.993 | 0.0241 | 16 | N/A | 108 | Relu |
| CSEEM | concrete | 225.957 | 0.0309 | 32 | N/A | 108 | Tanh |
| CSEEM | concrete | 617.513 | 0.0216 | 32 | N/A | 109 | SoftRelu |
| CSEEM | concrete | 58.54 | 0.025 | 32 | N/A | 96 | Relu |
| RMSprop | concrete | 73.051 | 0.0179 | N/A | 1000 | 1000 | Tanh |
| RMSprop | concrete | 570.609 | 0.0531 | N/A | 1000 | 128 | Tanh |
| RMSprop | concrete | 195.002 | 0.103 | N/A | 1000 | 1000 | SoftRelu |
| RMSprop | concrete | 744.147 | 0.105 | N/A | 1000 | 97 | SoftRelu |
| RMSprop | concrete | 36.002 | 0.109 | N/A | 1000 | 1000 | Relu |
| RMSprop | concrete | 684.184 | 0.103 | N/A | 1000 | 108 | Relu |
| SGD | concrete | 193.896 | 0.129 | N/A | 1000 | 1000 | Tanh |
| SGD | concrete | 439.192 | 0.201 | N/A | 1000 | 128 | Tanh |
| SGD | concrete | 899.066 | 0.0838 | N/A | 1000 | 1000 | SoftRelu |
| SGD | concrete | 696.616 | 0.991 | N/A | 1000 | 97 | SoftRelu |
| SGD | concrete | 144.345 | 0.0844 | N/A | 1000 | 1000 | Relu |
| SGD | concrete | 652.687 | 0.985 | N/A | 1000 | 108 | Relu |
| Adadelta | dee | 468.495 | 0.0799 | N/A | 1000 | 1000 | Tanh |
| Adadelta | dee | 352.447 | 0.264 | N/A | 1000 | 22 | Tanh |
| Adadelta | dee | 610.586 | 7.8e+03 | N/A | 1000 | 1000 | SoftRelu |
| Adadelta | dee | 358.432 | 3.12e+07 | N/A | 1000 | 28 | SoftRelu |
| Adadelta | dee | 545.273 | 8.32e+03 | N/A | 1000 | 1000 | Relu |
| Adadelta | dee | 451.709 | 9.11e+08 | N/A | 1000 | 31 | Relu |
| Adagrad | dee | 489.678 | 0.0198 | N/A | 1000 | 1000 | Tanh |

Table C.11: All Results of regression problems (11/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|--------|---------|----------|---------|-------|--------|-----|---------------|
| Adagrad | dee | 317.977 | 2.04 | N/A | 1000 | 22 | Tanh |
| Adagrad | dee | 695.492 | 704 | N/A | 1000 | 1000 | SoftRelu |
| Adagrad | dee | 291.986 | 3.42e+06 | N/A | 1000 | 28 | SoftRelu |
| Adagrad | dee | 600.725 | 356 | N/A | 1000 | 1000 | Relu |
| Adagrad | dee | 769.143 | 1.65e+05 | N/A | 1000 | 31 | Relu |
| Adam | dee | 499.124 | 0.0107 | N/A | 1000 | 1000 | Tanh |
| Adam | dee | 292.388 | 0.0367 | N/A | 1000 | 22 | Tanh |
| Adam | dee | 843.989 | 66.7 | N/A | 1000 | 1000 | SoftRelu |
| Adam | dee | 339.967 | 1.02e+05 | N/A | 1000 | 28 | SoftRelu |
| Adam | dee | 648.517 | 91.2 | N/A | 1000 | 1000 | Relu |
| Adam | dee | 385.266 | 2.44e+04 | N/A | 1000 | 31 | Relu |
| CSEEM | dee | 196.53 | 0.0269 | 8 | N/A | 13 | Tanh |
| CSEEM | dee | 158.768 | 0.0238 | 8 | N/A | 23 | SoftRelu |
| CSEEM | dee | 78.129 | 0.0227 | 8 | N/A | 43 | Relu |
| CSEEM | dee | 100.991 | 0.0274 | 16 | N/A | 22 | Tanh |
| CSEEM | dee | 159.999 | 0.0233 | 16 | N/A | 28 | SoftRelu |
| CSEEM | dee | 94.999 | 0.0243 | 16 | N/A | 31 | Relu |
| CSEEM | dee | 216.157 | 0.028 | 32 | N/A | 24 | Tanh |
| CSEEM | dee | 369.808 | 0.024 | 32 | N/A | 25 | SoftRelu |
| CSEEM | dee | 505.829 | 0.0251 | 32 | N/A | 19 | Relu |
| RMSprop | dee | 448.3 | 0.0298 | N/A | 1000 | 1000 | Tanh |
| RMSprop | dee | 382.258 | 0.0414 | N/A | 1000 | 22 | Tanh |
| RMSprop | dee | 563.007 | 4.07e+05 | N/A | 1000 | 1000 | SoftRelu |
| RMSprop | dee | 345.36 | 4.74e+04 | N/A | 1000 | 28 | SoftRelu |
| RMSprop | dee | 474.083 | 3.39e+05 | N/A | 1000 | 1000 | Relu |
| RMSprop | dee | 446.423 | 1.76e+05 | N/A | 1000 | 31 | Relu |
| SGD | dee | 416.812 | 0.013 | N/A | 1000 | 1000 | Tanh |
| SGD | dee | 281.269 | 0.0453 | N/A | 1000 | 22 | Tanh |

Table C.12: All Results of regression problems (12/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|---|---|---|---|---|---|---|---|
| SGD | dee | 653.597 | nan | N/A | 1000 | 1000 | SoftRelu |
| SGD | dee | 276.052 | nan | N/A | 1000 | 28 | SoftRelu |
| SGD | dee | 620.058 | 6.27e+27 | N/A | 1000 | 1000 | Relu |
| SGD | dee | 339.691 | 6.11e+30 | N/A | 1000 | 31 | Relu |
| Adadelta | delta_ail | 424.029 | 2.11 | N/A | 1000 | 1000 | Tanh |
| Adadelta | delta_ail | 659.343 | 59.8 | N/A | 1000 | 239 | Tanh |
| Adadelta | delta_ail | 773.874 | 2.14 | N/A | 1000 | 1000 | SoftRelu |
| Adadelta | delta_ail | 942.476 | 3.01e+06 | N/A | 1000 | 178 | SoftRelu |
| Adadelta | delta_ail | 327.041 | 0.537 | N/A | 1000 | 1000 | Relu |
| Adadelta | delta_ail | 544.447 | 1.76 | N/A | 1000 | 172 | Relu |
| Adagrad | delta_ail | 381.437 | 0.338 | N/A | 1000 | 1000 | Tanh |
| Adagrad | delta_ail | 588.757 | 0.363 | N/A | 1000 | 239 | Tanh |
| Adagrad | delta_ail | 957.066 | 0.437 | N/A | 1000 | 1000 | SoftRelu |
| Adagrad | delta_ail | 881.249 | 25.1 | N/A | 1000 | 178 | SoftRelu |
| Adagrad | delta_ail | 459.02 | 0.344 | N/A | 1000 | 1000 | Relu |
| Adagrad | delta_ail | 570.112 | 0.415 | N/A | 1000 | 172 | Relu |
| Adam | delta_ail | 426.88 | 0.322 | N/A | 1000 | 1000 | Tanh |
| Adam | delta_ail | 697.849 | 0.322 | N/A | 1000 | 239 | Tanh |
| Adam | delta_ail | 569.827 | 0.373 | N/A | 1000 | 1000 | SoftRelu |
| Adam | delta_ail | 936.523 | 1.1 | N/A | 1000 | 178 | SoftRelu |
| Adam | delta_ail | 350.27 | 0.375 | N/A | 1000 | 1000 | Relu |
| Adam | delta_ail | 921.749 | 0.301 | N/A | 1000 | 172 | Relu |
| CSEEM | delta_ail | 960.069 | 0.00568 | 8 | N/A | 223 | Tanh |
| CSEEM | delta_ail | 513.778 | 0.00573 | 8 | N/A | 113 | SoftRelu |
| CSEEM | delta_ail | 386.403 | 0.00563 | 8 | N/A | 199 | Relu |
| CSEEM | delta_ail | 453.393 | 0.00571 | 16 | N/A | 239 | Tanh |
| CSEEM | delta_ail | 952.113 | 0.00554 | 16 | N/A | 178 | SoftRelu |
| CSEEM | delta_ail | 297.154 | 0.00568 | 16 | N/A | 172 | Relu |

Table C.13: All Results of regression problems (13/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|---|---|---|---|---|---|---|---|
| CSEEM | delta_ail | 975.324 | 0.00567 | 32 | N/A | 241 | Tanh |
| CSEEM | delta_ail | 702.658 | 0.00548 | 32 | N/A | 202 | SoftRelu |
| CSEEM | delta_ail | 581.887 | 0.00552 | 32 | N/A | 224 | Relu |
| RMSprop | delta_ail | 82.153 | 3.81 | N/A | 1000 | 1000 | Tanh |
| RMSprop | delta_ail | 727.09 | 5.91 | N/A | 1000 | 239 | Tanh |
| RMSprop | delta_ail | 205.002 | 6.89e+05 | N/A | 1000 | 1000 | SoftRelu |
| RMSprop | delta_ail | 848.471 | 2.56e+04 | N/A | 1000 | 178 | SoftRelu |
| RMSprop | delta_ail | 171.0 | 3.5 | N/A | 1000 | 1000 | Relu |
| RMSprop | delta_ail | 926.095 | 3.47 | N/A | 1000 | 172 | Relu |
| SGD | delta_ail | 237.535 | nan | N/A | 1000 | 1000 | Tanh |
| SGD | delta_ail | 660.347 | nan | N/A | 1000 | 239 | Tanh |
| SGD | delta_ail | 745.925 | nan | N/A | 1000 | 1000 | SoftRelu |
| SGD | delta_ail | 800.387 | nan | N/A | 1000 | 178 | SoftRelu |
| SGD | delta_ail | 508.577 | nan | N/A | 1000 | 1000 | Relu |
| SGD | delta_ail | 632.319 | nan | N/A | 1000 | 172 | Relu |
| Adadelta | delta_elv | 980.564 | 163 | N/A | 1000 | 1000 | Tanh |
| Adadelta | delta_elv | 345.387 | 2.16e+04 | N/A | 1000 | 354 | Tanh |
| Adadelta | delta_elv | 356.323 | 638 | N/A | 1000 | 1000 | SoftRelu |
| Adadelta | delta_elv | 782.109 | 6.32e+04 | N/A | 1000 | 288 | SoftRelu |
| Adadelta | delta_elv | 97.058 | 1.61e+03 | N/A | 1000 | 1000 | Relu |
| Adadelta | delta_elv | 907.349 | 4.15e+04 | N/A | 1000 | 287 | Relu |
| Adagrad | delta_elv | 27.808 | 0.634 | N/A | 1000 | 1000 | Tanh |
| Adagrad | delta_elv | 342.771 | 55.3 | N/A | 1000 | 354 | Tanh |
| Adagrad | delta_elv | 61.44 | 1.08 | N/A | 1000 | 1000 | SoftRelu |
| Adagrad | delta_elv | 812.38 | 13.5 | N/A | 1000 | 288 | SoftRelu |
| Adagrad | delta_elv | 103.652 | 0.969 | N/A | 1000 | 1000 | Relu |
| Adagrad | delta_elv | 934.8 | 12.7 | N/A | 1000 | 287 | Relu |
| Adam | delta_elv | 973.162 | 0.484 | N/A | 1000 | 1000 | Tanh |

Table C.14: All Results of regression problems (14/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|--------|---------|----------|---------|-------|--------|-----|---------------|
| Adam | delta_elv | 410.281 | 1.19 | N/A | 1000 | 354 | Tanh |
| Adam | delta_elv | 300.271 | 0.598 | N/A | 1000 | 1000 | SoftRelu |
| Adam | delta_elv | 975.385 | 1.03 | N/A | 1000 | 288 | SoftRelu |
| Adam | delta_elv | 903.649 | 0.491 | N/A | 1000 | 1000 | Relu |
| Adam | delta_elv | 78.295 | 1.75 | N/A | 1000 | 287 | Relu |
| CSEEM | delta_elv | 6.653 | 0.00965 | 8 | N/A | 340 | Tanh |
| CSEEM | delta_elv | 351.766 | 0.00972 | 8 | N/A | 346 | SoftRelu |
| CSEEM | delta_elv | 922.565 | 0.00972 | 8 | N/A | 310 | Relu |
| CSEEM | delta_elv | 447.296 | 0.00961 | 16 | N/A | 354 | Tanh |
| CSEEM | delta_elv | 817.189 | 0.00964 | 16 | N/A | 288 | SoftRelu |
| CSEEM | delta_elv | 509.962 | 0.0097 | 16 | N/A | 287 | Relu |
| CSEEM | delta_elv | 222.361 | 0.00964 | 32 | N/A | 329 | Tanh |
| CSEEM | delta_elv | 27.59 | 0.00956 | 32 | N/A | 341 | SoftRelu |
| CSEEM | delta_elv | 279.321 | 0.00962 | 32 | N/A | 348 | Relu |
| RMSprop | delta_elv | 59.09 | 1.72e+04 | N/A | 1000 | 1000 | Tanh |
| RMSprop | delta_elv | 890.729 | 4.34e+03 | N/A | 1000 | 354 | Tanh |
| RMSprop | delta_elv | 13.0 | 4.57e+04 | N/A | 1000 | 1000 | SoftRelu |
| RMSprop | delta_elv | 46.046 | 1.45e+04 | N/A | 1000 | 288 | SoftRelu |
| RMSprop | delta_elv | 751.073 | 1.35e+04 | N/A | 1000 | 1000 | Relu |
| RMSprop | delta_elv | 383.494 | 1.06e+04 | N/A | 1000 | 287 | Relu |
| SGD | delta_elv | 2.123 | nan | N/A | 1000 | 1000 | Tanh |
| SGD | delta_elv | 245.302 | nan | N/A | 1000 | 354 | Tanh |
| SGD | delta_elv | 900.209 | nan | N/A | 1000 | 1000 | SoftRelu |
| SGD | delta_elv | 845.529 | nan | N/A | 1000 | 288 | SoftRelu |
| SGD | delta_elv | 183.227 | nan | N/A | 1000 | 1000 | Relu |
| SGD | delta_elv | 36.61 | nan | N/A | 1000 | 287 | Relu |
| Adadelta | diabetes | 439.093 | 0.565 | N/A | 1000 | 1000 | Tanh |
| Adadelta | diabetes | 183.249 | 1.42 | N/A | 1000 | 6 | Tanh |

Table C.15: All Results of regression problems (15/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|--------|---------|----------|---------|-------|--------|-----|---------------|
| Adadelta | diabetes | 528.429 | 0.475 | N/A | 1000 | 1000 | SoftRelu |
| Adadelta | diabetes | 263.794 | 0.141 | N/A | 1000 | 5 | SoftRelu |
| Adadelta | diabetes | 352.925 | 0.933 | N/A | 1000 | 1000 | Relu |
| Adadelta | diabetes | 320.351 | 3.92 | N/A | 1000 | 4 | Relu |
| Adagrad | diabetes | 401.786 | 0.032 | N/A | 1000 | 1000 | Tanh |
| Adagrad | diabetes | 153.863 | 0.619 | N/A | 1000 | 6 | Tanh |
| Adagrad | diabetes | 504.859 | 0.0154 | N/A | 1000 | 1000 | SoftRelu |
| Adagrad | diabetes | 240.904 | 0.566 | N/A | 1000 | 5 | SoftRelu |
| Adagrad | diabetes | 335.305 | 0.0879 | N/A | 1000 | 1000 | Relu |
| Adagrad | diabetes | 263.584 | 0.537 | N/A | 1000 | 4 | Relu |
| Adam | diabetes | 405.703 | 0.00992 | N/A | 1000 | 1000 | Tanh |
| Adam | diabetes | 193.517 | 0.0158 | N/A | 1000 | 6 | Tanh |
| Adam | diabetes | 567.142 | 0.0107 | N/A | 1000 | 1000 | SoftRelu |
| Adam | diabetes | 277.897 | 0.071 | N/A | 1000 | 5 | SoftRelu |
| Adam | diabetes | 392.236 | 0.00837 | N/A | 1000 | 1000 | Relu |
| Adam | diabetes | 346.009 | 0.0704 | N/A | 1000 | 4 | Relu |
| CSEEM | diabetes | 0.0 | 0.0711 | 8 | N/A | 6 | Tanh |
| CSEEM | diabetes | 0.0 | 0.0684 | 8 | N/A | 5 | SoftRelu |
| CSEEM | diabetes | 0.0 | 0.0698 | 8 | N/A | 6 | Relu |
| CSEEM | diabetes | 13.002 | 0.0653 | 16 | N/A | 6 | Tanh |
| CSEEM | diabetes | 15.021 | 0.0698 | 16 | N/A | 5 | SoftRelu |
| CSEEM | diabetes | 7.995 | 0.078 | 16 | N/A | 4 | Relu |
| CSEEM | diabetes | 31.26 | 0.0677 | 32 | N/A | 4 | Tanh |
| CSEEM | diabetes | 15.636 | 0.0685 | 32 | N/A | 4 | SoftRelu |
| CSEEM | diabetes | 42.771 | 0.0742 | 32 | N/A | 3 | Relu |
| RMSprop | diabetes | 422.958 | 0.0128 | N/A | 1000 | 1000 | Tanh |
| RMSprop | diabetes | 220.128 | 0.0103 | N/A | 1000 | 6 | Tanh |
| RMSprop | diabetes | 564.987 | 0.0143 | N/A | 1000 | 1000 | SoftRelu |

Table C.16: All Results of regression problems (16/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|---|---|---|---|---|---|---|---|
| RMSprop | diabetes | 303.733 | 0.013 | N/A | 1000 | 5 | SoftRelu |
| RMSprop | diabetes | 571.997 | 0.0146 | N/A | 1000 | 1000 | Relu |
| RMSprop | diabetes | 328.771 | 0.557 | N/A | 1000 | 4 | Relu |
| SGD | diabetes | 299.273 | 0.0156 | N/A | 1000 | 1000 | Tanh |
| SGD | diabetes | 150.197 | 0.0146 | N/A | 1000 | 6 | Tanh |
| SGD | diabetes | 492.662 | 0.0136 | N/A | 1000 | 1000 | SoftRelu |
| SGD | diabetes | 228.086 | 0.0821 | N/A | 1000 | 5 | SoftRelu |
| SGD | diabetes | 304.848 | 0.0706 | N/A | 1000 | 1000 | Relu |
| SGD | diabetes | 246.089 | 0.0718 | N/A | 1000 | 4 | Relu |
| Adadelta | ele-1 | 939.693 | 0.999 | N/A | 1000 | 1000 | Tanh |
| Adadelta | ele-1 | 287.837 | 0.999 | N/A | 1000 | 51 | Tanh |
| Adadelta | ele-1 | 592.55 | 1.01 | N/A | 1000 | 1000 | SoftRelu |
| Adadelta | ele-1 | 483.125 | 1.01 | N/A | 1000 | 65 | SoftRelu |
| Adadelta | ele-1 | 83.823 | 0.997 | N/A | 1000 | 1000 | Relu |
| Adadelta | ele-1 | 423.924 | 1.03 | N/A | 1000 | 71 | Relu |
| Adagrad | ele-1 | 904.679 | 0.998 | N/A | 1000 | 1000 | Tanh |
| Adagrad | ele-1 | 246.79 | 0.999 | N/A | 1000 | 51 | Tanh |
| Adagrad | ele-1 | 536.034 | 0.367 | N/A | 1000 | 1000 | SoftRelu |
| Adagrad | ele-1 | 444.651 | 0.834 | N/A | 1000 | 65 | SoftRelu |
| Adagrad | ele-1 | 72.869 | 0.316 | N/A | 1000 | 1000 | Relu |
| Adagrad | ele-1 | 396.967 | 0.716 | N/A | 1000 | 71 | Relu |
| Adam | ele-1 | 990.965 | 0.471 | N/A | 1000 | 1000 | Tanh |
| Adam | ele-1 | 293.802 | 0.958 | N/A | 1000 | 51 | Tanh |
| Adam | ele-1 | 498.209 | 0.0847 | N/A | 1000 | 1000 | SoftRelu |
| Adam | ele-1 | 484.599 | 0.0943 | N/A | 1000 | 65 | SoftRelu |
| Adam | ele-1 | 143.624 | 0.0959 | N/A | 1000 | 1000 | Relu |
| Adam | ele-1 | 453.383 | 0.104 | N/A | 1000 | 71 | Relu |
| CSEEM | ele-1 | 81.637 | 0.0656 | 8 | N/A | 50 | Tanh |

Table C.17: All Results of regression problems (17/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|--------|---------|----------|---------|-------|--------|-----|---------------|
| CSEEM | ele-1 | 147.138 | 0.0625 | 8 | N/A | 61 | SoftRelu |
| CSEEM | ele-1 | 31.252 | 0.0678 | 8 | N/A | 57 | Relu |
| CSEEM | ele-1 | 209.992 | 0.0656 | 16 | N/A | 51 | Tanh |
| CSEEM | ele-1 | 280.992 | 0.0613 | 16 | N/A | 65 | SoftRelu |
| CSEEM | ele-1 | 504.988 | 0.061 | 16 | N/A | 71 | Relu |
| CSEEM | ele-1 | 617.211 | 0.0618 | 32 | N/A | 58 | Tanh |
| CSEEM | ele-1 | 432.307 | 0.0654 | 32 | N/A | 48 | SoftRelu |
| CSEEM | ele-1 | 554.566 | 0.0628 | 32 | N/A | 62 | Relu |
| RMSprop | ele-1 | 660.001 | 0.416 | N/A | 1000 | 1000 | Tanh |
| RMSprop | ele-1 | 298.159 | 0.957 | N/A | 1000 | 51 | Tanh |
| RMSprop | ele-1 | 268.256 | 0.0865 | N/A | 1000 | 1000 | SoftRelu |
| RMSprop | ele-1 | 491.015 | 0.0906 | N/A | 1000 | 65 | SoftRelu |
| RMSprop | ele-1 | 27.913 | 0.0888 | N/A | 1000 | 1000 | Relu |
| RMSprop | ele-1 | 440.118 | 0.0933 | N/A | 1000 | 71 | Relu |
| SGD | ele-1 | 917.573 | 0.99 | N/A | 1000 | 1000 | Tanh |
| SGD | ele-1 | 235.05 | 0.999 | N/A | 1000 | 51 | Tanh |
| SGD | ele-1 | 498.767 | 0.119 | N/A | 1000 | 1000 | SoftRelu |
| SGD | ele-1 | 439.043 | 0.119 | N/A | 1000 | 65 | SoftRelu |
| SGD | ele-1 | 49.196 | 0.118 | N/A | 1000 | 1000 | Relu |
| SGD | ele-1 | 433.139 | 0.115 | N/A | 1000 | 71 | Relu |
| Adadelta | ele-2 | 271.524 | 1 | N/A | 1000 | 1000 | Tanh |
| Adadelta | ele-2 | 292.047 | 1 | N/A | 1000 | 16 | Tanh |
| Adadelta | ele-2 | 215.25 | 0.997 | N/A | 1000 | 1000 | SoftRelu |
| Adadelta | ele-2 | 459.647 | 0.999 | N/A | 1000 | 23 | SoftRelu |
| Adadelta | ele-2 | 389.743 | 0.996 | N/A | 1000 | 1000 | Relu |
| Adadelta | ele-2 | 522.692 | 0.997 | N/A | 1000 | 42 | Relu |
| Adagrad | ele-2 | 246.392 | 0.999 | N/A | 1000 | 1000 | Tanh |
| Adagrad | ele-2 | 269.355 | 1 | N/A | 1000 | 16 | Tanh |

Table C.18: All Results of regression problems (18/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|---|---|---|---|---|---|---|---|
| Adagrad | ele-2 | 243.739 | 0.991 | N/A | 1000 | 1000 | SoftRelu |
| Adagrad | ele-2 | 444.471 | 0.997 | N/A | 1000 | 23 | SoftRelu |
| Adagrad | ele-2 | 324.108 | 0.987 | N/A | 1000 | 1000 | Relu |
| Adagrad | ele-2 | 477.427 | 0.985 | N/A | 1000 | 42 | Relu |
| Adam | ele-2 | 299.955 | 0.604 | N/A | 1000 | 1000 | Tanh |
| Adam | ele-2 | 294.581 | 0.989 | N/A | 1000 | 16 | Tanh |
| Adam | ele-2 | 284.762 | 0.00446 | N/A | 1000 | 1000 | SoftRelu |
| Adam | ele-2 | 491.442 | 0.0549 | N/A | 1000 | 23 | SoftRelu |
| Adam | ele-2 | 339.076 | 0.00447 | N/A | 1000 | 1000 | Relu |
| Adam | ele-2 | 518.896 | 0.0211 | N/A | 1000 | 42 | Relu |
| CSEEM | ele-2 | 502.605 | 0.00301 | 8 | N/A | 59 | Tanh |
| CSEEM | ele-2 | 208.043 | 0.00206 | 8 | N/A | 27 | SoftRelu |
| CSEEM | ele-2 | 933.636 | 0.0048 | 8 | N/A | 16 | Relu |
| CSEEM | ele-2 | 971.993 | 0.0053 | 16 | N/A | 16 | Tanh |
| CSEEM | ele-2 | 247.0 | 0.00221 | 16 | N/A | 23 | SoftRelu |
| CSEEM | ele-2 | 533.993 | 0.00199 | 16 | N/A | 42 | Relu |
| CSEEM | ele-2 | 42.453 | 0.00311 | 32 | N/A | 61 | Tanh |
| CSEEM | ele-2 | 286.549 | 0.00202 | 32 | N/A | 20 | SoftRelu |
| CSEEM | ele-2 | 874.619 | 0.00179 | 32 | N/A | 38 | Relu |
| RMSprop | ele-2 | 127.519 | 0.575 | N/A | 1000 | 1000 | Tanh |
| RMSprop | ele-2 | 301.362 | 0.989 | N/A | 1000 | 16 | Tanh |
| RMSprop | ele-2 | 446.062 | 0.00421 | N/A | 1000 | 1000 | SoftRelu |
| RMSprop | ele-2 | 489.118 | 0.284 | N/A | 1000 | 23 | SoftRelu |
| RMSprop | ele-2 | 495.46 | 0.00409 | N/A | 1000 | 1000 | Relu |
| RMSprop | ele-2 | 548.427 | 0.0154 | N/A | 1000 | 42 | Relu |
| SGD | ele-2 | 281.914 | 0.997 | N/A | 1000 | 1000 | Tanh |
| SGD | ele-2 | 228.47 | 1 | N/A | 1000 | 16 | Tanh |
| SGD | ele-2 | 182.376 | 0.965 | N/A | 1000 | 1000 | SoftRelu |

Table C.19: All Results of regression problems (19/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|---|---|---|---|---|---|---|---|
| SGD | ele-2 | 437.407 | 0.95 | N/A | 1000 | 23 | SoftRelu |
| SGD | ele-2 | 291.231 | 0.966 | N/A | 1000 | 1000 | Relu |
| SGD | ele-2 | 458.739 | 0.969 | N/A | 1000 | 42 | Relu |
| Adadelta | forestFires | 96.75 | 0.985 | N/A | 1000 | 1000 | Tanh |
| Adadelta | forestFires | 447.982 | 0.986 | N/A | 1000 | 238 | Tanh |
| Adadelta | forestFires | 686.592 | 0.96 | N/A | 1000 | 1000 | SoftRelu |
| Adadelta | forestFires | 103.018 | 0.956 | N/A | 1000 | 307 | SoftRelu |
| Adadelta | forestFires | 327.751 | 0.956 | N/A | 1000 | 1000 | Relu |
| Adadelta | forestFires | 700.422 | 0.968 | N/A | 1000 | 283 | Relu |
| Adagrad | forestFires | 72.739 | 0.958 | N/A | 1000 | 1000 | Tanh |
| Adagrad | forestFires | 413.496 | 0.975 | N/A | 1000 | 238 | Tanh |
| Adagrad | forestFires | 564.158 | 0.95 | N/A | 1000 | 1000 | SoftRelu |
| Adagrad | forestFires | 80.462 | 0.949 | N/A | 1000 | 307 | SoftRelu |
| Adagrad | forestFires | 381.049 | 0.951 | N/A | 1000 | 1000 | Relu |
| Adagrad | forestFires | 670.159 | 0.953 | N/A | 1000 | 283 | Relu |
| Adam | forestFires | 146.89 | 0.621 | N/A | 1000 | 1000 | Tanh |
| Adam | forestFires | 477.596 | 0.862 | N/A | 1000 | 238 | Tanh |
| Adam | forestFires | 673.251 | 0.717 | N/A | 1000 | 1000 | SoftRelu |
| Adam | forestFires | 131.228 | 0.758 | N/A | 1000 | 307 | SoftRelu |
| Adam | forestFires | 504.732 | 0.789 | N/A | 1000 | 1000 | Relu |
| Adam | forestFires | 742.554 | 0.839 | N/A | 1000 | 283 | Relu |
| CSEEM | forestFires | 437.177 | 0.46 | 8 | N/A | 283 | Tanh |
| CSEEM | forestFires | 548.188 | 0.509 | 8 | N/A | 260 | SoftRelu |
| CSEEM | forestFires | 417.389 | 0.552 | 8 | N/A | 240 | Relu |
| CSEEM | forestFires | 977.998 | 0.468 | 16 | N/A | 238 | Tanh |
| CSEEM | forestFires | 904.15 | 0.432 | 16 | N/A | 307 | SoftRelu |
| CSEEM | forestFires | 515.993 | 0.465 | 16 | N/A | 283 | Relu |
| CSEEM | forestFires | 817.481 | 0.516 | 32 | N/A | 259 | Tanh |

Table C.20: All Results of regression problems (20/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|---|---|---|---|---|---|---|---|
| CSEEM | forestFires | 795.832 | 0.485 | 32 | N/A | 292 | SoftRelu |
| CSEEM | forestFires | 239.29 | 0.481 | 32 | N/A | 267 | Relu |
| RMSprop | forestFires | 863.075 | 0.867 | N/A | 1000 | 1000 | Tanh |
| RMSprop | forestFires | 506.898 | 0.902 | N/A | 1000 | 238 | Tanh |
| RMSprop | forestFires | 500.986 | 0.926 | N/A | 1000 | 1000 | SoftRelu |
| RMSprop | forestFires | 227.296 | 0.93 | N/A | 1000 | 307 | SoftRelu |
| RMSprop | forestFires | 247.001 | 0.925 | N/A | 1000 | 1000 | Relu |
| RMSprop | forestFires | 755.492 | 0.933 | N/A | 1000 | 283 | Relu |
| SGD | forestFires | 304.208 | 0.953 | N/A | 1000 | 1000 | Tanh |
| SGD | forestFires | 391.875 | 0.963 | N/A | 1000 | 238 | Tanh |
| SGD | forestFires | 633.612 | 0.949 | N/A | 1000 | 1000 | SoftRelu |
| SGD | forestFires | 112.015 | 0.951 | N/A | 1000 | 307 | SoftRelu |
| SGD | forestFires | 410.785 | 0.951 | N/A | 1000 | 1000 | Relu |
| SGD | forestFires | 620.352 | 0.953 | N/A | 1000 | 283 | Relu |
| Adadelta | friedman | 629.831 | 0.963 | N/A | 1000 | 1000 | Tanh |
| Adadelta | friedman | 416.55 | 0.965 | N/A | 1000 | 88 | Tanh |
| Adadelta | friedman | 534.004 | 0.894 | N/A | 1000 | 1000 | SoftRelu |
| Adadelta | friedman | 670.04 | 1.02 | N/A | 1000 | 57 | SoftRelu |
| Adadelta | friedman | 938.906 | 0.981 | N/A | 1000 | 1000 | Relu |
| Adadelta | friedman | 543.583 | 0.945 | N/A | 1000 | 43 | Relu |
| Adagrad | friedman | 552.468 | 0.668 | N/A | 1000 | 1000 | Tanh |
| Adagrad | friedman | 388.216 | 0.773 | N/A | 1000 | 88 | Tanh |
| Adagrad | friedman | 480.245 | 0.112 | N/A | 1000 | 1000 | SoftRelu |
| Adagrad | friedman | 645.943 | 0.69 | N/A | 1000 | 57 | SoftRelu |
| Adagrad | friedman | 831.787 | 0.834 | N/A | 1000 | 1000 | Relu |
| Adagrad | friedman | 554.841 | 0.894 | N/A | 1000 | 43 | Relu |
| Adam | friedman | 585.692 | 0.0301 | N/A | 1000 | 1000 | Tanh |
| Adam | friedman | 437.075 | 0.0345 | N/A | 1000 | 88 | Tanh |

Table C.21: All Results of regression problems (21/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|--------|---------|----------|---------|-------|--------|-----|---------------|
| Adam | friedman | 571.693 | 0.0306 | N/A | 1000 | 1000 | SoftRelu |
| Adam | friedman | 697.18 | 0.0463 | N/A | 1000 | 57 | SoftRelu |
| Adam | friedman | 6.496 | 0.0139 | N/A | 1000 | 1000 | Relu |
| Adam | friedman | 600.207 | 0.0306 | N/A | 1000 | 43 | Relu |
| CSEEM | friedman | 1.079 | 0.0106 | 8 | N/A | 97 | Tanh |
| CSEEM | friedman | 827.581 | 0.00768 | 8 | N/A | 58 | SoftRelu |
| CSEEM | friedman | 664.092 | 0.0087 | 8 | N/A | 60 | Relu |
| CSEEM | friedman | 338.0 | 0.00975 | 16 | N/A | 88 | Tanh |
| CSEEM | friedman | 675.001 | 0.00902 | 16 | N/A | 57 | SoftRelu |
| CSEEM | friedman | 383.0 | 0.0102 | 16 | N/A | 43 | Relu |
| CSEEM | friedman | 981.206 | 0.0152 | 32 | N/A | 66 | Tanh |
| CSEEM | friedman | 4.125 | 0.00766 | 32 | N/A | 61 | SoftRelu |
| CSEEM | friedman | 259.218 | 0.00848 | 32 | N/A | 68 | Relu |
| RMSprop | friedman | 581.002 | 0.0303 | N/A | 1000 | 1000 | Tanh |
| RMSprop | friedman | 442.235 | 0.0268 | N/A | 1000 | 88 | Tanh |
| RMSprop | friedman | 486.306 | 0.0307 | N/A | 1000 | 1000 | SoftRelu |
| RMSprop | friedman | 698.304 | 0.0296 | N/A | 1000 | 57 | SoftRelu |
| RMSprop | friedman | 676.135 | 0.0126 | N/A | 1000 | 1000 | Relu |
| RMSprop | friedman | 570.272 | 0.03 | N/A | 1000 | 43 | Relu |
| SGD | friedman | 556.561 | 0.0945 | N/A | 1000 | 1000 | Tanh |
| SGD | friedman | 367.327 | 0.142 | N/A | 1000 | 88 | Tanh |
| SGD | friedman | 491.9 | 0.11 | N/A | 1000 | 1000 | SoftRelu |
| SGD | friedman | 650.806 | 0.0951 | N/A | 1000 | 57 | SoftRelu |
| SGD | friedman | 820.297 | 0.168 | N/A | 1000 | 1000 | Relu |
| SGD | friedman | 487.743 | 0.148 | N/A | 1000 | 43 | Relu |
| Adadelta | laser | 125.498 | 0.96 | N/A | 1000 | 1000 | Tanh |
| Adadelta | laser | 354.269 | 1.01 | N/A | 1000 | 61 | Tanh |
| Adadelta | laser | 483.052 | 0.722 | N/A | 1000 | 1000 | SoftRelu |

Table C.22: All Results of regression problems (22/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|--------|---------|----------|---------|-------|--------|-----|---------------|
| Adadelta | laser | 481.831 | 1.09 | N/A | 1000 | 37 | SoftRelu |
| Adadelta | laser | 196.527 | 0.849 | N/A | 1000 | 1000 | Relu |
| Adadelta | laser | 546.712 | 0.967 | N/A | 1000 | 68 | Relu |
| Adagrad | laser | 940.676 | 0.417 | N/A | 1000 | 1000 | Tanh |
| Adagrad | laser | 334.915 | 0.911 | N/A | 1000 | 61 | Tanh |
| Adagrad | laser | 475.875 | 0.117 | N/A | 1000 | 1000 | SoftRelu |
| Adagrad | laser | 483.187 | 0.248 | N/A | 1000 | 37 | SoftRelu |
| Adagrad | laser | 75.43 | 0.116 | N/A | 1000 | 1000 | Relu |
| Adagrad | laser | 534.586 | 0.324 | N/A | 1000 | 68 | Relu |
| Adam | laser | 32.503 | 0.00399 | N/A | 1000 | 1000 | Tanh |
| Adam | laser | 370.848 | 0.279 | N/A | 1000 | 61 | Tanh |
| Adam | laser | 643.204 | 0.00317 | N/A | 1000 | 1000 | SoftRelu |
| Adam | laser | 492.444 | 0.0201 | N/A | 1000 | 37 | SoftRelu |
| Adam | laser | 72.033 | 0.00351 | N/A | 1000 | 1000 | Relu |
| Adam | laser | 563.951 | 0.0253 | N/A | 1000 | 68 | Relu |
| CSEEM | laser | 332.043 | 0.00525 | 8 | N/A | 68 | Tanh |
| CSEEM | laser | 114.394 | 0.00431 | 8 | N/A | 46 | SoftRelu |
| CSEEM | laser | 200.53 | 0.00696 | 8 | N/A | 44 | Relu |
| CSEEM | laser | 804.999 | 0.00478 | 16 | N/A | 61 | Tanh |
| CSEEM | laser | 763.001 | 0.0049 | 16 | N/A | 37 | SoftRelu |
| CSEEM | laser | 48.999 | 0.00575 | 16 | N/A | 68 | Relu |
| CSEEM | laser | 619.271 | 0.00714 | 32 | N/A | 52 | Tanh |
| CSEEM | laser | 541.31 | 0.00417 | 32 | N/A | 42 | SoftRelu |
| CSEEM | laser | 36.556 | 0.00471 | 32 | N/A | 53 | Relu |
| RMSprop | laser | 55.0 | 0.005 | N/A | 1000 | 1000 | Tanh |
| RMSprop | laser | 384.484 | 0.218 | N/A | 1000 | 61 | Tanh |
| RMSprop | laser | 736.21 | 0.0135 | N/A | 1000 | 1000 | SoftRelu |
| RMSprop | laser | 519.626 | 0.0216 | N/A | 1000 | 37 | SoftRelu |

Table C.23: All Results of regression problems (23/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|---|---|---|---|---|---|---|---|
| RMSprop | laser | 990.539 | 0.013 | N/A | 1000 | 1000 | Relu |
| RMSprop | laser | 570.383 | 0.0115 | N/A | 1000 | 68 | Relu |
| SGD | laser | 12.438 | 0.167 | N/A | 1000 | 1000 | Tanh |
| SGD | laser | 331.698 | 0.776 | N/A | 1000 | 61 | Tanh |
| SGD | laser | 487.488 | 0.0845 | N/A | 1000 | 1000 | SoftRelu |
| SGD | laser | 455.047 | 0.0884 | N/A | 1000 | 37 | SoftRelu |
| SGD | laser | 97.3 | 0.0808 | N/A | 1000 | 1000 | Relu |
| SGD | laser | 512.537 | 0.08 | N/A | 1000 | 68 | Relu |
| Adadelta | machineCPU | 557.816 | 0.996 | N/A | 1000 | 1000 | Tanh |
| Adadelta | machineCPU | 244.497 | 1.01 | N/A | 1000 | 35 | Tanh |
| Adadelta | machineCPU | 99.42 | 0.156 | N/A | 1000 | 1000 | SoftRelu |
| Adadelta | machineCPU | 294.568 | 27.4 | N/A | 1000 | 29 | SoftRelu |
| Adadelta | machineCPU | 821.031 | 0.158 | N/A | 1000 | 1000 | Relu |
| Adadelta | machineCPU | 377.543 | 0.513 | N/A | 1000 | 21 | Relu |
| Adagrad | machineCPU | 601.659 | 0.911 | N/A | 1000 | 1000 | Tanh |
| Adagrad | machineCPU | 190.486 | 0.993 | N/A | 1000 | 35 | Tanh |
| Adagrad | machineCPU | 63.853 | 0.107 | N/A | 1000 | 1000 | SoftRelu |
| Adagrad | machineCPU | 273.649 | 0.43 | N/A | 1000 | 29 | SoftRelu |
| Adagrad | machineCPU | 803.313 | 0.103 | N/A | 1000 | 1000 | Relu |
| Adagrad | machineCPU | 317.104 | 16.3 | N/A | 1000 | 21 | Relu |
| Adam | machineCPU | 595.447 | 0.467 | N/A | 1000 | 1000 | Tanh |
| Adam | machineCPU | 240.933 | 0.839 | N/A | 1000 | 35 | Tanh |
| Adam | machineCPU | 126.071 | 0.0206 | N/A | 1000 | 1000 | SoftRelu |
| Adam | machineCPU | 325.101 | 0.101 | N/A | 1000 | 29 | SoftRelu |
| Adam | machineCPU | 866.083 | 0.0268 | N/A | 1000 | 1000 | Relu |
| Adam | machineCPU | 386.834 | 0.0881 | N/A | 1000 | 21 | Relu |
| CSEEM | machineCPU | 77.523 | 0.048 | 8 | N/A | 45 | Tanh |
| CSEEM | machineCPU | 31.256 | 0.0318 | 8 | N/A | 26 | SoftRelu |

Table C.24: All Results of regression problems (24/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|--------|---------|----------|---------|-------|--------|-----|--------------|
| CSEEM | machineCPU | 37.765 | 0.0356 | 8 | N/A | 25 | Relu |
| CSEEM | machineCPU | 112.0 | 0.0622 | 16 | N/A | 35 | Tanh |
| CSEEM | machineCPU | 64.0 | 0.0311 | 16 | N/A | 29 | SoftRelu |
| CSEEM | machineCPU | 65.99 | 0.0327 | 16 | N/A | 21 | Relu |
| CSEEM | machineCPU | 162.76 | 0.0713 | 32 | N/A | 41 | Tanh |
| CSEEM | machineCPU | 79.639 | 0.0318 | 32 | N/A | 25 | SoftRelu |
| CSEEM | machineCPU | 46.874 | 0.0307 | 32 | N/A | 25 | Relu |
| RMSprop | machineCPU | 692.984 | 0.573 | N/A | 1000 | 1000 | Tanh |
| RMSprop | machineCPU | 259.797 | 0.831 | N/A | 1000 | 35 | Tanh |
| RMSprop | machineCPU | 200.31 | 0.858 | N/A | 1000 | 1000 | SoftRelu |
| RMSprop | machineCPU | 319.207 | 0.183 | N/A | 1000 | 29 | SoftRelu |
| RMSprop | machineCPU | 851.675 | 0.886 | N/A | 1000 | 1000 | Relu |
| RMSprop | machineCPU | 339.983 | 0.147 | N/A | 1000 | 21 | Relu |
| SGD | machineCPU | 512.623 | 0.802 | N/A | 1000 | 1000 | Tanh |
| SGD | machineCPU | 179.677 | 0.99 | N/A | 1000 | 35 | Tanh |
| SGD | machineCPU | 54.538 | 1 | N/A | 1000 | 1000 | SoftRelu |
| SGD | machineCPU | 266.691 | 0.999 | N/A | 1000 | 29 | SoftRelu |
| SGD | machineCPU | 632.027 | 1 | N/A | 1000 | 1000 | Relu |
| SGD | machineCPU | 276.822 | 0.999 | N/A | 1000 | 21 | Relu |
| Adadelta | mortgage | 269.322 | 0.287 | N/A | 1000 | 1000 | Tanh |
| Adadelta | mortgage | 453.351 | 0.901 | N/A | 1000 | 108 | Tanh |
| Adadelta | mortgage | 214.234 | 0.128 | N/A | 1000 | 1000 | SoftRelu |
| Adadelta | mortgage | 570.224 | 143 | N/A | 1000 | 46 | SoftRelu |
| Adadelta | mortgage | 548.688 | 0.0971 | N/A | 1000 | 1000 | Relu |
| Adadelta | mortgage | 669.399 | 1.52e+04 | N/A | 1000 | 60 | Relu |
| Adagrad | mortgage | 275.585 | 0.032 | N/A | 1000 | 1000 | Tanh |
| Adagrad | mortgage | 597.637 | 0.269 | N/A | 1000 | 108 | Tanh |
| Adagrad | mortgage | 230.256 | 0.0204 | N/A | 1000 | 1000 | SoftRelu |

Table C.25: All Results of regression problems (25/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|--------|---------|----------|---------|-------|--------|-----|---------------|
| Adagrad | mortgage | 548.51 | 67.4 | N/A | 1000 | 46 | SoftRelu |
| Adagrad | mortgage | 573.59 | 0.0181 | N/A | 1000 | 1000 | Relu |
| Adagrad | mortgage | 615.562 | 16.8 | N/A | 1000 | 60 | Relu |
| Adam | mortgage | 324.567 | 0.0064 | N/A | 1000 | 1000 | Tanh |
| Adam | mortgage | 643.082 | 0.143 | N/A | 1000 | 108 | Tanh |
| Adam | mortgage | 207.231 | 0.0314 | N/A | 1000 | 1000 | SoftRelu |
| Adam | mortgage | 592.401 | 0.369 | N/A | 1000 | 46 | SoftRelu |
| Adam | mortgage | 674.998 | 0.00577 | N/A | 1000 | 1000 | Relu |
| Adam | mortgage | 721.049 | 0.12 | N/A | 1000 | 60 | Relu |
| CSEEM | mortgage | 654.988 | 0.0124 | 8 | N/A | 76 | Tanh |
| CSEEM | mortgage | 385.439 | 0.0045 | 8 | N/A | 57 | SoftRelu |
| CSEEM | mortgage | 200.537 | 0.00327 | 8 | N/A | 85 | Relu |
| CSEEM | mortgage | 41.0 | 0.00821 | 16 | N/A | 108 | Tanh |
| CSEEM | mortgage | 565.002 | 0.00698 | 16 | N/A | 46 | SoftRelu |
| CSEEM | mortgage | 564.993 | 0.00525 | 16 | N/A | 60 | Relu |
| CSEEM | mortgage | 621.556 | 0.0123 | 32 | N/A | 83 | Tanh |
| CSEEM | mortgage | 292.156 | 0.00544 | 32 | N/A | 64 | SoftRelu |
| CSEEM | mortgage | 644.662 | 0.00407 | 32 | N/A | 62 | Relu |
| RMSprop | mortgage | 204.351 | 0.0392 | N/A | 1000 | 1000 | Tanh |
| RMSprop | mortgage | 460.909 | 0.028 | N/A | 1000 | 108 | Tanh |
| RMSprop | mortgage | 426.001 | 10.5 | N/A | 1000 | 1000 | SoftRelu |
| RMSprop | mortgage | 627.163 | 8.25 | N/A | 1000 | 46 | SoftRelu |
| RMSprop | mortgage | 413.526 | 10.5 | N/A | 1000 | 1000 | Relu |
| RMSprop | mortgage | 596.679 | 19.7 | N/A | 1000 | 60 | Relu |
| SGD | mortgage | 109.322 | 0.0857 | N/A | 1000 | 1000 | Tanh |
| SGD | mortgage | 412.113 | 0.121 | N/A | 1000 | 108 | Tanh |
| SGD | mortgage | 234.369 | nan | N/A | 1000 | 1000 | SoftRelu |
| SGD | mortgage | 541.382 | nan | N/A | 1000 | 46 | SoftRelu |

Table C.26: All Results of regression problems (26/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|---|---|---|---|---|---|---|---|
| SGD | mortgage | 542.111 | 1.23e+17 | N/A | 1000 | 1000 | Relu |
| SGD | mortgage | 822.228 | 1.07e+09 | N/A | 1000 | 60 | Relu |
| Adadelta | plastic | 62.52 | 0.518 | N/A | 1000 | 1000 | Tanh |
| Adadelta | plastic | 366.974 | 1.23 | N/A | 1000 | 40 | Tanh |
| Adadelta | plastic | 884.943 | 0.0946 | N/A | 1000 | 1000 | SoftRelu |
| Adadelta | plastic | 716.124 | 0.0538 | N/A | 1000 | 51 | SoftRelu |
| Adadelta | plastic | 47.917 | 0.0646 | N/A | 1000 | 1000 | Relu |
| Adadelta | plastic | 652.172 | 13.5 | N/A | 1000 | 52 | Relu |
| Adagrad | plastic | 942.068 | 0.0357 | N/A | 1000 | 1000 | Tanh |
| Adagrad | plastic | 342.732 | 0.839 | N/A | 1000 | 40 | Tanh |
| Adagrad | plastic | 910.874 | 0.0223 | N/A | 1000 | 1000 | SoftRelu |
| Adagrad | plastic | 695.843 | 0.0273 | N/A | 1000 | 51 | SoftRelu |
| Adagrad | plastic | 43.568 | 0.0345 | N/A | 1000 | 1000 | Relu |
| Adagrad | plastic | 625.602 | 0.0541 | N/A | 1000 | 52 | Relu |
| Adam | plastic | 959.979 | 0.0102 | N/A | 1000 | 1000 | Tanh |
| Adam | plastic | 384.567 | 0.0376 | N/A | 1000 | 40 | Tanh |
| Adam | plastic | 11.599 | 0.00968 | N/A | 1000 | 1000 | SoftRelu |
| Adam | plastic | 717.769 | 0.00989 | N/A | 1000 | 51 | SoftRelu |
| Adam | plastic | 161.855 | 0.00978 | N/A | 1000 | 1000 | Relu |
| Adam | plastic | 652.972 | 0.0322 | N/A | 1000 | 52 | Relu |
| CSEEM | plastic | 182.907 | 0.0578 | 8 | N/A | 51 | Tanh |
| CSEEM | plastic | 536.806 | 0.0578 | 8 | N/A | 54 | SoftRelu |
| CSEEM | plastic | 200.536 | 0.0579 | 8 | N/A | 29 | Relu |
| CSEEM | plastic | 459.992 | 0.0578 | 16 | N/A | 40 | Tanh |
| CSEEM | plastic | 688.999 | 0.0578 | 16 | N/A | 51 | SoftRelu |
| CSEEM | plastic | 571.007 | 0.0578 | 16 | N/A | 52 | Relu |
| CSEEM | plastic | 970.745 | 0.0578 | 32 | N/A | 43 | Tanh |
| CSEEM | plastic | 155.273 | 0.0578 | 32 | N/A | 48 | SoftRelu |

Table C.27: All Results of regression problems (27/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|--------|---------|----------|---------|-------|--------|-----|---------------|
| CSEEM | plastic | 857.008 | 0.0577 | 32 | N/A | 82 | Relu |
| RMSprop | plastic | 683.623 | 0.022 | N/A | 1000 | 1000 | Tanh |
| RMSprop | plastic | 387.363 | 0.0327 | N/A | 1000 | 40 | Tanh |
| RMSprop | plastic | 778.535 | 0.0452 | N/A | 1000 | 1000 | SoftRelu |
| RMSprop | plastic | 724.225 | 0.0154 | N/A | 1000 | 51 | SoftRelu |
| RMSprop | plastic | 403.006 | 0.0419 | N/A | 1000 | 1000 | Relu |
| RMSprop | plastic | 704.611 | 0.0135 | N/A | 1000 | 52 | Relu |
| SGD | plastic | 916.114 | 0.0271 | N/A | 1000 | 1000 | Tanh |
| SGD | plastic | 346.235 | 0.0449 | N/A | 1000 | 40 | Tanh |
| SGD | plastic | 573.086 | 0.0284 | N/A | 1000 | 1000 | SoftRelu |
| SGD | plastic | 720.811 | 0.0625 | N/A | 1000 | 51 | SoftRelu |
| SGD | plastic | 50.759 | 0.0631 | N/A | 1000 | 1000 | Relu |
| SGD | plastic | 612.391 | 0.855 | N/A | 1000 | 52 | Relu |
| Adadelta | puma32h | 185.441 | 237 | N/A | 1000 | 1000 | Tanh |
| Adadelta | puma32h | 860.175 | 358 | N/A | 1000 | 1089 | Tanh |
| Adadelta | puma32h | 352.293 | 961 | N/A | 1000 | 1000 | SoftRelu |
| Adadelta | puma32h | 771.284 | 104 | N/A | 1000 | 1308 | SoftRelu |
| Adadelta | puma32h | 70.412 | 407 | N/A | 1000 | 1000 | Relu |
| Adadelta | puma32h | 444.939 | 607 | N/A | 1000 | 1310 | Relu |
| Adagrad | puma32h | 31.63 | 4.12 | N/A | 1000 | 1000 | Tanh |
| Adagrad | puma32h | 668.944 | 4.6 | N/A | 1000 | 1089 | Tanh |
| Adagrad | puma32h | 792.782 | 15.1 | N/A | 1000 | 1000 | SoftRelu |
| Adagrad | puma32h | 992.182 | 8.64 | N/A | 1000 | 1308 | SoftRelu |
| Adagrad | puma32h | 201.041 | 22.1 | N/A | 1000 | 1000 | Relu |
| Adagrad | puma32h | 490.276 | 14.6 | N/A | 1000 | 1310 | Relu |
| Adam | puma32h | 165.137 | 0.0356 | N/A | 1000 | 1000 | Tanh |
| Adam | puma32h | 860.1 | 0.0543 | N/A | 1000 | 1089 | Tanh |
| Adam | puma32h | 863.278 | 1.89 | N/A | 1000 | 1000 | SoftRelu |

Table C.28: All Results of regression problems (28/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|---|---|---|---|---|---|---|---|
| Adam | puma32h | 685.677 | 1.94 | N/A | 1000 | 1308 | SoftRelu |
| Adam | puma32h | 226.344 | 2.27 | N/A | 1000 | 1000 | Relu |
| Adam | puma32h | 833.567 | 1.21 | N/A | 1000 | 1310 | Relu |
| CSEEM | puma32h | 661.805 | 0.0702 | 8 | N/A | 1023 | Tanh |
| CSEEM | puma32h | 15.73 | 0.0729 | 8 | N/A | 1029 | SoftRelu |
| CSEEM | puma32h | 717.498 | 0.0809 | 8 | N/A | 337 | Relu |
| CSEEM | puma32h | 720.688 | 0.0692 | 16 | N/A | 1089 | Tanh |
| CSEEM | puma32h | 517.031 | 0.0686 | 16 | N/A | 1308 | SoftRelu |
| CSEEM | puma32h | 801.747 | 0.0697 | 16 | N/A | 1310 | Relu |
| CSEEM | puma32h | 518.541 | 0.066 | 32 | N/A | 1293 | Tanh |
| CSEEM | puma32h | 919.079 | 0.0697 | 32 | N/A | 1292 | SoftRelu |
| CSEEM | puma32h | 757.061 | 0.0715 | 32 | N/A | 1104 | Relu |
| RMSprop | puma32h | 912.058 | 113 | N/A | 1000 | 1000 | Tanh |
| RMSprop | puma32h | 998.778 | 47.1 | N/A | 1000 | 1089 | Tanh |
| RMSprop | puma32h | 783.179 | 1.15e+03 | N/A | 1000 | 1000 | SoftRelu |
| RMSprop | puma32h | 974.898 | 952 | N/A | 1000 | 1308 | SoftRelu |
| RMSprop | puma32h | 39.129 | 947 | N/A | 1000 | 1000 | Relu |
| RMSprop | puma32h | 922.732 | 789 | N/A | 1000 | 1310 | Relu |
| SGD | puma32h | 133.768 | nan | N/A | 1000 | 1000 | Tanh |
| SGD | puma32h | 717.063 | nan | N/A | 1000 | 1089 | Tanh |
| SGD | puma32h | 331.971 | nan | N/A | 1000 | 1000 | SoftRelu |
| SGD | puma32h | 539.738 | nan | N/A | 1000 | 1308 | SoftRelu |
| SGD | puma32h | 63.225 | nan | N/A | 1000 | 1000 | Relu |
| SGD | puma32h | 777.541 | nan | N/A | 1000 | 1310 | Relu |
| Adadelta | quake | 530.767 | 0.544 | N/A | 1000 | 1000 | Tanh |
| Adadelta | quake | 277.047 | 0.732 | N/A | 1000 | 791 | Tanh |
| Adadelta | quake | 170.634 | 0.0849 | N/A | 1000 | 1000 | SoftRelu |
| Adadelta | quake | 202.687 | 0.154 | N/A | 1000 | 698 | SoftRelu |

Table C.29: All Results of regression problems (29/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|---|---|---|---|---|---|---|---|
| Adadelta | quake | 538.458 | 0.159 | N/A | 1000 | 1000 | Relu |
| Adadelta | quake | 293.266 | 0.134 | N/A | 1000 | 748 | Relu |
| Adagrad | quake | 529.857 | 0.0547 | N/A | 1000 | 1000 | Tanh |
| Adagrad | quake | 242.226 | 0.058 | N/A | 1000 | 791 | Tanh |
| Adagrad | quake | 83.864 | 0.0281 | N/A | 1000 | 1000 | SoftRelu |
| Adagrad | quake | 130.379 | 0.0401 | N/A | 1000 | 698 | SoftRelu |
| Adagrad | quake | 467.35 | 0.0478 | N/A | 1000 | 1000 | Relu |
| Adagrad | quake | 262.515 | 0.0468 | N/A | 1000 | 748 | Relu |
| Adam | quake | 592.701 | 0.000951 | N/A | 1000 | 1000 | Tanh |
| Adam | quake | 526.639 | 0.000972 | N/A | 1000 | 791 | Tanh |
| Adam | quake | 150.67 | 0.00161 | N/A | 1000 | 1000 | SoftRelu |
| Adam | quake | 243.936 | 0.00292 | N/A | 1000 | 698 | SoftRelu |
| Adam | quake | 555.85 | 0.00135 | N/A | 1000 | 1000 | Relu |
| Adam | quake | 455.83 | 0.00138 | N/A | 1000 | 748 | Relu |
| CSEEM | quake | 93.043 | 0.315 | 8 | N/A | 812 | Tanh |
| CSEEM | quake | 269.546 | 0.458 | 8 | N/A | 258 | SoftRelu |
| CSEEM | quake | 137.971 | 0.42 | 8 | N/A | 409 | Relu |
| CSEEM | quake | 27.176 | 0.316 | 16 | N/A | 791 | Tanh |
| CSEEM | quake | 718.195 | 0.348 | 16 | N/A | 698 | SoftRelu |
| CSEEM | quake | 213.142 | 0.342 | 16 | N/A | 748 | Relu |
| CSEEM | quake | 569.674 | 0.314 | 32 | N/A | 814 | Tanh |
| CSEEM | quake | 284.25 | 0.342 | 32 | N/A | 709 | SoftRelu |
| CSEEM | quake | 459.34 | 0.365 | 32 | N/A | 640 | Relu |
| RMSprop | quake | 41.023 | 0.00586 | N/A | 1000 | 1000 | Tanh |
| RMSprop | quake | 292.607 | 0.00458 | N/A | 1000 | 791 | Tanh |
| RMSprop | quake | 803.229 | 0.0777 | N/A | 1000 | 1000 | SoftRelu |
| RMSprop | quake | 277.296 | 0.0835 | N/A | 1000 | 698 | SoftRelu |
| RMSprop | quake | 275.002 | 0.108 | N/A | 1000 | 1000 | Relu |

Table C.30: All Results of regression problems (30/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|---|---|---|---|---|---|---|---|
| RMSprop | quake | 302.385 | 0.141 | N/A | 1000 | 748 | Relu |
| SGD | quake | 608.183 | 0.0321 | N/A | 1000 | 1000 | Tanh |
| SGD | quake | 205.479 | 0.0314 | N/A | 1000 | 791 | Tanh |
| SGD | quake | 83.827 | nan | N/A | 1000 | 1000 | SoftRelu |
| SGD | quake | 167.72 | nan | N/A | 1000 | 698 | SoftRelu |
| SGD | quake | 451.274 | nan | N/A | 1000 | 1000 | Relu |
| SGD | quake | 232.797 | nan | N/A | 1000 | 748 | Relu |
| Adadelta | stock | 995.278 | 0.703 | N/A | 1000 | 1000 | Tanh |
| Adadelta | stock | 421.362 | 0.94 | N/A | 1000 | 80 | Tanh |
| Adadelta | stock | 600.118 | 0.285 | N/A | 1000 | 1000 | SoftRelu |
| Adadelta | stock | 572.101 | 1.32 | N/A | 1000 | 49 | SoftRelu |
| Adadelta | stock | 959.455 | 0.392 | N/A | 1000 | 1000 | Relu |
| Adadelta | stock | 560.29 | 0.719 | N/A | 1000 | 51 | Relu |
| Adagrad | stock | 990.648 | 0.0326 | N/A | 1000 | 1000 | Tanh |
| Adagrad | stock | 410.531 | 0.786 | N/A | 1000 | 80 | Tanh |
| Adagrad | stock | 550.146 | 0.00927 | N/A | 1000 | 1000 | SoftRelu |
| Adagrad | stock | 544.343 | 0.0228 | N/A | 1000 | 49 | SoftRelu |
| Adagrad | stock | 970.584 | 0.00732 | N/A | 1000 | 1000 | Relu |
| Adagrad | stock | 542.908 | 0.0108 | N/A | 1000 | 51 | Relu |
| Adam | stock | 55.912 | 0.00106 | N/A | 1000 | 1000 | Tanh |
| Adam | stock | 477.697 | 0.0183 | N/A | 1000 | 80 | Tanh |
| Adam | stock | 679.636 | 0.000712 | N/A | 1000 | 1000 | SoftRelu |
| Adam | stock | 586.804 | 0.00081 | N/A | 1000 | 49 | SoftRelu |
| Adam | stock | 119.529 | 0.0012 | N/A | 1000 | 1000 | Relu |
| Adam | stock | 575.55 | 0.00798 | N/A | 1000 | 51 | Relu |
| CSEEM | stock | 393.431 | 0.0134 | 8 | N/A | 49 | Tanh |
| CSEEM | stock | 544.21 | 0.00629 | 8 | N/A | 53 | SoftRelu |
| CSEEM | stock | 234.792 | 0.00637 | 8 | N/A | 71 | Relu |

Table C.31: All Results of regression problems (31/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|--------|---------|----------|---------|-------|--------|-----|----------------|
| CSEEM | stock | 735.992 | 0.00843 | 16 | N/A | 80 | Tanh |
| CSEEM | stock | 762.251 | 0.00582 | 16 | N/A | 49 | SoftRelu |
| CSEEM | stock | 399.963 | 0.00722 | 16 | N/A | 51 | Relu |
| CSEEM | stock | 89.699 | 0.0076 | 32 | N/A | 71 | Tanh |
| CSEEM | stock | 30.018 | 0.00571 | 32 | N/A | 56 | SoftRelu |
| CSEEM | stock | 488.063 | 0.00653 | 32 | N/A | 56 | Relu |
| RMSprop | stock | 816.009 | 0.00204 | N/A | 1000 | 1000 | Tanh |
| RMSprop | stock | 464.226 | 0.00223 | N/A | 1000 | 80 | Tanh |
| RMSprop | stock | 610.938 | 0.0041 | N/A | 1000 | 1000 | SoftRelu |
| RMSprop | stock | 597.616 | 0.00178 | N/A | 1000 | 49 | SoftRelu |
| RMSprop | stock | 904.063 | 0.00378 | N/A | 1000 | 1000 | Relu |
| RMSprop | stock | 603.446 | 0.00309 | N/A | 1000 | 51 | Relu |
| SGD | stock | 957.117 | 0.0108 | N/A | 1000 | 1000 | Tanh |
| SGD | stock | 417.454 | 0.24 | N/A | 1000 | 80 | Tanh |
| SGD | stock | 690.868 | 0.00408 | N/A | 1000 | 1000 | SoftRelu |
| SGD | stock | 585.146 | 0.00649 | N/A | 1000 | 49 | SoftRelu |
| SGD | stock | 942.149 | 0.00415 | N/A | 1000 | 1000 | Relu |
| SGD | stock | 506.709 | 0.00731 | N/A | 1000 | 51 | Relu |
| Adadelta | tic | 610.062 | 1.11 | N/A | 1000 | 1000 | Tanh |
| Adadelta | tic | 630.957 | 0.941 | N/A | 1000 | 5121 | Tanh |
| Adadelta | tic | 699.311 | 3.31 | N/A | 1000 | 1000 | SoftRelu |
| Adadelta | tic | 882.953 | 0.925 | N/A | 1000 | 5205 | SoftRelu |
| Adadelta | tic | 216.353 | 1.53 | N/A | 1000 | 1000 | Relu |
| Adadelta | tic | 472.501 | 0.886 | N/A | 1000 | 5252 | Relu |
| Adagrad | tic | 355.192 | 0.929 | N/A | 1000 | 1000 | Tanh |
| Adagrad | tic | 221.843 | 0.894 | N/A | 1000 | 5121 | Tanh |
| Adagrad | tic | 132.933 | 0.921 | N/A | 1000 | 1000 | SoftRelu |
| Adagrad | tic | 74.651 | 0.888 | N/A | 1000 | 5205 | SoftRelu |

Table C.32: All Results of regression problems (32/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|--------|---------|----------|---------|-------|--------|-----|---------------|
| Adagrad | tic | 85.509 | 0.876 | N/A | 1000 | 1000 | Relu |
| Adagrad | tic | 27.802 | 0.82 | N/A | 1000 | 5252 | Relu |
| Adam | tic | 810.0 | 0.724 | N/A | 1000 | 1000 | Tanh |
| Adam | tic | 346.204 | 0.834 | N/A | 1000 | 5121 | Tanh |
| Adam | tic | 795.521 | 0.797 | N/A | 1000 | 1000 | SoftRelu |
| Adam | tic | 153.882 | 0.845 | N/A | 1000 | 5205 | SoftRelu |
| Adam | tic | 354.768 | 0.474 | N/A | 1000 | 1000 | Relu |
| Adam | tic | 737.73 | 0.641 | N/A | 1000 | 5252 | Relu |
| CSEEM | tic | 778.013 | 0.547 | 8 | N/A | 3637 | Tanh |
| CSEEM | tic | 917.98 | 0.447 | 8 | N/A | 4516 | SoftRelu |
| CSEEM | tic | 909.831 | 0.366 | 8 | N/A | 5390 | Relu |
| CSEEM | tic | 535.471 | 0.397 | 16 | N/A | 5121 | Tanh |
| CSEEM | tic | 290.455 | 0.392 | 16 | N/A | 5205 | SoftRelu |
| CSEEM | tic | 120.634 | 0.376 | 16 | N/A | 5252 | Relu |
| CSEEM | tic | 576.248 | 0.385 | 32 | N/A | 5332 | Tanh |
| CSEEM | tic | 235.13 | 0.384 | 32 | N/A | 5150 | SoftRelu |
| CSEEM | tic | 36.241 | 0.349 | 32 | N/A | 5574 | Relu |
| RMSprop | tic | 266.567 | 2.5 | N/A | 1000 | 1000 | Tanh |
| RMSprop | tic | 659.235 | 0.942 | N/A | 1000 | 5121 | Tanh |
| RMSprop | tic | 336.622 | 0.944 | N/A | 1000 | 1000 | SoftRelu |
| RMSprop | tic | 821.07 | 0.933 | N/A | 1000 | 5205 | SoftRelu |
| RMSprop | tic | 991.001 | 0.701 | N/A | 1000 | 1000 | Relu |
| RMSprop | tic | 166.795 | 0.394 | N/A | 1000 | 5252 | Relu |
| SGD | tic | 568.325 | nan | N/A | 1000 | 1000 | Tanh |
| SGD | tic | 232.608 | nan | N/A | 1000 | 5121 | Tanh |
| SGD | tic | 472.179 | 1.8 | N/A | 1000 | 1000 | SoftRelu |
| SGD | tic | 705.805 | 41.9 | N/A | 1000 | 5205 | SoftRelu |
| SGD | tic | 664.804 | 0.94 | N/A | 1000 | 1000 | Relu |

Table C.33: All Results of regression problems (33/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|---|---|---|---|---|---|---|---|
| SGD | tic | 935.567 | 0.94 | N/A | 1000 | 5252 | Relu |
| Adadelta | treasury | 446.725 | 0.144 | N/A | 1000 | 1000 | Tanh |
| Adadelta | treasury | 427.736 | 0.944 | N/A | 1000 | 79 | Tanh |
| Adadelta | treasury | 517.184 | 0.562 | N/A | 1000 | 1000 | SoftRelu |
| Adadelta | treasury | 803.981 | 82.1 | N/A | 1000 | 63 | SoftRelu |
| Adadelta | treasury | 474.988 | 0.0693 | N/A | 1000 | 1000 | Relu |
| Adadelta | treasury | 540.176 | 809 | N/A | 1000 | 57 | Relu |
| Adagrad | treasury | 123.599 | 0.0439 | N/A | 1000 | 1000 | Tanh |
| Adagrad | treasury | 408.25 | 0.214 | N/A | 1000 | 79 | Tanh |
| Adagrad | treasury | 526.494 | 0.0221 | N/A | 1000 | 1000 | SoftRelu |
| Adagrad | treasury | 747.748 | 15.4 | N/A | 1000 | 63 | SoftRelu |
| Adagrad | treasury | 429.688 | 0.0774 | N/A | 1000 | 1000 | Relu |
| Adagrad | treasury | 517.076 | 2.4 | N/A | 1000 | 57 | Relu |
| Adam | treasury | 299.426 | 0.00802 | N/A | 1000 | 1000 | Tanh |
| Adam | treasury | 479.655 | 0.167 | N/A | 1000 | 79 | Tanh |
| Adam | treasury | 821.831 | 0.00204 | N/A | 1000 | 1000 | SoftRelu |
| Adam | treasury | 816.022 | 0.0238 | N/A | 1000 | 63 | SoftRelu |
| Adam | treasury | 473.317 | 0.00586 | N/A | 1000 | 1000 | Relu |
| Adam | treasury | 596.848 | 0.127 | N/A | 1000 | 57 | Relu |
| CSEEM | treasury | 641.83 | 0.0173 | 8 | N/A | 79 | Tanh |
| CSEEM | treasury | 620.351 | 0.00478 | 8 | N/A | 72 | SoftRelu |
| CSEEM | treasury | 369.811 | 0.00745 | 8 | N/A | 54 | Relu |
| CSEEM | treasury | 832.095 | 0.0172 | 16 | N/A | 79 | Tanh |
| CSEEM | treasury | 850.001 | 0.00491 | 16 | N/A | 63 | SoftRelu |
| CSEEM | treasury | 29.017 | 0.00613 | 16 | N/A | 57 | Relu |
| CSEEM | treasury | 79.681 | 0.0147 | 32 | N/A | 86 | Tanh |
| CSEEM | treasury | 771.689 | 0.00497 | 32 | N/A | 62 | SoftRelu |
| CSEEM | treasury | 39.192 | 0.00555 | 32 | N/A | 66 | Relu |

Table C.34: All Results of regression problems (34/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|---|---|---|---|---|---|---|---|
| RMSprop | treasury | 190.424 | 0.0236 | N/A | 1000 | 1000 | Tanh |
| RMSprop | treasury | 472.317 | 0.0793 | N/A | 1000 | 79 | Tanh |
| RMSprop | treasury | 629.408 | 11 | N/A | 1000 | 1000 | SoftRelu |
| RMSprop | treasury | 778.347 | 12.6 | N/A | 1000 | 63 | SoftRelu |
| RMSprop | treasury | 881.363 | 8.05 | N/A | 1000 | 1000 | Relu |
| RMSprop | treasury | 558.557 | 7.55 | N/A | 1000 | 57 | Relu |
| SGD | treasury | 176.637 | 0.0781 | N/A | 1000 | 1000 | Tanh |
| SGD | treasury | 392.899 | 0.168 | N/A | 1000 | 79 | Tanh |
| SGD | treasury | 616.599 | nan | N/A | 1000 | 1000 | SoftRelu |
| SGD | treasury | 737.838 | nan | N/A | 1000 | 63 | SoftRelu |
| SGD | treasury | 434.291 | 1.18e+05 | N/A | 1000 | 1000 | Relu |
| SGD | treasury | 492.176 | 1.09e+08 | N/A | 1000 | 57 | Relu |
| Adadelta | wankara | 919.105 | 0.803 | N/A | 1000 | 1000 | Tanh |
| Adadelta | wankara | 485.424 | 1.04 | N/A | 1000 | 77 | Tanh |
| Adadelta | wankara | 595.845 | 0.538 | N/A | 1000 | 1000 | SoftRelu |
| Adadelta | wankara | 837.571 | 2.44 | N/A | 1000 | 49 | SoftRelu |
| Adadelta | wankara | 713.959 | 0.517 | N/A | 1000 | 1000 | Relu |
| Adadelta | wankara | 614.823 | 0.423 | N/A | 1000 | 53 | Relu |
| Adagrad | wankara | 915.609 | 0.0903 | N/A | 1000 | 1000 | Tanh |
| Adagrad | wankara | 448.56 | 0.777 | N/A | 1000 | 77 | Tanh |
| Adagrad | wankara | 563.489 | 0.00365 | N/A | 1000 | 1000 | SoftRelu |
| Adagrad | wankara | 788.45 | 0.166 | N/A | 1000 | 49 | SoftRelu |
| Adagrad | wankara | 721.172 | 0.00277 | N/A | 1000 | 1000 | Relu |
| Adagrad | wankara | 593.818 | 0.00458 | N/A | 1000 | 53 | Relu |
| Adam | wankara | 874.141 | 0.000513 | N/A | 1000 | 1000 | Tanh |
| Adam | wankara | 494.674 | 0.0328 | N/A | 1000 | 77 | Tanh |
| Adam | wankara | 618.983 | 0.000721 | N/A | 1000 | 1000 | SoftRelu |
| Adam | wankara | 859.795 | 0.000734 | N/A | 1000 | 49 | SoftRelu |

Table C.35: All Results of regression problems (35/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|--------|---------|----------|---------|-------|--------|-----|---------------|
| Adam | wankara | 731.399 | 0.000683 | N/A | 1000 | 1000 | Relu |
| Adam | wankara | 649.16 | 0.000937 | N/A | 1000 | 53 | Relu |
| CSEEM | wankara | 26.552 | 0.00487 | 8 | N/A | 76 | Tanh |
| CSEEM | wankara | 833.121 | 0.00103 | 8 | N/A | 43 | SoftRelu |
| CSEEM | wankara | 230.992 | 0.00128 | 8 | N/A | 56 | Relu |
| CSEEM | wankara | 178.002 | 0.00486 | 16 | N/A | 77 | Tanh |
| CSEEM | wankara | 471.011 | 0.00104 | 16 | N/A | 49 | SoftRelu |
| CSEEM | wankara | 118.055 | 0.00133 | 16 | N/A | 53 | Relu |
| CSEEM | wankara | 654.514 | 0.00437 | 32 | N/A | 61 | Tanh |
| CSEEM | wankara | 799.99 | 0.00092 | 32 | N/A | 50 | SoftRelu |
| CSEEM | wankara | 91.207 | 0.00135 | 32 | N/A | 42 | Relu |
| RMSprop | wankara | 566.225 | 0.00171 | N/A | 1000 | 1000 | Tanh |
| RMSprop | wankara | 492.9 | 0.000933 | N/A | 1000 | 77 | Tanh |
| RMSprop | wankara | 660.005 | 0.00182 | N/A | 1000 | 1000 | SoftRelu |
| RMSprop | wankara | 147.127 | 0.000914 | N/A | 1000 | 49 | SoftRelu |
| RMSprop | wankara | 832.006 | 0.00189 | N/A | 1000 | 1000 | Relu |
| RMSprop | wankara | 659.805 | 0.000916 | N/A | 1000 | 53 | Relu |
| SGD | wankara | 872.884 | 0.0143 | N/A | 1000 | 1000 | Tanh |
| SGD | wankara | 429.078 | 0.35 | N/A | 1000 | 77 | Tanh |
| SGD | wankara | 470.225 | 0.00125 | N/A | 1000 | 1000 | SoftRelu |
| SGD | wankara | 765.419 | 0.00122 | N/A | 1000 | 49 | SoftRelu |
| SGD | wankara | 695.536 | 0.00115 | N/A | 1000 | 1000 | Relu |
| SGD | wankara | 592.206 | 0.00119 | N/A | 1000 | 53 | Relu |
| Adadelta | wizmir | 388.028 | 0.846 | N/A | 1000 | 1000 | Tanh |
| Adadelta | wizmir | 406.854 | 0.969 | N/A | 1000 | 41 | Tanh |
| Adadelta | wizmir | 418.72 | 0.611 | N/A | 1000 | 1000 | SoftRelu |
| Adadelta | wizmir | 882.086 | 1.64 | N/A | 1000 | 45 | SoftRelu |
| Adadelta | wizmir | 974.198 | 0.579 | N/A | 1000 | 1000 | Relu |

Table C.36: All Results of regression problems (36/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|---|---|---|---|---|---|---|---|
| Adadelta | wizmir | 554.476 | 0.701 | N/A | 1000 | 48 | Relu |
| Adagrad | wizmir | 416.425 | 0.122 | N/A | 1000 | 1000 | Tanh |
| Adagrad | wizmir | 382.71 | 0.895 | N/A | 1000 | 41 | Tanh |
| Adagrad | wizmir | 291.821 | 0.00245 | N/A | 1000 | 1000 | SoftRelu |
| Adagrad | wizmir | 942.846 | 0.0656 | N/A | 1000 | 45 | SoftRelu |
| Adagrad | wizmir | 971.915 | 0.00261 | N/A | 1000 | 1000 | Relu |
| Adagrad | wizmir | 531.085 | 0.00185 | N/A | 1000 | 48 | Relu |
| Adam | wizmir | 583.663 | 0.000313 | N/A | 1000 | 1000 | Tanh |
| Adam | wizmir | 434.257 | 0.187 | N/A | 1000 | 41 | Tanh |
| Adam | wizmir | 279.064 | 0.000353 | N/A | 1000 | 1000 | SoftRelu |
| Adam | wizmir | 809.111 | 0.000417 | N/A | 1000 | 45 | SoftRelu |
| Adam | wizmir | 150.801 | 0.000351 | N/A | 1000 | 1000 | Relu |
| Adam | wizmir | 568.403 | 0.000602 | N/A | 1000 | 48 | Relu |
| CSEEM | wizmir | 897.604 | 0.0054 | 8 | N/A | 66 | Tanh |
| CSEEM | wizmir | 43.266 | 0.00141 | 8 | N/A | 48 | SoftRelu |
| CSEEM | wizmir | 752.414 | 0.00243 | 8 | N/A | 44 | Relu |
| CSEEM | wizmir | 766.0 | 0.00589 | 16 | N/A | 41 | Tanh |
| CSEEM | wizmir | 462.0 | 0.00131 | 16 | N/A | 45 | SoftRelu |
| CSEEM | wizmir | 858.232 | 0.00172 | 16 | N/A | 48 | Relu |
| CSEEM | wizmir | 491.232 | 0.00583 | 32 | N/A | 63 | Tanh |
| CSEEM | wizmir | 98.88 | 0.00134 | 32 | N/A | 39 | SoftRelu |
| CSEEM | wizmir | 732.425 | 0.00201 | 32 | N/A | 48 | Relu |
| RMSprop | wizmir | 207.009 | 0.00153 | N/A | 1000 | 1000 | Tanh |
| RMSprop | wizmir | 435.168 | 0.143 | N/A | 1000 | 41 | Tanh |
| RMSprop | wizmir | 506.215 | 0.00135 | N/A | 1000 | 1000 | SoftRelu |
| RMSprop | wizmir | 801.235 | 0.000644 | N/A | 1000 | 45 | SoftRelu |
| RMSprop | wizmir | 662.242 | 0.00144 | N/A | 1000 | 1000 | Relu |
| RMSprop | wizmir | 551.858 | 0.000552 | N/A | 1000 | 48 | Relu |

Table C.37: All Results of Regression problems (37/37).

| Method | Dataset | Time (s) | N. Loss | $n_c$ | epochs | $k$ | $\phi(\cdot)$ |
|--------|---------|----------|---------|-------|--------|-----|---------------|
| SGD | wizmir | 342.419 | 0.0221 | N/A | 1000 | 1000 | Tanh |
| SGD | wizmir | 356.456 | 0.621 | N/A | 1000 | 41 | Tanh |
| SGD | wizmir | 141.377 | 0.000805 | N/A | 1000 | 1000 | SoftRelu |
| SGD | wizmir | 748.675 | 0.00172 | N/A | 1000 | 45 | SoftRelu |
| SGD | wizmir | 937.574 | 0.000754 | N/A | 1000 | 1000 | Relu |
| SGD | wizmir | 505.77 | 0.000672 | N/A | 1000 | 48 | Relu |

# Appendix D

# All Classification Results

Table D.1: All CSEEM Results of classification problems (1/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|---|---|---|---|---|---|---|---|---|
| Adadelta | appendicitis | 688.281 | 0.717 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | appendicitis | 362.11 | 0.396 | N/A | 1000 | 30 | Tanh | SoftMax |
| Adadelta | appendicitis | 134.738 | 0.604 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | appendicitis | 422.857 | 0.302 | N/A | 1000 | 16 | SoftRelu | SoftMax |
| Adadelta | appendicitis | 622.394 | 0.547 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | appendicitis | 321.524 | 0.462 | N/A | 1000 | 31 | Relu | SoftMax |
| Adagrad | appendicitis | 634.95 | 0.604 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | appendicitis | 316.466 | 0.547 | N/A | 1000 | 30 | Tanh | SoftMax |
| Adagrad | appendicitis | 60.333 | 0.689 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | appendicitis | 376.155 | 0.67 | N/A | 1000 | 16 | SoftRelu | SoftMax |
| Adagrad | appendicitis | 617.16 | 0.462 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | appendicitis | 291.807 | 0.642 | N/A | 1000 | 31 | Relu | SoftMax |
| Adam | appendicitis | 748.706 | 0.896 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | appendicitis | 415.213 | 0.858 | N/A | 1000 | 30 | Tanh | SoftMax |
| Adam | appendicitis | 156.512 | 0.896 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | appendicitis | 425.13 | 0.849 | N/A | 1000 | 16 | SoftRelu | SoftMax |
| Adam | appendicitis | 664.578 | 0.877 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | appendicitis | 360.788 | 0.868 | N/A | 1000 | 31 | Relu | SoftMax |
| CSEEM | appendicitis | 9.001 | 0.943 | 8 | N/A | 25 | Tanh | ClipRound |
| CSEEM | appendicitis | 7.0 | 0.915 | 8 | N/A | 15 | SoftRelu | ClipRound |
| CSEEM | appendicitis | 8.0 | 0.934 | 8 | N/A | 22 | Relu | ClipRound |
| CSEEM | appendicitis | 18.999 | 0.934 | 16 | N/A | 30 | Tanh | ClipRound |
| CSEEM | appendicitis | 22.992 | 0.915 | 16 | N/A | 16 | SoftRelu | ClipRound |
| CSEEM | appendicitis | 18.986 | 0.934 | 16 | N/A | 31 | Relu | ClipRound |
| CSEEM | appendicitis | 42.001 | 0.915 | 32 | N/A | 21 | Tanh | ClipRound |
| CSEEM | appendicitis | 53.998 | 0.925 | 32 | N/A | 23 | SoftRelu | ClipRound |
| CSEEM | appendicitis | 50.001 | 0.934 | 32 | N/A | 27 | Relu | ClipRound |
| RMSprop | appendicitis | 675.062 | 0.896 | N/A | 1000 | 1000 | Tanh | SoftMax |

Table D.2: All CSEEM Results of classification problems (2/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|--------|---------|----------|----------|-------|--------|-----|---------------|-----------------|
| RMSprop | appendicitis | 398.897 | 0.849 | N/A | 1000 | 30 | Tanh | SoftMax |
| RMSprop | appendicitis | 186.009 | 0.887 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | appendicitis | 472.313 | 0.868 | N/A | 1000 | 16 | SoftRelu | SoftMax |
| RMSprop | appendicitis | 789.009 | 0.868 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | appendicitis | 372.883 | 0.887 | N/A | 1000 | 31 | Relu | SoftMax |
| SGD | appendicitis | 658.238 | 0.66 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | appendicitis | 287.478 | 0.575 | N/A | 1000 | 30 | Tanh | SoftMax |
| SGD | appendicitis | 72.593 | 0.33 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | appendicitis | 351.872 | 0.368 | N/A | 1000 | 16 | SoftRelu | SoftMax |
| SGD | appendicitis | 589.557 | 0.566 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | appendicitis | 267.528 | 0.745 | N/A | 1000 | 31 | Relu | SoftMax |
| Adadelta | australian | 705.465 | 0.651 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | australian | 701.643 | 0.454 | N/A | 1000 | 196 | Tanh | SoftMax |
| Adadelta | australian | 738.584 | 0.555 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | australian | 433.879 | 0.555 | N/A | 1000 | 156 | SoftRelu | SoftMax |
| Adadelta | australian | 948.147 | 0.555 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | australian | 746.04 | 0.555 | N/A | 1000 | 141 | Relu | SoftMax |
| Adagrad | australian | 861.577 | 0.606 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | australian | 684.285 | 0.483 | N/A | 1000 | 196 | Tanh | SoftMax |
| Adagrad | australian | 873.111 | 0.555 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | australian | 121.762 | 0.555 | N/A | 1000 | 156 | SoftRelu | SoftMax |
| Adagrad | australian | 17.991 | 0.555 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | australian | 727.84 | 0.555 | N/A | 1000 | 141 | Relu | SoftMax |
| Adam | australian | 737.256 | 0.619 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | australian | 749.67 | 0.71 | N/A | 1000 | 196 | Tanh | SoftMax |
| Adam | australian | 901.272 | 0.555 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | australian | 124.691 | 0.555 | N/A | 1000 | 156 | SoftRelu | SoftMax |
| Adam | australian | 947.962 | 0.555 | N/A | 1000 | 1000 | Relu | SoftMax |

Table D.3: All CSEEM Results of classification problems (3/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|---|---|---|---|---|---|---|---|---|
| Adam | australian | 768.977 | 0.555 | N/A | 1000 | 141 | Relu | SoftMax |
| CSEEM | australian | 507.999 | 0.939 | 8 | N/A | 243 | Tanh | ClipRound |
| CSEEM | australian | 503.999 | 0.919 | 8 | N/A | 157 | SoftRelu | ClipRound |
| CSEEM | australian | 789.0 | 0.938 | 8 | N/A | 246 | Relu | ClipRound |
| CSEEM | australian | 496.999 | 0.932 | 16 | N/A | 196 | Tanh | ClipRound |
| CSEEM | australian | 649.008 | 0.92 | 16 | N/A | 156 | SoftRelu | ClipRound |
| CSEEM | australian | 75.001 | 0.92 | 16 | N/A | 141 | Relu | ClipRound |
| CSEEM | australian | 955.999 | 0.923 | 32 | N/A | 216 | Tanh | ClipRound |
| CSEEM | australian | 664.508 | 0.919 | 32 | N/A | 153 | SoftRelu | ClipRound |
| CSEEM | australian | 893.0 | 0.932 | 32 | N/A | 196 | Relu | ClipRound |
| RMSprop | australian | 441.002 | 0.659 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | australian | 733.814 | 0.691 | N/A | 1000 | 196 | Tanh | SoftMax |
| RMSprop | australian | 793.004 | 0.555 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | australian | 93.431 | 0.555 | N/A | 1000 | 156 | SoftRelu | SoftMax |
| RMSprop | australian | 448.965 | 0.555 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | australian | 755.592 | 0.555 | N/A | 1000 | 141 | Relu | SoftMax |
| SGD | australian | 697.413 | 0.635 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | australian | 690.934 | 0.607 | N/A | 1000 | 196 | Tanh | SoftMax |
| SGD | australian | 824.166 | 0.555 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | australian | 55.561 | 0.555 | N/A | 1000 | 156 | SoftRelu | SoftMax |
| SGD | australian | 820.238 | 0.555 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | australian | 720.132 | 0.555 | N/A | 1000 | 141 | Relu | SoftMax |
| Adadelta | automobile | 943.802 | 0.314 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | automobile | 437.954 | 0.157 | N/A | 1000 | 73 | Tanh | SoftMax |
| Adadelta | automobile | 497.904 | 0.0189 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | automobile | 562.988 | 0.0189 | N/A | 1000 | 60 | SoftRelu | SoftMax |
| Adadelta | automobile | 940.182 | 0.0189 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | automobile | 455.214 | 0.0189 | N/A | 1000 | 71 | Relu | SoftMax |

Table D.4: All CSEEM Results of classification problems (4/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|---|---|---|---|---|---|---|---|---|
| Adagrad | automobile | 844.561 | 0.384 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | automobile | 392.087 | 0.208 | N/A | 1000 | 73 | Tanh | SoftMax |
| Adagrad | automobile | 441.775 | 0.0189 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | automobile | 502.838 | 0.0189 | N/A | 1000 | 60 | SoftRelu | SoftMax |
| Adagrad | automobile | 833.192 | 0.0189 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | automobile | 437.383 | 0.0189 | N/A | 1000 | 71 | Relu | SoftMax |
| Adam | automobile | 917.106 | 0.377 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | automobile | 465.064 | 0.421 | N/A | 1000 | 73 | Tanh | SoftMax |
| Adam | automobile | 548.087 | 0.0189 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | automobile | 546.255 | 0.0189 | N/A | 1000 | 60 | SoftRelu | SoftMax |
| Adam | automobile | 896.388 | 0.0189 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | automobile | 128.812 | 0.0189 | N/A | 1000 | 71 | Relu | SoftMax |
| CSEEM | automobile | 34.998 | 0.931 | 8 | N/A | 82 | Tanh | ClipRound |
| CSEEM | automobile | 19.999 | 0.874 | 8 | N/A | 63 | SoftRelu | ClipRound |
| CSEEM | automobile | 55.0 | 0.881 | 8 | N/A | 65 | Relu | ClipRound |
| CSEEM | automobile | 110.999 | 0.925 | 16 | N/A | 73 | Tanh | ClipRound |
| CSEEM | automobile | 109.006 | 0.868 | 16 | N/A | 60 | SoftRelu | ClipRound |
| CSEEM | automobile | 120.998 | 0.943 | 16 | N/A | 71 | Relu | ClipRound |
| CSEEM | automobile | 420.0 | 0.906 | 32 | N/A | 66 | Tanh | ClipRound |
| CSEEM | automobile | 145.0 | 0.906 | 32 | N/A | 66 | SoftRelu | ClipRound |
| CSEEM | automobile | 126.0 | 0.855 | 32 | N/A | 57 | Relu | ClipRound |
| RMSprop | automobile | 228.09 | 0.371 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | automobile | 434.806 | 0.277 | N/A | 1000 | 73 | Tanh | SoftMax |
| RMSprop | automobile | 740.405 | 0.0189 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | automobile | 553.702 | 0.0189 | N/A | 1000 | 60 | SoftRelu | SoftMax |
| RMSprop | automobile | 61.239 | 0.0189 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | automobile | 411.475 | 0.0189 | N/A | 1000 | 71 | Relu | SoftMax |
| SGD | automobile | 801.754 | 0.428 | N/A | 1000 | 1000 | Tanh | SoftMax |

Table D.5: All CSEEM Results of classification problems (5/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|---|---|---|---|---|---|---|---|---|
| SGD | automobile | 374.219 | 0.119 | N/A | 1000 | 73 | Tanh | SoftMax |
| SGD | automobile | 537.025 | 0.0189 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | automobile | 476.518 | 0.0189 | N/A | 1000 | 60 | SoftRelu | SoftMax |
| SGD | automobile | 855.266 | 0.0189 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | automobile | 325.923 | 0.0189 | N/A | 1000 | 71 | Relu | SoftMax |
| Adadelta | balance | 380.114 | 0.28 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | balance | 578.008 | 0.418 | N/A | 1000 | 111 | Tanh | SoftMax |
| Adadelta | balance | 949.475 | 0.0848 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | balance | 774.278 | 0.24 | N/A | 1000 | 80 | SoftRelu | SoftMax |
| Adadelta | balance | 500.104 | 0.192 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | balance | 698.647 | 0.43 | N/A | 1000 | 102 | Relu | SoftMax |
| Adagrad | balance | 385.215 | 0.251 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | balance | 576.465 | 0.214 | N/A | 1000 | 111 | Tanh | SoftMax |
| Adagrad | balance | 763.078 | 0.277 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | balance | 753.12 | 0.334 | N/A | 1000 | 80 | SoftRelu | SoftMax |
| Adagrad | balance | 493.985 | 0.275 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | balance | 687.494 | 0.219 | N/A | 1000 | 102 | Relu | SoftMax |
| Adam | balance | 518.133 | 0.878 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | balance | 624.096 | 0.89 | N/A | 1000 | 111 | Tanh | SoftMax |
| Adam | balance | 962.125 | 0.894 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | balance | 786.451 | 0.878 | N/A | 1000 | 80 | SoftRelu | SoftMax |
| Adam | balance | 614.806 | 0.88 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | balance | 746.805 | 0.877 | N/A | 1000 | 102 | Relu | SoftMax |
| CSEEM | balance | 237.0 | 0.906 | 8 | N/A | 88 | Tanh | ClipRound |
| CSEEM | balance | 656.0 | 0.904 | 8 | N/A | 90 | SoftRelu | ClipRound |
| CSEEM | balance | 952.0 | 0.912 | 8 | N/A | 102 | Relu | ClipRound |
| CSEEM | balance | 887.999 | 0.915 | 16 | N/A | 111 | Tanh | ClipRound |
| CSEEM | balance | 148.999 | 0.907 | 16 | N/A | 80 | SoftRelu | ClipRound |

Table D.6: All CSEEM Results of classification problems (6/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|--------|---------|----------|----------|-------|--------|-----|---------------|-----------------|
| CSEEM | balance | 932.986 | 0.915 | 16 | N/A | 102 | Relu | ClipRound |
| CSEEM | balance | 60.999 | 0.915 | 32 | N/A | 123 | Tanh | ClipRound |
| CSEEM | balance | 902.0 | 0.915 | 32 | N/A | 113 | SoftRelu | ClipRound |
| CSEEM | balance | 548.999 | 0.906 | 32 | N/A | 92 | Relu | ClipRound |
| RMSprop | balance | 497.001 | 0.91 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | balance | 586.14 | 0.872 | N/A | 1000 | 111 | Tanh | SoftMax |
| RMSprop | balance | 499.513 | 0.91 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | balance | 802.18 | 0.91 | N/A | 1000 | 80 | SoftRelu | SoftMax |
| RMSprop | balance | 211.168 | 0.891 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | balance | 718.801 | 0.883 | N/A | 1000 | 102 | Relu | SoftMax |
| SGD | balance | 382.976 | 0.448 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | balance | 533.459 | 0.234 | N/A | 1000 | 111 | Tanh | SoftMax |
| SGD | balance | 358.81 | 0.483 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | balance | 771.138 | 0.406 | N/A | 1000 | 80 | SoftRelu | SoftMax |
| SGD | balance | 536.336 | 0.504 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | balance | 654.702 | 0.346 | N/A | 1000 | 102 | Relu | SoftMax |
| Adadelta | bands | 143.732 | 0.627 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | bands | 625.653 | 0.578 | N/A | 1000 | 173 | Tanh | SoftMax |
| Adadelta | bands | 162.996 | 0.638 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | bands | 832.66 | 0.37 | N/A | 1000 | 136 | SoftRelu | SoftMax |
| Adadelta | bands | 736.581 | 0.37 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | bands | 84.329 | 0.37 | N/A | 1000 | 163 | Relu | SoftMax |
| Adagrad | bands | 113.041 | 0.638 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | bands | 584.61 | 0.592 | N/A | 1000 | 173 | Tanh | SoftMax |
| Adagrad | bands | 90.368 | 0.37 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | bands | 824.535 | 0.367 | N/A | 1000 | 136 | SoftRelu | SoftMax |
| Adagrad | bands | 825.147 | 0.367 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | bands | 132.161 | 0.633 | N/A | 1000 | 163 | Relu | SoftMax |

Table D.7: All CSEEM Results of classification problems (7/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|---|---|---|---|---|---|---|---|---|
| Adam | bands | 90.43 | 0.562 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | bands | 619.117 | 0.595 | N/A | 1000 | 173 | Tanh | SoftMax |
| Adam | bands | 150.355 | 0.37 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | bands | 874.457 | 0.37 | N/A | 1000 | 136 | SoftRelu | SoftMax |
| Adam | bands | 713.551 | 0.37 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | bands | 277.732 | 0.37 | N/A | 1000 | 163 | Relu | SoftMax |
| CSEEM | bands | 311.999 | 0.921 | 8 | N/A | 183 | Tanh | ClipRound |
| CSEEM | bands | 233.0 | 0.899 | 8 | N/A | 157 | SoftRelu | ClipRound |
| CSEEM | bands | 106.999 | 0.816 | 8 | N/A | 84 | Relu | ClipRound |
| CSEEM | bands | 350.999 | 0.888 | 16 | N/A | 173 | Tanh | ClipRound |
| CSEEM | bands | 399.0 | 0.879 | 16 | N/A | 136 | SoftRelu | ClipRound |
| CSEEM | bands | 188.004 | 0.901 | 16 | N/A | 163 | Relu | ClipRound |
| CSEEM | bands | 778.999 | 0.866 | 32 | N/A | 127 | Tanh | ClipRound |
| CSEEM | bands | 775.998 | 0.882 | 32 | N/A | 148 | SoftRelu | ClipRound |
| CSEEM | bands | 801.0 | 0.882 | 32 | N/A | 145 | Relu | ClipRound |
| RMSprop | bands | 55.844 | 0.674 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | bands | 637.723 | 0.668 | N/A | 1000 | 173 | Tanh | SoftMax |
| RMSprop | bands | 58.917 | 0.37 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | bands | 864.443 | 0.37 | N/A | 1000 | 136 | SoftRelu | SoftMax |
| RMSprop | bands | 599.164 | 0.37 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | bands | 903.988 | 0.37 | N/A | 1000 | 163 | Relu | SoftMax |
| SGD | bands | 976.18 | 0.66 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | bands | 532.66 | 0.575 | N/A | 1000 | 173 | Tanh | SoftMax |
| SGD | bands | 992.159 | 0.367 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | bands | 823.202 | 0.37 | N/A | 1000 | 136 | SoftRelu | SoftMax |
| SGD | bands | 786.062 | 0.504 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | bands | 857.17 | 0.37 | N/A | 1000 | 163 | Relu | SoftMax |
| Adadelta | breast | 761.316 | 0.473 | N/A | 1000 | 1000 | Tanh | SoftMax |

Table D.8: All CSEEM Results of classification problems (8/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|---|---|---|---|---|---|---|---|---|
| Adadelta | breast | 447.931 | 0.538 | N/A | 1000 | 92 | Tanh | SoftMax |
| Adadelta | breast | 230.174 | 0.534 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | breast | 619.999 | 0.404 | N/A | 1000 | 111 | SoftRelu | SoftMax |
| Adadelta | breast | 243.565 | 0.531 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | breast | 556.236 | 0.419 | N/A | 1000 | 115 | Relu | SoftMax |
| Adagrad | breast | 695.672 | 0.646 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | breast | 420.974 | 0.52 | N/A | 1000 | 92 | Tanh | SoftMax |
| Adagrad | breast | 180.9 | 0.588 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | breast | 609.414 | 0.534 | N/A | 1000 | 111 | SoftRelu | SoftMax |
| Adagrad | breast | 271.848 | 0.574 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | breast | 556.52 | 0.588 | N/A | 1000 | 115 | Relu | SoftMax |
| Adam | breast | 662.486 | 0.704 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | breast | 484.371 | 0.704 | N/A | 1000 | 92 | Tanh | SoftMax |
| Adam | breast | 241.801 | 0.697 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | breast | 708.168 | 0.693 | N/A | 1000 | 111 | SoftRelu | SoftMax |
| Adam | breast | 277.383 | 0.657 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | breast | 585.134 | 0.704 | N/A | 1000 | 115 | Relu | SoftMax |
| CSEEM | breast | 146.999 | 0.877 | 8 | N/A | 95 | Tanh | ClipRound |
| CSEEM | breast | 107.999 | 0.863 | 8 | N/A | 80 | SoftRelu | ClipRound |
| CSEEM | breast | 89.0 | 0.877 | 8 | N/A | 88 | Relu | ClipRound |
| CSEEM | breast | 153.0 | 0.863 | 16 | N/A | 92 | Tanh | ClipRound |
| CSEEM | breast | 400.007 | 0.91 | 16 | N/A | 111 | SoftRelu | ClipRound |
| CSEEM | breast | 301.993 | 0.917 | 16 | N/A | 115 | Relu | ClipRound |
| CSEEM | breast | 431.998 | 0.866 | 32 | N/A | 79 | Tanh | ClipRound |
| CSEEM | breast | 627.999 | 0.895 | 32 | N/A | 102 | SoftRelu | ClipRound |
| CSEEM | breast | 540.0 | 0.877 | 32 | N/A | 84 | Relu | ClipRound |
| RMSprop | breast | 742.738 | 0.704 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | breast | 466.075 | 0.675 | N/A | 1000 | 92 | Tanh | SoftMax |

Table D.9: All CSEEM Results of classification problems (9/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|---|---|---|---|---|---|---|---|---|
| RMSprop | breast | 408.401 | 0.686 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | breast | 671.876 | 0.69 | N/A | 1000 | 111 | SoftRelu | SoftMax |
| RMSprop | breast | 241.236 | 0.661 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | breast | 744.105 | 0.671 | N/A | 1000 | 115 | Relu | SoftMax |
| SGD | breast | 696.608 | 0.56 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | breast | 415.071 | 0.585 | N/A | 1000 | 92 | Tanh | SoftMax |
| SGD | breast | 360.049 | 0.603 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | breast | 567.494 | 0.487 | N/A | 1000 | 111 | SoftRelu | SoftMax |
| SGD | breast | 211.916 | 0.513 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | breast | 575.285 | 0.56 | N/A | 1000 | 115 | Relu | SoftMax |
| Adadelta | bupa | 102.407 | 0.591 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | bupa | 506.615 | 0.467 | N/A | 1000 | 117 | Tanh | SoftMax |
| Adadelta | bupa | 790.866 | 0.472 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | bupa | 691.361 | 0.496 | N/A | 1000 | 113 | SoftRelu | SoftMax |
| Adadelta | bupa | 571.105 | 0.554 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | bupa | 584.91 | 0.435 | N/A | 1000 | 137 | Relu | SoftMax |
| Adagrad | bupa | 948.841 | 0.583 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | bupa | 458.082 | 0.612 | N/A | 1000 | 117 | Tanh | SoftMax |
| Adagrad | bupa | 751.996 | 0.438 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | bupa | 652.067 | 0.554 | N/A | 1000 | 113 | SoftRelu | SoftMax |
| Adagrad | bupa | 490.42 | 0.504 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | bupa | 588.716 | 0.565 | N/A | 1000 | 137 | Relu | SoftMax |
| Adam | bupa | 863.978 | 0.707 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | bupa | 525.561 | 0.687 | N/A | 1000 | 117 | Tanh | SoftMax |
| Adam | bupa | 673.697 | 0.42 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | bupa | 722.132 | 0.516 | N/A | 1000 | 113 | SoftRelu | SoftMax |
| Adam | bupa | 704.601 | 0.562 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | bupa | 708.91 | 0.455 | N/A | 1000 | 137 | Relu | SoftMax |

Table D.10: All CSEEM Results of classification problems (10/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|---|---|---|---|---|---|---|---|---|
| CSEEM | bupa | 296.0 | 0.875 | 8 | N/A | 122 | Tanh | ClipRound |
| CSEEM | bupa | 123.999 | 0.872 | 8 | N/A | 108 | SoftRelu | ClipRound |
| CSEEM | bupa | 138.0 | 0.861 | 8 | N/A | 129 | Relu | ClipRound |
| CSEEM | bupa | 340.0 | 0.887 | 16 | N/A | 117 | Tanh | ClipRound |
| CSEEM | bupa | 602.995 | 0.87 | 16 | N/A | 113 | SoftRelu | ClipRound |
| CSEEM | bupa | 446.985 | 0.884 | 16 | N/A | 137 | Relu | ClipRound |
| CSEEM | bupa | 372.999 | 0.89 | 32 | N/A | 132 | Tanh | ClipRound |
| CSEEM | bupa | 69.999 | 0.887 | 32 | N/A | 131 | SoftRelu | ClipRound |
| CSEEM | bupa | 85.001 | 0.861 | 32 | N/A | 98 | Relu | ClipRound |
| RMSprop | bupa | 865.004 | 0.704 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | bupa | 532.227 | 0.704 | N/A | 1000 | 117 | Tanh | SoftMax |
| RMSprop | bupa | 593.167 | 0.649 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | bupa | 693.293 | 0.586 | N/A | 1000 | 113 | SoftRelu | SoftMax |
| RMSprop | bupa | 893.313 | 0.687 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | bupa | 607.023 | 0.42 | N/A | 1000 | 137 | Relu | SoftMax |
| SGD | bupa | 858.365 | 0.539 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | bupa | 435.842 | 0.554 | N/A | 1000 | 117 | Tanh | SoftMax |
| SGD | bupa | 711.87 | 0.525 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | bupa | 634.775 | 0.507 | N/A | 1000 | 113 | SoftRelu | SoftMax |
| SGD | bupa | 333.194 | 0.452 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | bupa | 538.22 | 0.586 | N/A | 1000 | 137 | Relu | SoftMax |
| Adadelta | cleveland | 919.209 | 0.37 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | cleveland | 520.087 | 0.313 | N/A | 1000 | 123 | Tanh | SoftMax |
| Adadelta | cleveland | 220.294 | 0.279 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | cleveland | 704.112 | 0.182 | N/A | 1000 | 127 | SoftRelu | SoftMax |
| Adadelta | cleveland | 317.874 | 0.135 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | cleveland | 613.923 | 0.539 | N/A | 1000 | 139 | Relu | SoftMax |
| Adagrad | cleveland | 772.798 | 0.367 | N/A | 1000 | 1000 | Tanh | SoftMax |

Table D.11: All CSEEM Results of classification problems (11/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|--------|---------|----------|----------|-------|--------|-----|---------------|-----------------|
| Adagrad | cleveland | 477.628 | 0.377 | N/A | 1000 | 123 | Tanh | SoftMax |
| Adagrad | cleveland | 153.33 | 0.273 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | cleveland | 698.499 | 0.259 | N/A | 1000 | 127 | SoftRelu | SoftMax |
| Adagrad | cleveland | 262.035 | 0.269 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | cleveland | 562.901 | 0.539 | N/A | 1000 | 139 | Relu | SoftMax |
| Adam | cleveland | 728.44 | 0.512 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | cleveland | 596.159 | 0.549 | N/A | 1000 | 123 | Tanh | SoftMax |
| Adam | cleveland | 425.635 | 0.552 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | cleveland | 703.998 | 0.539 | N/A | 1000 | 127 | SoftRelu | SoftMax |
| Adam | cleveland | 312.569 | 0.545 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | cleveland | 609.127 | 0.539 | N/A | 1000 | 139 | Relu | SoftMax |
| CSEEM | cleveland | 109.998 | 0.751 | 8 | N/A | 119 | Tanh | ClipRound |
| CSEEM | cleveland | 297.0 | 0.869 | 8 | N/A | 148 | SoftRelu | ClipRound |
| CSEEM | cleveland | 211.999 | 0.855 | 8 | N/A | 144 | Relu | ClipRound |
| CSEEM | cleveland | 429.999 | 0.788 | 16 | N/A | 123 | Tanh | ClipRound |
| CSEEM | cleveland | 457.007 | 0.818 | 16 | N/A | 127 | SoftRelu | ClipRound |
| CSEEM | cleveland | 283.001 | 0.815 | 16 | N/A | 139 | Relu | ClipRound |
| CSEEM | cleveland | 603.999 | 0.835 | 32 | N/A | 138 | Tanh | ClipRound |
| CSEEM | cleveland | 718.0 | 0.801 | 32 | N/A | 135 | SoftRelu | ClipRound |
| CSEEM | cleveland | 698.002 | 0.845 | 32 | N/A | 139 | Relu | ClipRound |
| RMSprop | cleveland | 819.028 | 0.545 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | cleveland | 511.206 | 0.549 | N/A | 1000 | 123 | Tanh | SoftMax |
| RMSprop | cleveland | 402.686 | 0.519 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | cleveland | 700.964 | 0.539 | N/A | 1000 | 127 | SoftRelu | SoftMax |
| RMSprop | cleveland | 168.999 | 0.539 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | cleveland | 596.892 | 0.559 | N/A | 1000 | 139 | Relu | SoftMax |
| SGD | cleveland | 746.502 | 0.357 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | cleveland | 461.602 | 0.35 | N/A | 1000 | 123 | Tanh | SoftMax |

Table D.12: All CSEEM Results of classification problems (12/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|---|---|---|---|---|---|---|---|---|
| SGD | cleveland | 376.331 | 0.424 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | cleveland | 632.276 | 0.444 | N/A | 1000 | 127 | SoftRelu | SoftMax |
| SGD | cleveland | 137.254 | 0.418 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | cleveland | 544.692 | 0.121 | N/A | 1000 | 139 | Relu | SoftMax |
| Adadelta | crx | 654.589 | 0.423 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | crx | 685.555 | 0.544 | N/A | 1000 | 171 | Tanh | SoftMax |
| Adadelta | crx | 371.549 | 0.461 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | crx | 90.137 | 0.453 | N/A | 1000 | 200 | SoftRelu | SoftMax |
| Adadelta | crx | 335.321 | 0.453 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | crx | 828.765 | 0.453 | N/A | 1000 | 141 | Relu | SoftMax |
| Adagrad | crx | 569.66 | 0.579 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | crx | 686.583 | 0.594 | N/A | 1000 | 171 | Tanh | SoftMax |
| Adagrad | crx | 181.359 | 0.453 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | crx | 138.158 | 0.453 | N/A | 1000 | 200 | SoftRelu | SoftMax |
| Adagrad | crx | 219.424 | 0.453 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | crx | 827.971 | 0.453 | N/A | 1000 | 141 | Relu | SoftMax |
| Adam | crx | 707.712 | 0.706 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | crx | 772.484 | 0.692 | N/A | 1000 | 171 | Tanh | SoftMax |
| Adam | crx | 961.26 | 0.453 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | crx | 141.992 | 0.453 | N/A | 1000 | 200 | SoftRelu | SoftMax |
| Adam | crx | 451.553 | 0.453 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | crx | 887.118 | 0.453 | N/A | 1000 | 141 | Relu | SoftMax |
| CSEEM | crx | 288.999 | 0.922 | 8 | N/A | 160 | Tanh | ClipRound |
| CSEEM | crx | 855.001 | 0.933 | 8 | N/A | 199 | SoftRelu | ClipRound |
| CSEEM | crx | 339.0 | 0.914 | 8 | N/A | 106 | Relu | ClipRound |
| CSEEM | crx | 67.0 | 0.925 | 16 | N/A | 171 | Tanh | ClipRound |
| CSEEM | crx | 938.009 | 0.931 | 16 | N/A | 200 | SoftRelu | ClipRound |
| CSEEM | crx | 88.999 | 0.922 | 16 | N/A | 141 | Relu | ClipRound |

Table D.13: All CSEEM Results of classification problems (13/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|--------|---------|----------|----------|-------|--------|-----|------------|-----------------|
| CSEEM | crx | 686.0 | 0.948 | 32 | N/A | 208 | Tanh | ClipRound |
| CSEEM | crx | 834.999 | 0.93 | 32 | N/A | 175 | SoftRelu | ClipRound |
| CSEEM | crx | 550.51 | 0.926 | 32 | N/A | 152 | Relu | ClipRound |
| RMSprop | crx | 391.083 | 0.533 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | crx | 710.598 | 0.662 | N/A | 1000 | 171 | Tanh | SoftMax |
| RMSprop | crx | 424.442 | 0.453 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | crx | 135.358 | 0.453 | N/A | 1000 | 200 | SoftRelu | SoftMax |
| RMSprop | crx | 532.513 | 0.453 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | crx | 882.361 | 0.453 | N/A | 1000 | 141 | Relu | SoftMax |
| SGD | crx | 656.909 | 0.639 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | crx | 628.334 | 0.579 | N/A | 1000 | 171 | Tanh | SoftMax |
| SGD | crx | 895.66 | 0.453 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | crx | 90.021 | 0.453 | N/A | 1000 | 200 | SoftRelu | SoftMax |
| SGD | crx | 312.297 | 0.453 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | crx | 843.163 | 0.453 | N/A | 1000 | 141 | Relu | SoftMax |
| Adadelta | ecoli | 716.777 | 0.274 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | ecoli | 491.884 | 0.0774 | N/A | 1000 | 86 | Tanh | SoftMax |
| Adadelta | ecoli | 455.136 | 0.384 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | ecoli | 622.481 | 0.179 | N/A | 1000 | 89 | SoftRelu | SoftMax |
| Adadelta | ecoli | 221.342 | 0.185 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | ecoli | 512.212 | 0.0655 | N/A | 1000 | 93 | Relu | SoftMax |
| Adagrad | ecoli | 655.466 | 0.554 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | ecoli | 478.477 | 0.211 | N/A | 1000 | 86 | Tanh | SoftMax |
| Adagrad | ecoli | 326.668 | 0.336 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | ecoli | 645.846 | 0.0744 | N/A | 1000 | 89 | SoftRelu | SoftMax |
| Adagrad | ecoli | 243.698 | 0.354 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | ecoli | 519.194 | 0.182 | N/A | 1000 | 93 | Relu | SoftMax |
| Adam | ecoli | 718.856 | 0.792 | N/A | 1000 | 1000 | Tanh | SoftMax |

Table D.14: All CSEEM Results of classification problems (14/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|---|---|---|---|---|---|---|---|---|
| Adam | ecoli | 551.526 | 0.768 | N/A | 1000 | 86 | Tanh | SoftMax |
| Adam | ecoli | 481.948 | 0.759 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | ecoli | 658.806 | 0.667 | N/A | 1000 | 89 | SoftRelu | SoftMax |
| Adam | ecoli | 298.772 | 0.717 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | ecoli | 560.454 | 0.592 | N/A | 1000 | 93 | Relu | SoftMax |
| CSEEM | ecoli | 154.999 | 0.854 | 8 | N/A | 61 | Tanh | ClipRound |
| CSEEM | ecoli | 60.0 | 0.893 | 8 | N/A | 82 | SoftRelu | ClipRound |
| CSEEM | ecoli | 276.998 | 0.914 | 8 | N/A | 101 | Relu | ClipRound |
| CSEEM | ecoli | 275.999 | 0.905 | 16 | N/A | 86 | Tanh | ClipRound |
| CSEEM | ecoli | 112.997 | 0.899 | 16 | N/A | 89 | SoftRelu | ClipRound |
| CSEEM | ecoli | 634.99 | 0.905 | 16 | N/A | 93 | Relu | ClipRound |
| CSEEM | ecoli | 891.999 | 0.905 | 32 | N/A | 86 | Tanh | ClipRound |
| CSEEM | ecoli | 463.0 | 0.914 | 32 | N/A | 105 | SoftRelu | ClipRound |
| CSEEM | ecoli | 839.0 | 0.887 | 32 | N/A | 81 | Relu | ClipRound |
| RMSprop | ecoli | 615.151 | 0.804 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | ecoli | 479.271 | 0.747 | N/A | 1000 | 86 | Tanh | SoftMax |
| RMSprop | ecoli | 412.549 | 0.735 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | ecoli | 653.862 | 0.634 | N/A | 1000 | 89 | SoftRelu | SoftMax |
| RMSprop | ecoli | 30.202 | 0.78 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | ecoli | 554.837 | 0.72 | N/A | 1000 | 93 | Relu | SoftMax |
| SGD | ecoli | 650.825 | 0.551 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | ecoli | 434.379 | 0.298 | N/A | 1000 | 86 | Tanh | SoftMax |
| SGD | ecoli | 440.608 | 0.467 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | ecoli | 579.398 | 0.182 | N/A | 1000 | 89 | SoftRelu | SoftMax |
| SGD | ecoli | 316.267 | 0.318 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | ecoli | 506.606 | 0.101 | N/A | 1000 | 93 | Relu | SoftMax |
| Adadelta | flare | 716.543 | 0.297 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | flare | 184.272 | 0.361 | N/A | 1000 | 259 | Tanh | SoftMax |

Table D.15: All CSEEM Results of classification problems (15/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|---|---|---|---|---|---|---|---|---|
| Adadelta | flare | 305.778 | 0.207 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | flare | 429.302 | 0.238 | N/A | 1000 | 278 | SoftRelu | SoftMax |
| Adadelta | flare | 931.724 | 0.115 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | flare | 674.846 | 0.312 | N/A | 1000 | 290 | Relu | SoftMax |
| Adagrad | flare | 627.96 | 0.283 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | flare | 107.045 | 0.137 | N/A | 1000 | 259 | Tanh | SoftMax |
| Adagrad | flare | 340.261 | 0.317 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | flare | 374.796 | 0.291 | N/A | 1000 | 278 | SoftRelu | SoftMax |
| Adagrad | flare | 357.334 | 0.123 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | flare | 621.763 | 0.0929 | N/A | 1000 | 290 | Relu | SoftMax |
| Adam | flare | 718.998 | 0.451 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | flare | 264.224 | 0.59 | N/A | 1000 | 259 | Tanh | SoftMax |
| Adam | flare | 441.728 | 0.421 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | flare | 381.645 | 0.447 | N/A | 1000 | 278 | SoftRelu | SoftMax |
| Adam | flare | 445.188 | 0.564 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | flare | 772.559 | 0.558 | N/A | 1000 | 290 | Relu | SoftMax |
| CSEEM | flare | 479.0 | 0.626 | 8 | N/A | 74 | Tanh | ClipRound |
| CSEEM | flare | 189.0 | 0.808 | 8 | N/A | 245 | SoftRelu | ClipRound |
| CSEEM | flare | 188.998 | 0.82 | 8 | N/A | 272 | Relu | ClipRound |
| CSEEM | flare | 763.0 | 0.816 | 16 | N/A | 259 | Tanh | ClipRound |
| CSEEM | flare | 822.035 | 0.816 | 16 | N/A | 278 | SoftRelu | ClipRound |
| CSEEM | flare | 503.999 | 0.823 | 16 | N/A | 290 | Relu | ClipRound |
| CSEEM | flare | 603.508 | 0.818 | 32 | N/A | 264 | Tanh | ClipRound |
| CSEEM | flare | 420.001 | 0.824 | 32 | N/A | 268 | SoftRelu | ClipRound |
| CSEEM | flare | 12.0 | 0.826 | 32 | N/A | 299 | Relu | ClipRound |
| RMSprop | flare | 519.653 | 0.447 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | flare | 519.628 | 0.458 | N/A | 1000 | 259 | Tanh | SoftMax |
| RMSprop | flare | 698.545 | 0.437 | N/A | 1000 | 1000 | SoftRelu | SoftMax |

Table D.16: All CSEEM Results of classification problems (16/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|---|---|---|---|---|---|---|---|---|
| RMSprop | flare | 276.55 | 0.425 | N/A | 1000 | 278 | SoftRelu | SoftMax |
| RMSprop | flare | 720.817 | 0.565 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | flare | 766.38 | 0.548 | N/A | 1000 | 290 | Relu | SoftMax |
| SGD | flare | 616.898 | 0.176 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | flare | 195.305 | 0.126 | N/A | 1000 | 259 | Tanh | SoftMax |
| SGD | flare | 223.006 | 0.132 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | flare | 203.635 | 0.199 | N/A | 1000 | 278 | SoftRelu | SoftMax |
| SGD | flare | 822.521 | 0.0816 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | flare | 644.326 | 0.307 | N/A | 1000 | 290 | Relu | SoftMax |
| Adadelta | german | 604.745 | 0.572 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | german | 105.625 | 0.584 | N/A | 1000 | 382 | Tanh | SoftMax |
| Adadelta | german | 99.649 | 0.7 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | german | 511.374 | 0.7 | N/A | 1000 | 342 | SoftRelu | SoftMax |
| Adadelta | german | 161.356 | 0.7 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | german | 64.909 | 0.7 | N/A | 1000 | 390 | Relu | SoftMax |
| Adagrad | german | 484.154 | 0.593 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | german | 130.11 | 0.586 | N/A | 1000 | 382 | Tanh | SoftMax |
| Adagrad | german | 67.164 | 0.314 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | german | 494.748 | 0.7 | N/A | 1000 | 342 | SoftRelu | SoftMax |
| Adagrad | german | 167.085 | 0.7 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | german | 70.502 | 0.7 | N/A | 1000 | 390 | Relu | SoftMax |
| Adam | german | 604.305 | 0.567 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | german | 224.532 | 0.657 | N/A | 1000 | 382 | Tanh | SoftMax |
| Adam | german | 53.489 | 0.7 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | german | 591.077 | 0.7 | N/A | 1000 | 342 | SoftRelu | SoftMax |
| Adam | german | 163.921 | 0.7 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | german | 122.165 | 0.7 | N/A | 1000 | 390 | Relu | SoftMax |
| CSEEM | german | 266.0 | 0.869 | 8 | N/A | 312 | Tanh | ClipRound |

Table D.17: All CSEEM Results of classification problems (17/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|---|---|---|---|---|---|---|---|---|
| CSEEM | german | 443.001 | 0.93 | 8 | N/A | 528 | SoftRelu | ClipRound |
| CSEEM | german | 933.0 | 0.898 | 8 | N/A | 389 | Relu | ClipRound |
| CSEEM | german | 856.0 | 0.892 | 16 | N/A | 382 | Tanh | ClipRound |
| CSEEM | german | 858.009 | 0.885 | 16 | N/A | 342 | SoftRelu | ClipRound |
| CSEEM | german | 286.0 | 0.903 | 16 | N/A | 390 | Relu | ClipRound |
| CSEEM | german | 275.0 | 0.876 | 32 | N/A | 347 | Tanh | ClipRound |
| CSEEM | german | 439.001 | 0.879 | 32 | N/A | 302 | SoftRelu | ClipRound |
| CSEEM | german | 204.001 | 0.897 | 32 | N/A | 348 | Relu | ClipRound |
| RMSprop | german | 300.001 | 0.516 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | german | 282.609 | 0.392 | N/A | 1000 | 382 | Tanh | SoftMax |
| RMSprop | german | 112.004 | 0.7 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | german | 590.995 | 0.7 | N/A | 1000 | 342 | SoftRelu | SoftMax |
| RMSprop | german | 613.92 | 0.7 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | german | 156.269 | 0.7 | N/A | 1000 | 390 | Relu | SoftMax |
| SGD | german | 544.147 | 0.592 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | german | 187.348 | 0.583 | N/A | 1000 | 382 | Tanh | SoftMax |
| SGD | german | 113.744 | 0.314 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | german | 497.764 | 0.7 | N/A | 1000 | 342 | SoftRelu | SoftMax |
| SGD | german | 75.586 | 0.7 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | german | 89.438 | 0.698 | N/A | 1000 | 390 | Relu | SoftMax |
| Adadelta | glass | 958.947 | 0.15 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | glass | 441.655 | 0.0981 | N/A | 1000 | 93 | Tanh | SoftMax |
| Adadelta | glass | 417.244 | 0.486 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | glass | 570.283 | 0.192 | N/A | 1000 | 86 | SoftRelu | SoftMax |
| Adadelta | glass | 752.552 | 0.318 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | glass | 707.545 | 0.0981 | N/A | 1000 | 95 | Relu | SoftMax |
| Adagrad | glass | 897.863 | 0.229 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | glass | 421.42 | 0.407 | N/A | 1000 | 93 | Tanh | SoftMax |

Table D.18: All CSEEM Results of classification problems (18/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|---|---|---|---|---|---|---|---|---|
| Adagrad | glass | 293.314 | 0.103 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | glass | 495.827 | 0.224 | N/A | 1000 | 86 | SoftRelu | SoftMax |
| Adagrad | glass | 749.535 | 0.173 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | glass | 623.172 | 0.425 | N/A | 1000 | 95 | Relu | SoftMax |
| Adam | glass | 956.754 | 0.262 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | glass | 479.915 | 0.35 | N/A | 1000 | 93 | Tanh | SoftMax |
| Adam | glass | 390.517 | 0.327 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | glass | 565.815 | 0.327 | N/A | 1000 | 86 | SoftRelu | SoftMax |
| Adam | glass | 935.199 | 0.327 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | glass | 696.747 | 0.327 | N/A | 1000 | 95 | Relu | SoftMax |
| CSEEM | glass | 92.999 | 0.79 | 8 | N/A | 65 | Tanh | ClipRound |
| CSEEM | glass | 66.999 | 0.86 | 8 | N/A | 89 | SoftRelu | ClipRound |
| CSEEM | glass | 82.0 | 0.864 | 8 | N/A | 97 | Relu | ClipRound |
| CSEEM | glass | 121.998 | 0.874 | 16 | N/A | 93 | Tanh | ClipRound |
| CSEEM | glass | 297.001 | 0.864 | 16 | N/A | 86 | SoftRelu | ClipRound |
| CSEEM | glass | 230.99 | 0.864 | 16 | N/A | 95 | Relu | ClipRound |
| CSEEM | glass | 732.001 | 0.86 | 32 | N/A | 84 | Tanh | ClipRound |
| CSEEM | glass | 582.999 | 0.869 | 32 | N/A | 87 | SoftRelu | ClipRound |
| CSEEM | glass | 675.0 | 0.836 | 32 | N/A | 77 | Relu | ClipRound |
| RMSprop | glass | 25.716 | 0.224 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | glass | 465.434 | 0.266 | N/A | 1000 | 93 | Tanh | SoftMax |
| RMSprop | glass | 519.954 | 0.327 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | glass | 552.781 | 0.327 | N/A | 1000 | 86 | SoftRelu | SoftMax |
| RMSprop | glass | 527.521 | 0.327 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | glass | 515.996 | 0.327 | N/A | 1000 | 95 | Relu | SoftMax |
| SGD | glass | 856.374 | 0.505 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | glass | 397.495 | 0.173 | N/A | 1000 | 93 | Tanh | SoftMax |
| SGD | glass | 281.576 | 0.458 | N/A | 1000 | 1000 | SoftRelu | SoftMax |

Table D.19: All CSEEM Results of classification problems (19/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|---|---|---|---|---|---|---|---|---|
| SGD | glass | 498.149 | 0.0841 | N/A | 1000 | 86 | SoftRelu | SoftMax |
| SGD | glass | 932.569 | 0.463 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | glass | 611.039 | 0.29 | N/A | 1000 | 95 | Relu | SoftMax |
| Adadelta | haberman | 722.745 | 0.578 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | haberman | 447.05 | 0.507 | N/A | 1000 | 95 | Tanh | SoftMax |
| Adadelta | haberman | 95.831 | 0.487 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | haberman | 582.56 | 0.291 | N/A | 1000 | 93 | SoftRelu | SoftMax |
| Adadelta | haberman | 663.889 | 0.588 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | haberman | 780.792 | 0.435 | N/A | 1000 | 105 | Relu | SoftMax |
| Adagrad | haberman | 740.024 | 0.588 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | haberman | 466.867 | 0.546 | N/A | 1000 | 95 | Tanh | SoftMax |
| Adagrad | haberman | 209.242 | 0.66 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | haberman | 557.593 | 0.686 | N/A | 1000 | 93 | SoftRelu | SoftMax |
| Adagrad | haberman | 695.185 | 0.425 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | haberman | 756.804 | 0.575 | N/A | 1000 | 105 | Relu | SoftMax |
| Adam | haberman | 861.718 | 0.399 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | haberman | 482.69 | 0.735 | N/A | 1000 | 95 | Tanh | SoftMax |
| Adam | haberman | 351.833 | 0.477 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | haberman | 608.049 | 0.265 | N/A | 1000 | 93 | SoftRelu | SoftMax |
| Adam | haberman | 713.026 | 0.657 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | haberman | 842.17 | 0.755 | N/A | 1000 | 105 | Relu | SoftMax |
| CSEEM | haberman | 178.0 | 0.873 | 8 | N/A | 94 | Tanh | ClipRound |
| CSEEM | haberman | 172.999 | 0.886 | 8 | N/A | 105 | SoftRelu | ClipRound |
| CSEEM | haberman | 135.0 | 0.837 | 8 | N/A | 65 | Relu | ClipRound |
| CSEEM | haberman | 331.0 | 0.876 | 16 | N/A | 95 | Tanh | ClipRound |
| CSEEM | haberman | 255.989 | 0.866 | 16 | N/A | 93 | SoftRelu | ClipRound |
| CSEEM | haberman | 451.025 | 0.873 | 16 | N/A | 105 | Relu | ClipRound |
| CSEEM | haberman | 460.998 | 0.882 | 32 | N/A | 95 | Tanh | ClipRound |

Table D.20: All CSEEM Results of classification problems (20/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|---|---|---|---|---|---|---|---|---|
| CSEEM | haberman | 19.998 | 0.892 | 32 | N/A | 102 | SoftRelu | ClipRound |
| CSEEM | haberman | 680.999 | 0.889 | 32 | N/A | 97 | Relu | ClipRound |
| RMSprop | haberman | 711.133 | 0.265 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | haberman | 472.086 | 0.742 | N/A | 1000 | 95 | Tanh | SoftMax |
| RMSprop | haberman | 207.022 | 0.265 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | haberman | 584.842 | 0.725 | N/A | 1000 | 93 | SoftRelu | SoftMax |
| RMSprop | haberman | 559.026 | 0.265 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | haberman | 832.155 | 0.595 | N/A | 1000 | 105 | Relu | SoftMax |
| SGD | haberman | 721.497 | 0.752 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | haberman | 403.067 | 0.745 | N/A | 1000 | 95 | Tanh | SoftMax |
| SGD | haberman | 124.787 | 0.765 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | haberman | 520.374 | 0.719 | N/A | 1000 | 93 | SoftRelu | SoftMax |
| SGD | haberman | 664.217 | 0.765 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | haberman | 765.996 | 0.578 | N/A | 1000 | 105 | Relu | SoftMax |
| Adadelta | hayes_roth | 838.142 | 0.325 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | hayes_roth | 378.34 | 0.381 | N/A | 1000 | 49 | Tanh | SoftMax |
| Adadelta | hayes_roth | 67.79 | 0.45 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | hayes_roth | 456.8 | 0.287 | N/A | 1000 | 54 | SoftRelu | SoftMax |
| Adadelta | hayes_roth | 131.922 | 0.194 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | hayes_roth | 425.436 | 0.338 | N/A | 1000 | 39 | Relu | SoftMax |
| Adagrad | hayes_roth | 556.207 | 0.431 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | hayes_roth | 337.7 | 0.256 | N/A | 1000 | 49 | Tanh | SoftMax |
| Adagrad | hayes_roth | 9.209 | 0.419 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | hayes_roth | 406.602 | 0.463 | N/A | 1000 | 54 | SoftRelu | SoftMax |
| Adagrad | hayes_roth | 111.014 | 0.475 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | hayes_roth | 407.25 | 0.138 | N/A | 1000 | 39 | Relu | SoftMax |
| Adam | hayes_roth | 680.951 | 0.663 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | hayes_roth | 407.313 | 0.581 | N/A | 1000 | 49 | Tanh | SoftMax |

Table D.21: All CSEEM Results of classification problems (21/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|---|---|---|---|---|---|---|---|---|
| Adam | hayes_roth | 102.984 | 0.406 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | hayes_roth | 460.121 | 0.619 | N/A | 1000 | 54 | SoftRelu | SoftMax |
| Adam | hayes_roth | 267.459 | 0.613 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | hayes_roth | 430.182 | 0.525 | N/A | 1000 | 39 | Relu | SoftMax |
| CSEEM | hayes_roth | 23.0 | 0.894 | 8 | N/A | 60 | Tanh | ClipRound |
| CSEEM | hayes_roth | 60.0 | 0.875 | 8 | N/A | 55 | SoftRelu | ClipRound |
| CSEEM | hayes_roth | 32.999 | 0.9 | 8 | N/A | 47 | Relu | ClipRound |
| CSEEM | hayes_roth | 52.999 | 0.894 | 16 | N/A | 49 | Tanh | ClipRound |
| CSEEM | hayes_roth | 35.0 | 0.863 | 16 | N/A | 54 | SoftRelu | ClipRound |
| CSEEM | hayes_roth | 23.998 | 0.869 | 16 | N/A | 39 | Relu | ClipRound |
| CSEEM | hayes_roth | 91.001 | 0.831 | 32 | N/A | 38 | Tanh | ClipRound |
| CSEEM | hayes_roth | 124.0 | 0.881 | 32 | N/A | 43 | SoftRelu | ClipRound |
| CSEEM | hayes_roth | 148.0 | 0.881 | 32 | N/A | 50 | Relu | ClipRound |
| RMSprop | hayes_roth | 745.754 | 0.575 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | hayes_roth | 391.927 | 0.581 | N/A | 1000 | 49 | Tanh | SoftMax |
| RMSprop | hayes_roth | 216.897 | 0.406 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | hayes_roth | 466.57 | 0.65 | N/A | 1000 | 54 | SoftRelu | SoftMax |
| RMSprop | hayes_roth | 292.648 | 0.65 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | hayes_roth | 506.08 | 0.506 | N/A | 1000 | 39 | Relu | SoftMax |
| SGD | hayes_roth | 564.247 | 0.525 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | hayes_roth | 339.889 | 0.419 | N/A | 1000 | 49 | Tanh | SoftMax |
| SGD | hayes_roth | 965.005 | 0.475 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | hayes_roth | 442.91 | 0.25 | N/A | 1000 | 54 | SoftRelu | SoftMax |
| SGD | hayes_roth | 143.302 | 0.488 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | hayes_roth | 373.072 | 0.319 | N/A | 1000 | 39 | Relu | SoftMax |
| Adadelta | heart | 986.197 | 0.648 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | heart | 408.705 | 0.5 | N/A | 1000 | 56 | Tanh | SoftMax |
| Adadelta | heart | 262.454 | 0.622 | N/A | 1000 | 1000 | SoftRelu | SoftMax |

Table D.22: All CSEEM Results of classification problems (22/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|---|---|---|---|---|---|---|---|---|
| Adadelta | heart | 560.369 | 0.637 | N/A | 1000 | 85 | SoftRelu | SoftMax |
| Adadelta | heart | 528.067 | 0.407 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | heart | 608.362 | 0.459 | N/A | 1000 | 76 | Relu | SoftMax |
| Adagrad | heart | 60.657 | 0.707 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | heart | 376.705 | 0.448 | N/A | 1000 | 56 | Tanh | SoftMax |
| Adagrad | heart | 123.548 | 0.73 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | heart | 538.278 | 0.489 | N/A | 1000 | 85 | SoftRelu | SoftMax |
| Adagrad | heart | 568.979 | 0.452 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | heart | 589.193 | 0.563 | N/A | 1000 | 76 | Relu | SoftMax |
| Adam | heart | 161.036 | 0.763 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | heart | 518.636 | 0.811 | N/A | 1000 | 56 | Tanh | SoftMax |
| Adam | heart | 293.08 | 0.748 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | heart | 609.328 | 0.567 | N/A | 1000 | 85 | SoftRelu | SoftMax |
| Adam | heart | 724.217 | 0.77 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | heart | 663.951 | 0.744 | N/A | 1000 | 76 | Relu | SoftMax |
| CSEEM | heart | 155.999 | 0.915 | 8 | N/A | 82 | Tanh | ClipRound |
| CSEEM | heart | 148.998 | 0.933 | 8 | N/A | 109 | SoftRelu | ClipRound |
| CSEEM | heart | 104.999 | 0.937 | 8 | N/A | 98 | Relu | ClipRound |
| CSEEM | heart | 170.0 | 0.907 | 16 | N/A | 56 | Tanh | ClipRound |
| CSEEM | heart | 156.008 | 0.926 | 16 | N/A | 85 | SoftRelu | ClipRound |
| CSEEM | heart | 451.999 | 0.922 | 16 | N/A | 76 | Relu | ClipRound |
| CSEEM | heart | 648.999 | 0.915 | 32 | N/A | 64 | Tanh | ClipRound |
| CSEEM | heart | 861.999 | 0.926 | 32 | N/A | 82 | SoftRelu | ClipRound |
| CSEEM | heart | 176.0 | 0.911 | 32 | N/A | 79 | Relu | ClipRound |
| RMSprop | heart | 631.769 | 0.774 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | heart | 426.643 | 0.7 | N/A | 1000 | 56 | Tanh | SoftMax |
| RMSprop | heart | 463.244 | 0.804 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | heart | 569.374 | 0.444 | N/A | 1000 | 85 | SoftRelu | SoftMax |

Table D.23: All CSEEM Results of classification problems (23/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|--------|---------|----------|----------|-------|--------|-----|---------------|-----------------|
| RMSprop | heart | 850.077 | 0.793 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | heart | 664.092 | 0.556 | N/A | 1000 | 76 | Relu | SoftMax |
| SGD | heart | 41.321 | 0.663 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | heart | 369.235 | 0.604 | N/A | 1000 | 56 | Tanh | SoftMax |
| SGD | heart | 90.47 | 0.7 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | heart | 514.678 | 0.663 | N/A | 1000 | 85 | SoftRelu | SoftMax |
| SGD | heart | 666.422 | 0.73 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | heart | 611.293 | 0.456 | N/A | 1000 | 76 | Relu | SoftMax |
| Adadelta | hepatitis | 860.948 | 0.65 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | hepatitis | 366.305 | 0.312 | N/A | 1000 | 13 | Tanh | SoftMax |
| Adadelta | hepatitis | 772.298 | 0.738 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | hepatitis | 395.245 | 0.7 | N/A | 1000 | 17 | SoftRelu | SoftMax |
| Adadelta | hepatitis | 658.039 | 0.188 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | hepatitis | 402.01 | 0.162 | N/A | 1000 | 25 | Relu | SoftMax |
| Adagrad | hepatitis | 852.871 | 0.812 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | hepatitis | 302.352 | 0.525 | N/A | 1000 | 13 | Tanh | SoftMax |
| Adagrad | hepatitis | 720.494 | 0.812 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | hepatitis | 380.278 | 0.775 | N/A | 1000 | 17 | SoftRelu | SoftMax |
| Adagrad | hepatitis | 624.569 | 0.237 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | hepatitis | 331.837 | 0.162 | N/A | 1000 | 25 | Relu | SoftMax |
| Adam | hepatitis | 923.692 | 0.9 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | hepatitis | 370.651 | 0.85 | N/A | 1000 | 13 | Tanh | SoftMax |
| Adam | hepatitis | 769.659 | 0.85 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | hepatitis | 416.8 | 0.8 | N/A | 1000 | 17 | SoftRelu | SoftMax |
| Adam | hepatitis | 675.672 | 0.887 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | hepatitis | 399.828 | 0.162 | N/A | 1000 | 25 | Relu | SoftMax |
| CSEEM | hepatitis | 11.999 | 0.95 | 8 | N/A | 14 | Tanh | ClipRound |
| CSEEM | hepatitis | 9.002 | 0.912 | 8 | N/A | 17 | SoftRelu | ClipRound |

Table D.24: All CSEEM Results of classification problems (24/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|--------|---------|----------|----------|-------|--------|-----|---------------|-----------------|
| CSEEM | hepatitis | 5.999 | 0.887 | 8 | N/A | 7 | Relu | ClipRound |
| CSEEM | hepatitis | 24.999 | 0.95 | 16 | N/A | 13 | Tanh | ClipRound |
| CSEEM | hepatitis | 21.0 | 0.95 | 16 | N/A | 17 | SoftRelu | ClipRound |
| CSEEM | hepatitis | 19.993 | 0.988 | 16 | N/A | 25 | Relu | ClipRound |
| CSEEM | hepatitis | 35.999 | 0.95 | 32 | N/A | 23 | Tanh | ClipRound |
| CSEEM | hepatitis | 36.999 | 0.963 | 32 | N/A | 20 | SoftRelu | ClipRound |
| CSEEM | hepatitis | 72.999 | 0.975 | 32 | N/A | 22 | Relu | ClipRound |
| RMSprop | hepatitis | 631.008 | 0.8 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | hepatitis | 351.807 | 0.812 | N/A | 1000 | 13 | Tanh | SoftMax |
| RMSprop | hepatitis | 886.219 | 0.875 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | hepatitis | 445.496 | 0.162 | N/A | 1000 | 17 | SoftRelu | SoftMax |
| RMSprop | hepatitis | 774.028 | 0.837 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | hepatitis | 386.06 | 0.162 | N/A | 1000 | 25 | Relu | SoftMax |
| SGD | hepatitis | 877.409 | 0.8 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | hepatitis | 288.47 | 0.4 | N/A | 1000 | 13 | Tanh | SoftMax |
| SGD | hepatitis | 703.688 | 0.837 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | hepatitis | 336.602 | 0.375 | N/A | 1000 | 17 | SoftRelu | SoftMax |
| SGD | hepatitis | 553.17 | 0.812 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | hepatitis | 305.213 | 0.812 | N/A | 1000 | 25 | Relu | SoftMax |
| Adadelta | housevotes | 819.648 | 0.284 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | housevotes | 421.791 | 0.284 | N/A | 1000 | 55 | Tanh | SoftMax |
| Adadelta | housevotes | 716.063 | 0.293 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | housevotes | 523.226 | 0.871 | N/A | 1000 | 32 | SoftRelu | SoftMax |
| Adadelta | housevotes | 410.512 | 0.397 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | housevotes | 422.861 | 0.371 | N/A | 1000 | 29 | Relu | SoftMax |
| Adagrad | housevotes | 979.702 | 0.866 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | housevotes | 377.844 | 0.716 | N/A | 1000 | 55 | Tanh | SoftMax |
| Adagrad | housevotes | 386.007 | 0.634 | N/A | 1000 | 1000 | SoftRelu | SoftMax |

Table D.25: All CSEEM Results of classification problems (25/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|---|---|---|---|---|---|---|---|---|
| Adagrad | housevotes | 948.853 | 0.267 | N/A | 1000 | 32 | SoftRelu | SoftMax |
| Adagrad | housevotes | 368.266 | 0.457 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | housevotes | 409.445 | 0.164 | N/A | 1000 | 29 | Relu | SoftMax |
| Adam | housevotes | 16.644 | 0.957 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | housevotes | 448.907 | 0.935 | N/A | 1000 | 55 | Tanh | SoftMax |
| Adam | housevotes | 454.382 | 0.953 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | housevotes | 494.058 | 0.922 | N/A | 1000 | 32 | SoftRelu | SoftMax |
| Adam | housevotes | 484.728 | 0.974 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | housevotes | 444.087 | 0.94 | N/A | 1000 | 29 | Relu | SoftMax |
| CSEEM | housevotes | 34.999 | 0.974 | 8 | N/A | 53 | Tanh | ClipRound |
| CSEEM | housevotes | 65.998 | 0.978 | 8 | N/A | 44 | SoftRelu | ClipRound |
| CSEEM | housevotes | 74.999 | 0.978 | 8 | N/A | 43 | Relu | ClipRound |
| CSEEM | housevotes | 137.999 | 0.987 | 16 | N/A | 55 | Tanh | ClipRound |
| CSEEM | housevotes | 157.041 | 0.974 | 16 | N/A | 32 | SoftRelu | ClipRound |
| CSEEM | housevotes | 201.999 | 0.978 | 16 | N/A | 29 | Relu | ClipRound |
| CSEEM | housevotes | 218.999 | 0.991 | 32 | N/A | 40 | Tanh | ClipRound |
| CSEEM | housevotes | 115.0 | 0.978 | 32 | N/A | 29 | SoftRelu | ClipRound |
| CSEEM | housevotes | 352.0 | 0.987 | 32 | N/A | 50 | Relu | ClipRound |
| RMSprop | housevotes | 964.0 | 0.961 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | housevotes | 469.195 | 0.97 | N/A | 1000 | 55 | Tanh | SoftMax |
| RMSprop | housevotes | 691.512 | 0.974 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | housevotes | 478.623 | 0.974 | N/A | 1000 | 32 | SoftRelu | SoftMax |
| RMSprop | housevotes | 648.017 | 0.966 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | housevotes | 688.902 | 0.974 | N/A | 1000 | 29 | Relu | SoftMax |
| SGD | housevotes | 83.312 | 0.875 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | housevotes | 362.008 | 0.599 | N/A | 1000 | 55 | Tanh | SoftMax |
| SGD | housevotes | 356.487 | 0.927 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | housevotes | 396.467 | 0.763 | N/A | 1000 | 32 | SoftRelu | SoftMax |

Table D.26: All CSEEM Results of classification problems (26/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|--------|---------|----------|----------|-------|--------|-----|---------------|-----------------|
| SGD | housevotes | 347.561 | 0.888 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | housevotes | 539.797 | 0.483 | N/A | 1000 | 29 | Relu | SoftMax |
| Adadelta | ionosphere | 782.287 | 0.607 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | ionosphere | 546.366 | 0.601 | N/A | 1000 | 96 | Tanh | SoftMax |
| Adadelta | ionosphere | 777.349 | 0.581 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | ionosphere | 971.337 | 0.627 | N/A | 1000 | 90 | SoftRelu | SoftMax |
| Adadelta | ionosphere | 190.406 | 0.396 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | ionosphere | 6.248 | 0.595 | N/A | 1000 | 74 | Relu | SoftMax |
| Adagrad | ionosphere | 761.688 | 0.439 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | ionosphere | 524.613 | 0.521 | N/A | 1000 | 96 | Tanh | SoftMax |
| Adagrad | ionosphere | 771.594 | 0.558 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | ionosphere | 866.364 | 0.342 | N/A | 1000 | 90 | SoftRelu | SoftMax |
| Adagrad | ionosphere | 971.966 | 0.416 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | ionosphere | 290.814 | 0.359 | N/A | 1000 | 74 | Relu | SoftMax |
| Adam | ionosphere | 39.358 | 0.866 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | ionosphere | 557.067 | 0.567 | N/A | 1000 | 96 | Tanh | SoftMax |
| Adam | ionosphere | 751.875 | 0.852 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | ionosphere | 937.362 | 0.826 | N/A | 1000 | 90 | SoftRelu | SoftMax |
| Adam | ionosphere | 202.927 | 0.906 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | ionosphere | 93.869 | 0.806 | N/A | 1000 | 74 | Relu | SoftMax |
| CSEEM | ionosphere | 104.001 | 0.969 | 8 | N/A | 81 | Tanh | ClipRound |
| CSEEM | ionosphere | 115.001 | 0.972 | 8 | N/A | 92 | SoftRelu | ClipRound |
| CSEEM | ionosphere | 182.001 | 0.972 | 8 | N/A | 67 | Relu | ClipRound |
| CSEEM | ionosphere | 453.0 | 0.98 | 16 | N/A | 96 | Tanh | ClipRound |
| CSEEM | ionosphere | 574.001 | 0.972 | 16 | N/A | 90 | SoftRelu | ClipRound |
| CSEEM | ionosphere | 300.002 | 0.966 | 16 | N/A | 74 | Relu | ClipRound |
| CSEEM | ionosphere | 161.0 | 0.969 | 32 | N/A | 87 | Tanh | ClipRound |
| CSEEM | ionosphere | 483.0 | 0.969 | 32 | N/A | 88 | SoftRelu | ClipRound |

Table D.27: All CSEEM Results of classification problems (27/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|---|---|---|---|---|---|---|---|---|
| CSEEM | ionosphere | 715.506 | 0.977 | 32 | N/A | 87 | Relu | ClipRound |
| RMSprop | ionosphere | 260.005 | 0.872 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | ionosphere | 556.378 | 0.923 | N/A | 1000 | 96 | Tanh | SoftMax |
| RMSprop | ionosphere | 999.515 | 0.883 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | ionosphere | 939.475 | 0.889 | N/A | 1000 | 90 | SoftRelu | SoftMax |
| RMSprop | ionosphere | 341.896 | 0.923 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | ionosphere | 58.536 | 0.889 | N/A | 1000 | 74 | Relu | SoftMax |
| SGD | ionosphere | 905.537 | 0.806 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | ionosphere | 494.268 | 0.732 | N/A | 1000 | 96 | Tanh | SoftMax |
| SGD | ionosphere | 738.356 | 0.678 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | ionosphere | 910.227 | 0.274 | N/A | 1000 | 90 | SoftRelu | SoftMax |
| SGD | ionosphere | 33.76 | 0.661 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | ionosphere | 963.812 | 0.59 | N/A | 1000 | 74 | Relu | SoftMax |
| Adadelta | iris | 954.176 | 0.307 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | iris | 347.814 | 0.04 | N/A | 1000 | 19 | Tanh | SoftMax |
| Adadelta | iris | 891.041 | 0.02 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | iris | 539.502 | 0.0467 | N/A | 1000 | 21 | SoftRelu | SoftMax |
| Adadelta | iris | 882.339 | 0.733 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | iris | 342.527 | 0.127 | N/A | 1000 | 17 | Relu | SoftMax |
| Adagrad | iris | 931.374 | 0.673 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | iris | 347.08 | 0 | N/A | 1000 | 19 | Tanh | SoftMax |
| Adagrad | iris | 867.238 | 0.307 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | iris | 500.264 | 0.42 | N/A | 1000 | 21 | SoftRelu | SoftMax |
| Adagrad | iris | 824.668 | 0.813 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | iris | 330.725 | 0.427 | N/A | 1000 | 17 | Relu | SoftMax |
| Adam | iris | 16.092 | 0.98 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | iris | 377.216 | 0.98 | N/A | 1000 | 19 | Tanh | SoftMax |
| Adam | iris | 37.481 | 0.973 | N/A | 1000 | 1000 | SoftRelu | SoftMax |

Table D.28: All CSEEM Results of classification problems (28/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|--------|---------|----------|----------|-------|--------|-----|---------------|-----------------|
| Adam | iris | 555.012 | 0.927 | N/A | 1000 | 21 | SoftRelu | SoftMax |
| Adam | iris | 938.134 | 0.973 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | iris | 360.172 | 0.86 | N/A | 1000 | 17 | Relu | SoftMax |
| CSEEM | iris | 19.999 | 0.98 | 8 | N/A | 16 | Tanh | ClipRound |
| CSEEM | iris | 15.0 | 0.993 | 8 | N/A | 19 | SoftRelu | ClipRound |
| CSEEM | iris | 5.0 | 0.953 | 8 | N/A | 10 | Relu | ClipRound |
| CSEEM | iris | 30.998 | 0.987 | 16 | N/A | 19 | Tanh | ClipRound |
| CSEEM | iris | 32.0 | 0.987 | 16 | N/A | 21 | SoftRelu | ClipRound |
| CSEEM | iris | 67.006 | 0.973 | 16 | N/A | 17 | Relu | ClipRound |
| CSEEM | iris | 71.999 | 0.993 | 32 | N/A | 18 | Tanh | ClipRound |
| CSEEM | iris | 43.999 | 0.993 | 32 | N/A | 25 | SoftRelu | ClipRound |
| CSEEM | iris | 48.998 | 0.993 | 32 | N/A | 20 | Relu | ClipRound |
| RMSprop | iris | 709.0 | 0.667 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | iris | 365.682 | 0.987 | N/A | 1000 | 19 | Tanh | SoftMax |
| RMSprop | iris | 282.015 | 0.987 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | iris | 564.703 | 0.98 | N/A | 1000 | 21 | SoftRelu | SoftMax |
| RMSprop | iris | 84.933 | 0.973 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | iris | 367.841 | 0.967 | N/A | 1000 | 17 | Relu | SoftMax |
| SGD | iris | 930.409 | 0.853 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | iris | 294.857 | 0.64 | N/A | 1000 | 19 | Tanh | SoftMax |
| SGD | iris | 910.787 | 0.747 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | iris | 468.289 | 0.54 | N/A | 1000 | 21 | SoftRelu | SoftMax |
| SGD | iris | 809.937 | 0.893 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | iris | 297.053 | 0.58 | N/A | 1000 | 17 | Relu | SoftMax |
| Adadelta | led7digit | 317.758 | 0.08 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | led7digit | 540.611 | 0.084 | N/A | 1000 | 69 | Tanh | SoftMax |
| Adadelta | led7digit | 554.981 | 0.17 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | led7digit | 764.904 | 0.018 | N/A | 1000 | 87 | SoftRelu | SoftMax |

Table D.29: All CSEEM Results of classification problems (29/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|---|---|---|---|---|---|---|---|---|
| Adadelta | led7digit | 289.301 | 0.16 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | led7digit | 83.495 | 0.16 | N/A | 1000 | 100 | Relu | SoftMax |
| Adagrad | led7digit | 216.96 | 0.228 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | led7digit | 510.741 | 0.254 | N/A | 1000 | 69 | Tanh | SoftMax |
| Adagrad | led7digit | 664.454 | 0.04 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | led7digit | 767.198 | 0.034 | N/A | 1000 | 87 | SoftRelu | SoftMax |
| Adagrad | led7digit | 62.671 | 0.05 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | led7digit | 79.828 | 0.164 | N/A | 1000 | 100 | Relu | SoftMax |
| Adam | led7digit | 352.674 | 0.73 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | led7digit | 565.299 | 0.708 | N/A | 1000 | 69 | Tanh | SoftMax |
| Adam | led7digit | 804.796 | 0.734 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | led7digit | 794.493 | 0.724 | N/A | 1000 | 87 | SoftRelu | SoftMax |
| Adam | led7digit | 435.874 | 0.722 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | led7digit | 129.31 | 0.726 | N/A | 1000 | 100 | Relu | SoftMax |
| CSEEM | led7digit | 207.0 | 0.746 | 8 | N/A | 69 | Tanh | ClipRound |
| CSEEM | led7digit | 593.999 | 0.76 | 8 | N/A | 80 | SoftRelu | ClipRound |
| CSEEM | led7digit | 357.0 | 0.77 | 8 | N/A | 88 | Relu | ClipRound |
| CSEEM | led7digit | 130.999 | 0.77 | 16 | N/A | 69 | Tanh | ClipRound |
| CSEEM | led7digit | 457.0 | 0.762 | 16 | N/A | 87 | SoftRelu | ClipRound |
| CSEEM | led7digit | 527.992 | 0.768 | 16 | N/A | 100 | Relu | ClipRound |
| CSEEM | led7digit | 257.998 | 0.766 | 32 | N/A | 75 | Tanh | ClipRound |
| CSEEM | led7digit | 533.0 | 0.766 | 32 | N/A | 71 | SoftRelu | ClipRound |
| CSEEM | led7digit | 397.0 | 0.764 | 32 | N/A | 69 | Relu | ClipRound |
| RMSprop | led7digit | 53.0 | 0.718 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | led7digit | 540.375 | 0.73 | N/A | 1000 | 69 | Tanh | SoftMax |
| RMSprop | led7digit | 413.501 | 0.712 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | led7digit | 903.568 | 0.704 | N/A | 1000 | 87 | SoftRelu | SoftMax |
| RMSprop | led7digit | 632.029 | 0.72 | N/A | 1000 | 1000 | Relu | SoftMax |

Table D.30: All CSEEM Results of classification problems (30/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|--------|---------|----------|----------|-------|--------|-----|---------------|-----------------|
| RMSprop | led7digit | 615.8 | 0.734 | N/A | 1000 | 100 | Relu | SoftMax |
| SGD | led7digit | 409.969 | 0.182 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | led7digit | 536.799 | 0.158 | N/A | 1000 | 69 | Tanh | SoftMax |
| SGD | led7digit | 6.607 | 0.224 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | led7digit | 739.653 | 0.05 | N/A | 1000 | 87 | SoftRelu | SoftMax |
| SGD | led7digit | 194.291 | 0.158 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | led7digit | 401.925 | 0.044 | N/A | 1000 | 100 | Relu | SoftMax |
| Adadelta | lymphography | 845.839 | 0.358 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | lymphography | 383.903 | 0.243 | N/A | 1000 | 35 | Tanh | SoftMax |
| Adadelta | lymphography | 866.971 | 0.209 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | lymphography | 531.525 | 0.243 | N/A | 1000 | 38 | SoftRelu | SoftMax |
| Adadelta | lymphography | 950.223 | 0.338 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | lymphography | 364.621 | 0.338 | N/A | 1000 | 42 | Relu | SoftMax |
| Adagrad | lymphography | 792.235 | 0.446 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | lymphography | 341.902 | 0.216 | N/A | 1000 | 35 | Tanh | SoftMax |
| Adagrad | lymphography | 883.605 | 0.52 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | lymphography | 506.716 | 0.304 | N/A | 1000 | 38 | SoftRelu | SoftMax |
| Adagrad | lymphography | 887.486 | 0.291 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | lymphography | 338.324 | 0.264 | N/A | 1000 | 42 | Relu | SoftMax |
| Adam | lymphography | 859.491 | 0.851 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | lymphography | 401.023 | 0.845 | N/A | 1000 | 35 | Tanh | SoftMax |
| Adam | lymphography | 25.832 | 0.838 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | lymphography | 551.661 | 0.905 | N/A | 1000 | 38 | SoftRelu | SoftMax |
| Adam | lymphography | 945.161 | 0.865 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | lymphography | 409.578 | 0.865 | N/A | 1000 | 42 | Relu | SoftMax |
| CSEEM | lymphography | 17.0 | 0.912 | 8 | N/A | 42 | Tanh | ClipRound |
| CSEEM | lymphography | 26.0 | 0.885 | 8 | N/A | 29 | SoftRelu | ClipRound |
| CSEEM | lymphography | 42.999 | 0.953 | 8 | N/A | 53 | Relu | ClipRound |

Table D.31: All CSEEM Results of classification problems (31/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|---|---|---|---|---|---|---|---|---|
| CSEEM | lymphography | 41.001 | 0.885 | 16 | N/A | 35 | Tanh | ClipRound |
| CSEEM | lymphography | 39.0 | 0.892 | 16 | N/A | 38 | SoftRelu | ClipRound |
| CSEEM | lymphography | 65.993 | 0.926 | 16 | N/A | 42 | Relu | ClipRound |
| CSEEM | lymphography | 93.999 | 0.899 | 32 | N/A | 53 | Tanh | ClipRound |
| CSEEM | lymphography | 167.0 | 0.953 | 32 | N/A | 50 | SoftRelu | ClipRound |
| CSEEM | lymphography | 91.999 | 0.905 | 32 | N/A | 30 | Relu | ClipRound |
| RMSprop | lymphography | 808.98 | 0.804 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | lymphography | 380.45 | 0.878 | N/A | 1000 | 35 | Tanh | SoftMax |
| RMSprop | lymphography | 480.994 | 0.838 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | lymphography | 426.309 | 0.845 | N/A | 1000 | 38 | SoftRelu | SoftMax |
| RMSprop | lymphography | 237.889 | 0.811 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | lymphography | 393.301 | 0.878 | N/A | 1000 | 42 | Relu | SoftMax |
| SGD | lymphography | 767.417 | 0.561 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | lymphography | 300.599 | 0.135 | N/A | 1000 | 35 | Tanh | SoftMax |
| SGD | lymphography | 954.916 | 0.493 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | lymphography | 427.233 | 0.243 | N/A | 1000 | 38 | SoftRelu | SoftMax |
| SGD | lymphography | 859.094 | 0.527 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | lymphography | 359.397 | 0.358 | N/A | 1000 | 42 | Relu | SoftMax |
| Adadelta | mammographic | 992.053 | 0.357 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | mammographic | 283.55 | 0.606 | N/A | 1000 | 218 | Tanh | SoftMax |
| Adadelta | mammographic | 892.046 | 0.649 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | mammographic | 770.999 | 0.622 | N/A | 1000 | 189 | SoftRelu | SoftMax |
| Adadelta | mammographic | 386.574 | 0.347 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | mammographic | 226.761 | 0.53 | N/A | 1000 | 204 | Relu | SoftMax |
| Adagrad | mammographic | 54.957 | 0.773 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | mammographic | 198.946 | 0.558 | N/A | 1000 | 218 | Tanh | SoftMax |
| Adagrad | mammographic | 696.472 | 0.69 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | mammographic | 583.042 | 0.293 | N/A | 1000 | 189 | SoftRelu | SoftMax |

Table D.32: All CSEEM Results of classification problems (32/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|--------|---------|----------|----------|-------|--------|-----|---------------|-----------------|
| Adagrad | mammographic | 379.399 | 0.593 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | mammographic | 216.722 | 0.653 | N/A | 1000 | 204 | Relu | SoftMax |
| Adam | mammographic | 55.826 | 0.514 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | mammographic | 315.014 | 0.767 | N/A | 1000 | 218 | Tanh | SoftMax |
| Adam | mammographic | 942.511 | 0.79 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | mammographic | 707.117 | 0.74 | N/A | 1000 | 189 | SoftRelu | SoftMax |
| Adam | mammographic | 458.018 | 0.752 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | mammographic | 265.8 | 0.689 | N/A | 1000 | 204 | Relu | SoftMax |
| CSEEM | mammographic | 686.999 | 0.889 | 8 | N/A | 180 | Tanh | ClipRound |
| CSEEM | mammographic | 428.999 | 0.875 | 8 | N/A | 165 | SoftRelu | ClipRound |
| CSEEM | mammographic | 904.998 | 0.899 | 8 | N/A | 257 | Relu | ClipRound |
| CSEEM | mammographic | 294.999 | 0.894 | 16 | N/A | 218 | Tanh | ClipRound |
| CSEEM | mammographic | 243.999 | 0.887 | 16 | N/A | 189 | SoftRelu | ClipRound |
| CSEEM | mammographic | 692.985 | 0.894 | 16 | N/A | 204 | Relu | ClipRound |
| CSEEM | mammographic | 399.0 | 0.896 | 32 | N/A | 229 | Tanh | ClipRound |
| CSEEM | mammographic | 24.998 | 0.886 | 32 | N/A | 187 | SoftRelu | ClipRound |
| CSEEM | mammographic | 794.999 | 0.896 | 32 | N/A | 223 | Relu | ClipRound |
| RMSprop | mammographic | 712.0 | 0.764 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | mammographic | 836.795 | 0.743 | N/A | 1000 | 218 | Tanh | SoftMax |
| RMSprop | mammographic | 694.001 | 0.71 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | mammographic | 678.15 | 0.648 | N/A | 1000 | 189 | SoftRelu | SoftMax |
| RMSprop | mammographic | 721.0 | 0.684 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | mammographic | 332.855 | 0.72 | N/A | 1000 | 204 | Relu | SoftMax |
| SGD | mammographic | 18.111 | 0.678 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | mammographic | 220.364 | 0.657 | N/A | 1000 | 218 | Tanh | SoftMax |
| SGD | mammographic | 62.419 | 0.693 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | mammographic | 540.273 | 0.704 | N/A | 1000 | 189 | SoftRelu | SoftMax |
| SGD | mammographic | 466.936 | 0.686 | N/A | 1000 | 1000 | Relu | SoftMax |

Table D.33: All CSEEM Results of classification problems (33/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|--------|---------|----------|----------|-------|--------|-----|---------------|-----------------|
| SGD | mammographic | 232.223 | 0.702 | N/A | 1000 | 204 | Relu | SoftMax |
| Adadelta | monk_2 | 932.404 | 0.535 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | monk_2 | 495.298 | 0.59 | N/A | 1000 | 79 | Tanh | SoftMax |
| Adadelta | monk_2 | 972.331 | 0.537 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | monk_2 | 789.207 | 0.468 | N/A | 1000 | 69 | SoftRelu | SoftMax |
| Adadelta | monk_2 | 910.714 | 0.417 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | monk_2 | 532.17 | 0.449 | N/A | 1000 | 53 | Relu | SoftMax |
| Adagrad | monk_2 | 833.963 | 0.525 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | monk_2 | 532.475 | 0.572 | N/A | 1000 | 79 | Tanh | SoftMax |
| Adagrad | monk_2 | 947.473 | 0.521 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | monk_2 | 542.849 | 0.572 | N/A | 1000 | 69 | SoftRelu | SoftMax |
| Adagrad | monk_2 | 588.13 | 0.701 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | monk_2 | 809.972 | 0.493 | N/A | 1000 | 53 | Relu | SoftMax |
| Adam | monk_2 | 995.15 | 0.806 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | monk_2 | 534.89 | 0.741 | N/A | 1000 | 79 | Tanh | SoftMax |
| Adam | monk_2 | 123.627 | 0.806 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | monk_2 | 738.585 | 0.722 | N/A | 1000 | 69 | SoftRelu | SoftMax |
| Adam | monk_2 | 1.55 | 0.806 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | monk_2 | 556.256 | 0.745 | N/A | 1000 | 53 | Relu | SoftMax |
| CSEEM | monk_2 | 152.999 | 0.981 | 8 | N/A | 97 | Tanh | ClipRound |
| CSEEM | monk_2 | 44.999 | 0.977 | 8 | N/A | 56 | SoftRelu | ClipRound |
| CSEEM | monk_2 | 75.997 | 0.979 | 8 | N/A | 52 | Relu | ClipRound |
| CSEEM | monk_2 | 358.999 | 0.975 | 16 | N/A | 79 | Tanh | ClipRound |
| CSEEM | monk_2 | 463.001 | 0.988 | 16 | N/A | 69 | SoftRelu | ClipRound |
| CSEEM | monk_2 | 256.999 | 0.991 | 16 | N/A | 53 | Relu | ClipRound |
| CSEEM | monk_2 | 627.998 | 0.984 | 32 | N/A | 67 | Tanh | ClipRound |
| CSEEM | monk_2 | 175.0 | 0.991 | 32 | N/A | 64 | SoftRelu | ClipRound |
| CSEEM | monk_2 | 988.998 | 0.995 | 32 | N/A | 66 | Relu | ClipRound |

Table D.34: All CSEEM Results of classification problems (34/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|--------|---------|----------|----------|-------|--------|-----|---------------|-----------------|
| RMSprop | monk_2 | 866.453 | 0.778 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | monk_2 | 524.788 | 0.778 | N/A | 1000 | 79 | Tanh | SoftMax |
| RMSprop | monk_2 | 137.002 | 0.778 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | monk_2 | 916.109 | 0.778 | N/A | 1000 | 69 | SoftRelu | SoftMax |
| RMSprop | monk_2 | 254.833 | 0.806 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | monk_2 | 553.976 | 0.806 | N/A | 1000 | 53 | Relu | SoftMax |
| SGD | monk_2 | 891.123 | 0.699 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | monk_2 | 472.031 | 0.493 | N/A | 1000 | 79 | Tanh | SoftMax |
| SGD | monk_2 | 974.132 | 0.727 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | monk_2 | 746.679 | 0.553 | N/A | 1000 | 69 | SoftRelu | SoftMax |
| SGD | monk_2 | 596.446 | 0.414 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | monk_2 | 476.204 | 0.41 | N/A | 1000 | 53 | Relu | SoftMax |
| Adadelta | newthyroid | 898.676 | 0.833 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | newthyroid | 385.884 | 0.0372 | N/A | 1000 | 28 | Tanh | SoftMax |
| Adadelta | newthyroid | 794.98 | 0.391 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | newthyroid | 389.567 | 0.251 | N/A | 1000 | 32 | SoftRelu | SoftMax |
| Adadelta | newthyroid | 985.971 | 0.46 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | newthyroid | 373.308 | 0.581 | N/A | 1000 | 34 | Relu | SoftMax |
| Adagrad | newthyroid | 849.002 | 0.893 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | newthyroid | 362.761 | 0.102 | N/A | 1000 | 28 | Tanh | SoftMax |
| Adagrad | newthyroid | 765.958 | 0.828 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | newthyroid | 407.089 | 0.758 | N/A | 1000 | 32 | SoftRelu | SoftMax |
| Adagrad | newthyroid | 967.404 | 0.851 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | newthyroid | 323.331 | 0.8 | N/A | 1000 | 34 | Relu | SoftMax |
| Adam | newthyroid | 947.933 | 0.991 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | newthyroid | 399.071 | 0.977 | N/A | 1000 | 28 | Tanh | SoftMax |
| Adam | newthyroid | 902.675 | 0.977 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | newthyroid | 415.849 | 0.977 | N/A | 1000 | 32 | SoftRelu | SoftMax |

Table D.35: All CSEEM Results of classification problems (35/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|---|---|---|---|---|---|---|---|---|
| Adam | newthyroid | 55.216 | 0.972 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | newthyroid | 378.28 | 0.963 | N/A | 1000 | 34 | Relu | SoftMax |
| CSEEM | newthyroid | 10.999 | 0.935 | 8 | N/A | 5 | Tanh | ClipRound |
| CSEEM | newthyroid | 56.0 | 0.977 | 8 | N/A | 34 | SoftRelu | ClipRound |
| CSEEM | newthyroid | 90.0 | 0.991 | 8 | N/A | 56 | Relu | ClipRound |
| CSEEM | newthyroid | 78.999 | 0.967 | 16 | N/A | 28 | Tanh | ClipRound |
| CSEEM | newthyroid | 97.0 | 0.972 | 16 | N/A | 32 | SoftRelu | ClipRound |
| CSEEM | newthyroid | 181.99 | 0.981 | 16 | N/A | 34 | Relu | ClipRound |
| CSEEM | newthyroid | 228.999 | 0.986 | 32 | N/A | 36 | Tanh | ClipRound |
| CSEEM | newthyroid | 159.999 | 0.981 | 32 | N/A | 36 | SoftRelu | ClipRound |
| CSEEM | newthyroid | 173.998 | 0.977 | 32 | N/A | 38 | Relu | ClipRound |
| RMSprop | newthyroid | 875.258 | 0.991 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | newthyroid | 407.676 | 0.991 | N/A | 1000 | 28 | Tanh | SoftMax |
| RMSprop | newthyroid | 575.012 | 0.986 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | newthyroid | 622.554 | 0.972 | N/A | 1000 | 32 | SoftRelu | SoftMax |
| RMSprop | newthyroid | 205.092 | 0.981 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | newthyroid | 363.504 | 0.977 | N/A | 1000 | 34 | Relu | SoftMax |
| SGD | newthyroid | 830.862 | 0.86 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | newthyroid | 330.795 | 0.377 | N/A | 1000 | 28 | Tanh | SoftMax |
| SGD | newthyroid | 923.478 | 0.86 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | newthyroid | 440.675 | 0.786 | N/A | 1000 | 32 | SoftRelu | SoftMax |
| SGD | newthyroid | 961.18 | 0.874 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | newthyroid | 300.385 | 0.0837 | N/A | 1000 | 34 | Relu | SoftMax |
| Adadelta | pima | 886.587 | 0.474 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | pima | 894.825 | 0.499 | N/A | 1000 | 263 | Tanh | SoftMax |
| Adadelta | pima | 52.828 | 0.355 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | pima | 353.188 | 0.444 | N/A | 1000 | 258 | SoftRelu | SoftMax |
| Adadelta | pima | 284.926 | 0.698 | N/A | 1000 | 1000 | Relu | SoftMax |

Table D.36: All CSEEM Results of classification problems (36/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|--------|---------|----------|----------|-------|--------|-----|---------------|-----------------|
| Adadelta | pima | 783.841 | 0.654 | N/A | 1000 | 213 | Relu | SoftMax |
| Adagrad | pima | 854.688 | 0.52 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | pima | 876.334 | 0.458 | N/A | 1000 | 263 | Tanh | SoftMax |
| Adagrad | pima | 71.579 | 0.336 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | pima | 330.938 | 0.635 | N/A | 1000 | 258 | SoftRelu | SoftMax |
| Adagrad | pima | 285.801 | 0.689 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | pima | 814.329 | 0.486 | N/A | 1000 | 213 | Relu | SoftMax |
| Adam | pima | 905.97 | 0.65 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | pima | 996.794 | 0.669 | N/A | 1000 | 263 | Tanh | SoftMax |
| Adam | pima | 185.568 | 0.698 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | pima | 492.868 | 0.651 | N/A | 1000 | 258 | SoftRelu | SoftMax |
| Adam | pima | 341.328 | 0.651 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | pima | 867.213 | 0.651 | N/A | 1000 | 213 | Relu | SoftMax |
| CSEEM | pima | 115.507 | 0.888 | 8 | N/A | 236 | Tanh | ClipRound |
| CSEEM | pima | 154.0 | 0.887 | 8 | N/A | 238 | SoftRelu | ClipRound |
| CSEEM | pima | 543.999 | 0.896 | 8 | N/A | 280 | Relu | ClipRound |
| CSEEM | pima | 947.0 | 0.905 | 16 | N/A | 263 | Tanh | ClipRound |
| CSEEM | pima | 878.009 | 0.888 | 16 | N/A | 258 | SoftRelu | ClipRound |
| CSEEM | pima | 156.993 | 0.883 | 16 | N/A | 213 | Relu | ClipRound |
| CSEEM | pima | 488.999 | 0.905 | 32 | N/A | 297 | Tanh | ClipRound |
| CSEEM | pima | 402.999 | 0.888 | 32 | N/A | 238 | SoftRelu | ClipRound |
| CSEEM | pima | 390.999 | 0.914 | 32 | N/A | 284 | Relu | ClipRound |
| RMSprop | pima | 634.05 | 0.667 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | pima | 44.996 | 0.656 | N/A | 1000 | 263 | Tanh | SoftMax |
| RMSprop | pima | 326.038 | 0.651 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | pima | 381.203 | 0.699 | N/A | 1000 | 258 | SoftRelu | SoftMax |
| RMSprop | pima | 913.468 | 0.651 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | pima | 669.727 | 0.654 | N/A | 1000 | 213 | Relu | SoftMax |

Table D.37: All CSEEM Results of classification problems (37/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|--------|---------|----------|----------|-------|--------|-----|---------------|-----------------|
| SGD | pima | 826.034 | 0.648 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | pima | 6.091 | 0.648 | N/A | 1000 | 263 | Tanh | SoftMax |
| SGD | pima | 250.658 | 0.352 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | pima | 339.105 | 0.646 | N/A | 1000 | 258 | SoftRelu | SoftMax |
| SGD | pima | 279.871 | 0.685 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | pima | 845.044 | 0.426 | N/A | 1000 | 213 | Relu | SoftMax |
| Adadelta | post_operative | 614.231 | 0.356 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | post_operative | 343.079 | 0.31 | N/A | 1000 | 34 | Tanh | SoftMax |
| Adadelta | post_operative | 842.023 | 0.333 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | post_operative | 367.462 | 0.414 | N/A | 1000 | 36 | SoftRelu | SoftMax |
| Adadelta | post_operative | 603.318 | 0.333 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | post_operative | 306.849 | 0.345 | N/A | 1000 | 44 | Relu | SoftMax |
| Adagrad | post_operative | 558.657 | 0.345 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | post_operative | 319.682 | 0.333 | N/A | 1000 | 34 | Tanh | SoftMax |
| Adagrad | post_operative | 802.299 | 0.379 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | post_operative | 384.515 | 0.402 | N/A | 1000 | 36 | SoftRelu | SoftMax |
| Adagrad | post_operative | 561.914 | 0.448 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | post_operative | 297.26 | 0.368 | N/A | 1000 | 44 | Relu | SoftMax |
| Adam | post_operative | 636.841 | 0.552 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | post_operative | 378.56 | 0.644 | N/A | 1000 | 34 | Tanh | SoftMax |
| Adam | post_operative | 908.416 | 0.575 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | post_operative | 386.13 | 0.563 | N/A | 1000 | 36 | SoftRelu | SoftMax |
| Adam | post_operative | 630.103 | 0.529 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | post_operative | 346.497 | 0.517 | N/A | 1000 | 44 | Relu | SoftMax |
| CSEEM | post_operative | 8.0 | 0.828 | 8 | N/A | 32 | Tanh | ClipRound |
| CSEEM | post_operative | 8.997 | 0.793 | 8 | N/A | 34 | SoftRelu | ClipRound |
| CSEEM | post_operative | 10.0 | 0.793 | 8 | N/A | 29 | Relu | ClipRound |
| CSEEM | post_operative | 22.0 | 0.851 | 16 | N/A | 34 | Tanh | ClipRound |

Table D.38: All CSEEM Results of classification problems (38/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|--------|---------|----------|----------|-------|--------|-----|---------------|-----------------|
| CSEEM | post_operative | 10.999 | 0.828 | 16 | N/A | 36 | SoftRelu | ClipRound |
| CSEEM | post_operative | 42.999 | 0.885 | 16 | N/A | 44 | Relu | ClipRound |
| CSEEM | post_operative | 47.999 | 0.885 | 32 | N/A | 32 | Tanh | ClipRound |
| CSEEM | post_operative | 62.0 | 0.816 | 32 | N/A | 31 | SoftRelu | ClipRound |
| CSEEM | post_operative | 44.0 | 0.862 | 32 | N/A | 35 | Relu | ClipRound |
| RMSprop | post_operative | 558.325 | 0.563 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | post_operative | 361.569 | 0.644 | N/A | 1000 | 34 | Tanh | SoftMax |
| RMSprop | post_operative | 920.063 | 0.655 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | post_operative | 390.019 | 0.609 | N/A | 1000 | 36 | SoftRelu | SoftMax |
| RMSprop | post_operative | 270.962 | 0.54 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | post_operative | 345.862 | 0.69 | N/A | 1000 | 44 | Relu | SoftMax |
| SGD | post_operative | 544.146 | 0.391 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | post_operative | 283.02 | 0.276 | N/A | 1000 | 34 | Tanh | SoftMax |
| SGD | post_operative | 821.132 | 0.207 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | post_operative | 312.956 | 0.345 | N/A | 1000 | 36 | SoftRelu | SoftMax |
| SGD | post_operative | 528.3 | 0.241 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | post_operative | 262.801 | 0.23 | N/A | 1000 | 44 | Relu | SoftMax |
| Adadelta | saheart | 151.389 | 0.626 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | saheart | 623.668 | 0.4 | N/A | 1000 | 178 | Tanh | SoftMax |
| Adadelta | saheart | 651.374 | 0.571 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | saheart | 891.237 | 0.53 | N/A | 1000 | 185 | SoftRelu | SoftMax |
| Adadelta | saheart | 986.097 | 0.628 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | saheart | 790.183 | 0.39 | N/A | 1000 | 158 | Relu | SoftMax |
| Adagrad | saheart | 49.022 | 0.621 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | saheart | 577.959 | 0.639 | N/A | 1000 | 178 | Tanh | SoftMax |
| Adagrad | saheart | 438.225 | 0.667 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | saheart | 852.136 | 0.677 | N/A | 1000 | 185 | SoftRelu | SoftMax |
| Adagrad | saheart | 965.334 | 0.628 | N/A | 1000 | 1000 | Relu | SoftMax |

Table D.39: All CSEEM Results of classification problems (39/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|--------|---------|----------|----------|-------|--------|-----|---------------|-----------------|
| Adagrad | saheart | 749.886 | 0.656 | N/A | 1000 | 158 | Relu | SoftMax |
| Adam | saheart | 110.782 | 0.654 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | saheart | 612.713 | 0.652 | N/A | 1000 | 178 | Tanh | SoftMax |
| Adam | saheart | 390.46 | 0.654 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | saheart | 917.936 | 0.535 | N/A | 1000 | 185 | SoftRelu | SoftMax |
| Adam | saheart | 803.942 | 0.68 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | saheart | 833.613 | 0.654 | N/A | 1000 | 158 | Relu | SoftMax |
| CSEEM | saheart | 320.0 | 0.87 | 8 | N/A | 162 | Tanh | ClipRound |
| CSEEM | saheart | 504.0 | 0.877 | 8 | N/A | 168 | SoftRelu | ClipRound |
| CSEEM | saheart | 307.999 | 0.851 | 8 | N/A | 124 | Relu | ClipRound |
| CSEEM | saheart | 342.999 | 0.896 | 16 | N/A | 178 | Tanh | ClipRound |
| CSEEM | saheart | 397.999 | 0.87 | 16 | N/A | 185 | SoftRelu | ClipRound |
| CSEEM | saheart | 198.993 | 0.877 | 16 | N/A | 158 | Relu | ClipRound |
| CSEEM | saheart | 186.508 | 0.887 | 32 | N/A | 186 | Tanh | ClipRound |
| CSEEM | saheart | 604.999 | 0.868 | 32 | N/A | 148 | SoftRelu | ClipRound |
| CSEEM | saheart | 149.999 | 0.868 | 32 | N/A | 149 | Relu | ClipRound |
| RMSprop | saheart | 860.135 | 0.632 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | saheart | 593.119 | 0.63 | N/A | 1000 | 178 | Tanh | SoftMax |
| RMSprop | saheart | 175.001 | 0.615 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | saheart | 896.447 | 0.654 | N/A | 1000 | 185 | SoftRelu | SoftMax |
| RMSprop | saheart | 942.131 | 0.619 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | saheart | 774.616 | 0.45 | N/A | 1000 | 158 | Relu | SoftMax |
| SGD | saheart | 916.369 | 0.571 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | saheart | 545.457 | 0.565 | N/A | 1000 | 178 | Tanh | SoftMax |
| SGD | saheart | 366.092 | 0.619 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | saheart | 824.706 | 0.628 | N/A | 1000 | 185 | SoftRelu | SoftMax |
| SGD | saheart | 972.358 | 0.645 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | saheart | 722.536 | 0.671 | N/A | 1000 | 158 | Relu | SoftMax |

Table D.40: All CSEEM Results of classification problems (40/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|--------|---------|----------|----------|-------|--------|-----|---------------|-----------------|
| Adadelta | tae | 775.915 | 0.404 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | tae | 388.593 | 0.325 | N/A | 1000 | 65 | Tanh | SoftMax |
| Adadelta | tae | 111.03 | 0.351 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | tae | 408.048 | 0.331 | N/A | 1000 | 53 | SoftRelu | SoftMax |
| Adadelta | tae | 803.771 | 0.351 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | tae | 342.872 | 0.437 | N/A | 1000 | 61 | Relu | SoftMax |
| Adagrad | tae | 783.71 | 0.45 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | tae | 355.574 | 0.404 | N/A | 1000 | 65 | Tanh | SoftMax |
| Adagrad | tae | 80.13 | 0.424 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | tae | 366.363 | 0.311 | N/A | 1000 | 53 | SoftRelu | SoftMax |
| Adagrad | tae | 774.471 | 0.417 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | tae | 317.566 | 0.331 | N/A | 1000 | 61 | Relu | SoftMax |
| Adam | tae | 785.917 | 0.43 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | tae | 412.87 | 0.384 | N/A | 1000 | 65 | Tanh | SoftMax |
| Adam | tae | 154.455 | 0.45 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | tae | 426.508 | 0.318 | N/A | 1000 | 53 | SoftRelu | SoftMax |
| Adam | tae | 819.675 | 0.47 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | tae | 408.531 | 0.377 | N/A | 1000 | 61 | Relu | SoftMax |
| CSEEM | tae | 28.999 | 0.801 | 8 | N/A | 66 | Tanh | ClipRound |
| CSEEM | tae | 30.999 | 0.795 | 8 | N/A | 76 | SoftRelu | ClipRound |
| CSEEM | tae | 78.999 | 0.854 | 8 | N/A | 79 | Relu | ClipRound |
| CSEEM | tae | 52.001 | 0.834 | 16 | N/A | 65 | Tanh | ClipRound |
| CSEEM | tae | 41.999 | 0.702 | 16 | N/A | 53 | SoftRelu | ClipRound |
| CSEEM | tae | 28.99 | 0.755 | 16 | N/A | 61 | Relu | ClipRound |
| CSEEM | tae | 107.0 | 0.775 | 32 | N/A | 63 | Tanh | ClipRound |
| CSEEM | tae | 65.0 | 0.861 | 32 | N/A | 73 | SoftRelu | ClipRound |
| CSEEM | tae | 179.0 | 0.788 | 32 | N/A | 58 | Relu | ClipRound |
| RMSprop | tae | 997.999 | 0.397 | N/A | 1000 | 1000 | Tanh | SoftMax |

Table D.41: All CSEEM Results of classification problems (41/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|---|---|---|---|---|---|---|---|---|
| RMSprop | tae | 383.926 | 0.437 | N/A | 1000 | 65 | Tanh | SoftMax |
| RMSprop | tae | 294.534 | 0.43 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | tae | 449.419 | 0.444 | N/A | 1000 | 53 | SoftRelu | SoftMax |
| RMSprop | tae | 882.999 | 0.444 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | tae | 384.689 | 0.43 | N/A | 1000 | 61 | Relu | SoftMax |
| SGD | tae | 699.005 | 0.417 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | tae | 356.43 | 0.424 | N/A | 1000 | 65 | Tanh | SoftMax |
| SGD | tae | 111.615 | 0.391 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | tae | 365.552 | 0.391 | N/A | 1000 | 53 | SoftRelu | SoftMax |
| SGD | tae | 726.443 | 0.377 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | tae | 299.207 | 0.417 | N/A | 1000 | 61 | Relu | SoftMax |
| Adadelta | tic_tac_toe | 432.809 | 0.541 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | tic_tac_toe | 598.462 | 0.557 | N/A | 1000 | 361 | Tanh | SoftMax |
| Adadelta | tic_tac_toe | 552.038 | 0.543 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | tic_tac_toe | 284.634 | 0.516 | N/A | 1000 | 187 | SoftRelu | SoftMax |
| Adadelta | tic_tac_toe | 926.366 | 0.537 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | tic_tac_toe | 977.165 | 0.571 | N/A | 1000 | 268 | Relu | SoftMax |
| Adagrad | tic_tac_toe | 647.363 | 0.566 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | tic_tac_toe | 647.881 | 0.533 | N/A | 1000 | 361 | Tanh | SoftMax |
| Adagrad | tic_tac_toe | 511.039 | 0.49 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | tic_tac_toe | 214.15 | 0.526 | N/A | 1000 | 187 | SoftRelu | SoftMax |
| Adagrad | tic_tac_toe | 828.211 | 0.54 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | tic_tac_toe | 409.087 | 0.426 | N/A | 1000 | 268 | Relu | SoftMax |
| Adam | tic_tac_toe | 287.403 | 0.674 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | tic_tac_toe | 598.725 | 0.648 | N/A | 1000 | 361 | Tanh | SoftMax |
| Adam | tic_tac_toe | 727.413 | 0.664 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | tic_tac_toe | 375.283 | 0.645 | N/A | 1000 | 187 | SoftRelu | SoftMax |
| Adam | tic_tac_toe | 901.869 | 0.606 | N/A | 1000 | 1000 | Relu | SoftMax |

Table D.42: All CSEEM Results of classification problems (42/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|--------|---------|----------|----------|-------|--------|-----|---------------|-----------------|
| Adam | tic_tac_toe | 522.156 | 0.623 | N/A | 1000 | 268 | Relu | SoftMax |
| CSEEM | tic_tac_toe | 913.0 | 0.92 | 8 | N/A | 328 | Tanh | ClipRound |
| CSEEM | tic_tac_toe | 367.0 | 0.955 | 8 | N/A | 218 | SoftRelu | ClipRound |
| CSEEM | tic_tac_toe | 954.002 | 0.953 | 8 | N/A | 243 | Relu | ClipRound |
| CSEEM | tic_tac_toe | 453.0 | 0.944 | 16 | N/A | 361 | Tanh | ClipRound |
| CSEEM | tic_tac_toe | 944.999 | 0.962 | 16 | N/A | 187 | SoftRelu | ClipRound |
| CSEEM | tic_tac_toe | 868.993 | 0.96 | 16 | N/A | 268 | Relu | ClipRound |
| CSEEM | tic_tac_toe | 867.0 | 0.944 | 32 | N/A | 326 | Tanh | ClipRound |
| CSEEM | tic_tac_toe | 775.999 | 0.961 | 32 | N/A | 189 | SoftRelu | ClipRound |
| CSEEM | tic_tac_toe | 563.018 | 0.957 | 32 | N/A | 218 | Relu | ClipRound |
| RMSprop | tic_tac_toe | 284.001 | 0.683 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | tic_tac_toe | 598.91 | 0.669 | N/A | 1000 | 361 | Tanh | SoftMax |
| RMSprop | tic_tac_toe | 7.592 | 0.687 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | tic_tac_toe | 268.369 | 0.693 | N/A | 1000 | 187 | SoftRelu | SoftMax |
| RMSprop | tic_tac_toe | 872.001 | 0.63 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | tic_tac_toe | 605.473 | 0.497 | N/A | 1000 | 268 | Relu | SoftMax |
| SGD | tic_tac_toe | 115.902 | 0.596 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | tic_tac_toe | 618.846 | 0.509 | N/A | 1000 | 361 | Tanh | SoftMax |
| SGD | tic_tac_toe | 581.87 | 0.593 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | tic_tac_toe | 193.802 | 0.405 | N/A | 1000 | 187 | SoftRelu | SoftMax |
| SGD | tic_tac_toe | 830.669 | 0.39 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | tic_tac_toe | 517.736 | 0.389 | N/A | 1000 | 268 | Relu | SoftMax |
| Adadelta | vehicle | 95.195 | 0.489 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | vehicle | 28.863 | 0.537 | N/A | 1000 | 278 | Tanh | SoftMax |
| Adadelta | vehicle | 643.911 | 0.394 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | vehicle | 368.906 | 0.213 | N/A | 1000 | 208 | SoftRelu | SoftMax |
| Adadelta | vehicle | 585.776 | 0.402 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | vehicle | 463.618 | 0.235 | N/A | 1000 | 278 | Relu | SoftMax |

Table D.43: All CSEEM Results of classification problems (43/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|--------|---------|----------|----------|-------|--------|-----|---------------|-----------------|
| Adagrad | vehicle | 966.516 | 0.475 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | vehicle | 8.623 | 0.453 | N/A | 1000 | 278 | Tanh | SoftMax |
| Adagrad | vehicle | 519.372 | 0.132 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | vehicle | 407.055 | 0.235 | N/A | 1000 | 208 | SoftRelu | SoftMax |
| Adagrad | vehicle | 477.115 | 0.44 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | vehicle | 466.161 | 0.235 | N/A | 1000 | 278 | Relu | SoftMax |
| Adam | vehicle | 62.816 | 0.481 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | vehicle | 98.379 | 0.485 | N/A | 1000 | 278 | Tanh | SoftMax |
| Adam | vehicle | 609.836 | 0.235 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | vehicle | 461.75 | 0.235 | N/A | 1000 | 208 | SoftRelu | SoftMax |
| Adam | vehicle | 664.868 | 0.235 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | vehicle | 86.535 | 0.235 | N/A | 1000 | 278 | Relu | SoftMax |
| CSEEM | vehicle | 984.526 | 0.875 | 8 | N/A | 267 | Tanh | ClipRound |
| CSEEM | vehicle | 815.0 | 0.874 | 8 | N/A | 183 | SoftRelu | ClipRound |
| CSEEM | vehicle | 395.001 | 0.864 | 8 | N/A | 166 | Relu | ClipRound |
| CSEEM | vehicle | 230.997 | 0.892 | 16 | N/A | 278 | Tanh | ClipRound |
| CSEEM | vehicle | 638.0 | 0.887 | 16 | N/A | 208 | SoftRelu | ClipRound |
| CSEEM | vehicle | 90.991 | 0.917 | 16 | N/A | 278 | Relu | ClipRound |
| CSEEM | vehicle | 828.533 | 0.885 | 32 | N/A | 274 | Tanh | ClipRound |
| CSEEM | vehicle | 89.0 | 0.918 | 32 | N/A | 272 | SoftRelu | ClipRound |
| CSEEM | vehicle | 993.001 | 0.933 | 32 | N/A | 280 | Relu | ClipRound |
| RMSprop | vehicle | 29.001 | 0.447 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | vehicle | 78.131 | 0.428 | N/A | 1000 | 278 | Tanh | SoftMax |
| RMSprop | vehicle | 961.519 | 0.235 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | vehicle | 405.805 | 0.235 | N/A | 1000 | 208 | SoftRelu | SoftMax |
| RMSprop | vehicle | 954.0 | 0.235 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | vehicle | 380.874 | 0.235 | N/A | 1000 | 278 | Relu | SoftMax |
| SGD | vehicle | 846.327 | 0.513 | N/A | 1000 | 1000 | Tanh | SoftMax |

Table D.44: All CSEEM Results of classification problems (44/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|---|---|---|---|---|---|---|---|---|
| SGD | vehicle | 945.414 | 0.559 | N/A | 1000 | 278 | Tanh | SoftMax |
| SGD | vehicle | 555.323 | 0.326 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | vehicle | 492.329 | 0.403 | N/A | 1000 | 208 | SoftRelu | SoftMax |
| SGD | vehicle | 494.223 | 0.441 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | vehicle | 219.706 | 0.277 | N/A | 1000 | 278 | Relu | SoftMax |
| Adadelta | vowel | 333.807 | 0.151 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | vowel | 518.845 | 0.14 | N/A | 1000 | 280 | Tanh | SoftMax |
| Adadelta | vowel | 40.089 | 0.104 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | vowel | 367.691 | 0.0808 | N/A | 1000 | 273 | SoftRelu | SoftMax |
| Adadelta | vowel | 193.718 | 0.0778 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | vowel | 616.824 | 0.0879 | N/A | 1000 | 259 | Relu | SoftMax |
| Adagrad | vowel | 429.82 | 0.102 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | vowel | 498.401 | 0.139 | N/A | 1000 | 280 | Tanh | SoftMax |
| Adagrad | vowel | 923.543 | 0.101 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | vowel | 385.642 | 0.128 | N/A | 1000 | 273 | SoftRelu | SoftMax |
| Adagrad | vowel | 8.397 | 0.0778 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | vowel | 521.462 | 0.0818 | N/A | 1000 | 259 | Relu | SoftMax |
| Adam | vowel | 463.689 | 0.331 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | vowel | 550.169 | 0.335 | N/A | 1000 | 280 | Tanh | SoftMax |
| Adam | vowel | 88.491 | 0.0909 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | vowel | 394.984 | 0.309 | N/A | 1000 | 273 | SoftRelu | SoftMax |
| Adam | vowel | 109.826 | 0.337 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | vowel | 337.189 | 0.337 | N/A | 1000 | 259 | Relu | SoftMax |
| CSEEM | vowel | 32.0 | 0.947 | 8 | N/A | 248 | Tanh | ClipRound |
| CSEEM | vowel | 812.001 | 0.959 | 8 | N/A | 239 | SoftRelu | ClipRound |
| CSEEM | vowel | 252.003 | 0.954 | 8 | N/A | 255 | Relu | ClipRound |
| CSEEM | vowel | 545.001 | 0.978 | 16 | N/A | 280 | Tanh | ClipRound |
| CSEEM | vowel | 705.998 | 0.971 | 16 | N/A | 273 | SoftRelu | ClipRound |

Table D.45: All CSEEM Results of classification problems (45/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|--------|---------|----------|----------|-------|--------|-----|---------------|-----------------|
| CSEEM | vowel | 437.002 | 0.973 | 16 | N/A | 259 | Relu | ClipRound |
| CSEEM | vowel | 319.605 | 0.971 | 32 | N/A | 269 | Tanh | ClipRound |
| CSEEM | vowel | 848.001 | 0.96 | 32 | N/A | 221 | SoftRelu | ClipRound |
| CSEEM | vowel | 786.999 | 0.913 | 32 | N/A | 213 | Relu | ClipRound |
| RMSprop | vowel | 476.78 | 0.0909 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | vowel | 563.481 | 0.344 | N/A | 1000 | 280 | Tanh | SoftMax |
| RMSprop | vowel | 81.034 | 0.0909 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | vowel | 292.13 | 0.309 | N/A | 1000 | 273 | SoftRelu | SoftMax |
| RMSprop | vowel | 146.0 | 0.355 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | vowel | 472.033 | 0.29 | N/A | 1000 | 259 | Relu | SoftMax |
| SGD | vowel | 380.955 | 0.0869 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | vowel | 481.411 | 0.106 | N/A | 1000 | 280 | Tanh | SoftMax |
| SGD | vowel | 49.001 | 0.0869 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | vowel | 237.82 | 0.096 | N/A | 1000 | 273 | SoftRelu | SoftMax |
| SGD | vowel | 85.924 | 0.116 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | vowel | 319.963 | 0.0919 | N/A | 1000 | 259 | Relu | SoftMax |
| Adadelta | wine | 487.458 | 0.685 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | wine | 382.646 | 0.365 | N/A | 1000 | 37 | Tanh | SoftMax |
| Adadelta | wine | 249.344 | 0.607 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | wine | 371.896 | 0.331 | N/A | 1000 | 29 | SoftRelu | SoftMax |
| Adadelta | wine | 887.07 | 0.331 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | wine | 315.515 | 0.174 | N/A | 1000 | 25 | Relu | SoftMax |
| Adagrad | wine | 730.804 | 0.685 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | wine | 355.591 | 0.247 | N/A | 1000 | 37 | Tanh | SoftMax |
| Adagrad | wine | 101.055 | 0.674 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | wine | 361.917 | 0.331 | N/A | 1000 | 29 | SoftRelu | SoftMax |
| Adagrad | wine | 856.584 | 0.663 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | wine | 275.249 | 0.331 | N/A | 1000 | 25 | Relu | SoftMax |

Table D.46: All CSEEM Results of classification problems (46/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|--------|---------|----------|----------|-------|--------|-----|----------|-----------|
| Adam | wine | 781.884 | 0.933 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | wine | 401.054 | 0.652 | N/A | 1000 | 37 | Tanh | SoftMax |
| Adam | wine | 214.568 | 0.331 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | wine | 422.596 | 0.331 | N/A | 1000 | 29 | SoftRelu | SoftMax |
| Adam | wine | 903.531 | 0.331 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | wine | 369.399 | 0.331 | N/A | 1000 | 25 | Relu | SoftMax |
| CSEEM | wine | 36.0 | 0.983 | 8 | N/A | 41 | Tanh | ClipRound |
| CSEEM | wine | 11.0 | 0.983 | 8 | N/A | 35 | SoftRelu | ClipRound |
| CSEEM | wine | 22.998 | 0.972 | 8 | N/A | 38 | Relu | ClipRound |
| CSEEM | wine | 97.001 | 0.966 | 16 | N/A | 37 | Tanh | ClipRound |
| CSEEM | wine | 62.994 | 0.978 | 16 | N/A | 29 | SoftRelu | ClipRound |
| CSEEM | wine | 41.997 | 0.955 | 16 | N/A | 25 | Relu | ClipRound |
| CSEEM | wine | 115.0 | 0.972 | 32 | N/A | 21 | Tanh | ClipRound |
| CSEEM | wine | 100.0 | 0.966 | 32 | N/A | 37 | SoftRelu | ClipRound |
| CSEEM | wine | 314.0 | 0.972 | 32 | N/A | 33 | Relu | ClipRound |
| RMSprop | wine | 862.893 | 0.933 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | wine | 422.919 | 0.669 | N/A | 1000 | 37 | Tanh | SoftMax |
| RMSprop | wine | 390.009 | 0.331 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | wine | 408.731 | 0.893 | N/A | 1000 | 29 | SoftRelu | SoftMax |
| RMSprop | wine | 678.051 | 0.331 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | wine | 325.256 | 0.916 | N/A | 1000 | 25 | Relu | SoftMax |
| SGD | wine | 748.845 | 0.685 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | wine | 314.273 | 0.652 | N/A | 1000 | 37 | Tanh | SoftMax |
| SGD | wine | 79.732 | 0.713 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | wine | 346.3 | 0.331 | N/A | 1000 | 29 | SoftRelu | SoftMax |
| SGD | wine | 801.817 | 0.331 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | wine | 274.915 | 0.331 | N/A | 1000 | 25 | Relu | SoftMax |
| Adadelta | wisconsin | 797.251 | 0.205 | N/A | 1000 | 1000 | Tanh | SoftMax |

Table D.47: All CSEEM Results of classification problems (47/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|---|---|---|---|---|---|---|---|---|
| Adadelta | wisconsin | 605.205 | 0.247 | N/A | 1000 | 89 | Tanh | SoftMax |
| Adadelta | wisconsin | 165.757 | 0.917 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | wisconsin | 769.454 | 0.0966 | N/A | 1000 | 88 | SoftRelu | SoftMax |
| Adadelta | wisconsin | 936.974 | 0.925 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | wisconsin | 535.397 | 0.493 | N/A | 1000 | 68 | Relu | SoftMax |
| Adagrad | wisconsin | 844.064 | 0.95 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | wisconsin | 551.134 | 0.572 | N/A | 1000 | 89 | Tanh | SoftMax |
| Adagrad | wisconsin | 101.02 | 0.895 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | wisconsin | 769.108 | 0.814 | N/A | 1000 | 88 | SoftRelu | SoftMax |
| Adagrad | wisconsin | 843.085 | 0.108 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | wisconsin | 504.62 | 0.375 | N/A | 1000 | 68 | Relu | SoftMax |
| Adam | wisconsin | 967.676 | 0.966 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | wisconsin | 597.071 | 0.953 | N/A | 1000 | 89 | Tanh | SoftMax |
| Adam | wisconsin | 47.568 | 0.971 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | wisconsin | 782.35 | 0.95 | N/A | 1000 | 88 | SoftRelu | SoftMax |
| Adam | wisconsin | 920.584 | 0.969 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | wisconsin | 551.941 | 0.968 | N/A | 1000 | 68 | Relu | SoftMax |
| CSEEM | wisconsin | 464.999 | 0.982 | 8 | N/A | 102 | Tanh | ClipRound |
| CSEEM | wisconsin | 245.0 | 0.98 | 8 | N/A | 53 | SoftRelu | ClipRound |
| CSEEM | wisconsin | 408.0 | 0.98 | 8 | N/A | 81 | Relu | ClipRound |
| CSEEM | wisconsin | 894.001 | 0.981 | 16 | N/A | 89 | Tanh | ClipRound |
| CSEEM | wisconsin | 691.999 | 0.982 | 16 | N/A | 88 | SoftRelu | ClipRound |
| CSEEM | wisconsin | 324.0 | 0.981 | 16 | N/A | 68 | Relu | ClipRound |
| CSEEM | wisconsin | 764.51 | 0.985 | 32 | N/A | 94 | Tanh | ClipRound |
| CSEEM | wisconsin | 185.0 | 0.988 | 32 | N/A | 115 | SoftRelu | ClipRound |
| CSEEM | wisconsin | 619.999 | 0.984 | 32 | N/A | 85 | Relu | ClipRound |
| RMSprop | wisconsin | 430.001 | 0.969 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | wisconsin | 577.476 | 0.946 | N/A | 1000 | 89 | Tanh | SoftMax |

Table D.48: All CSEEM Results of classification problems (48/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|--------|---------|----------|----------|-------|--------|-----|---------------|-----------------|
| RMSprop | wisconsin | 885.074 | 0.978 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | wisconsin | 749.024 | 0.972 | N/A | 1000 | 88 | SoftRelu | SoftMax |
| RMSprop | wisconsin | 268.872 | 0.971 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | wisconsin | 551.075 | 0.974 | N/A | 1000 | 68 | Relu | SoftMax |
| SGD | wisconsin | 175.971 | 0.959 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | wisconsin | 527.069 | 0.17 | N/A | 1000 | 89 | Tanh | SoftMax |
| SGD | wisconsin | 942.619 | 0.959 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | wisconsin | 682.916 | 0.956 | N/A | 1000 | 88 | SoftRelu | SoftMax |
| SGD | wisconsin | 952.632 | 0.949 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | wisconsin | 480.905 | 0.912 | N/A | 1000 | 68 | Relu | SoftMax |
| Adadelta | zoo | 806.181 | 0.248 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adadelta | zoo | 354.663 | 0.238 | N/A | 1000 | 26 | Tanh | SoftMax |
| Adadelta | zoo | 928.587 | 0.0099 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adadelta | zoo | 403.467 | 0.0594 | N/A | 1000 | 22 | SoftRelu | SoftMax |
| Adadelta | zoo | 722.16 | 0.168 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adadelta | zoo | 290.432 | 0.158 | N/A | 1000 | 22 | Relu | SoftMax |
| Adagrad | zoo | 817.483 | 0.406 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adagrad | zoo | 323.221 | 0.178 | N/A | 1000 | 26 | Tanh | SoftMax |
| Adagrad | zoo | 883.58 | 0.0099 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adagrad | zoo | 333.271 | 0.416 | N/A | 1000 | 22 | SoftRelu | SoftMax |
| Adagrad | zoo | 680.745 | 0.366 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adagrad | zoo | 267.788 | 0.0891 | N/A | 1000 | 22 | Relu | SoftMax |
| Adam | zoo | 935.639 | 0.96 | N/A | 1000 | 1000 | Tanh | SoftMax |
| Adam | zoo | 389.574 | 0.96 | N/A | 1000 | 26 | Tanh | SoftMax |
| Adam | zoo | 951.3 | 0.99 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| Adam | zoo | 385.294 | 0.96 | N/A | 1000 | 22 | SoftRelu | SoftMax |
| Adam | zoo | 730.774 | 0.99 | N/A | 1000 | 1000 | Relu | SoftMax |
| Adam | zoo | 316.174 | 0.99 | N/A | 1000 | 22 | Relu | SoftMax |

Table D.49: All Results of Classification problems (49/49).

| Method | Dataset | Time (s) | Accuracy | $n_c$ | epochs | $k$ | $\phi(\cdot)$ | $\phi_o(\cdot)$ |
|--------|---------|----------|----------|-------|--------|-----|---------------|-----------------|
| CSEEM | zoo | 13.0 | 0.98 | 8 | N/A | 24 | Tanh | ClipRound |
| CSEEM | zoo | 10.0 | 0.97 | 8 | N/A | 21 | SoftRelu | ClipRound |
| CSEEM | zoo | 20.998 | 0.99 | 8 | N/A | 24 | Relu | ClipRound |
| CSEEM | zoo | 14.0 | 0.98 | 16 | N/A | 26 | Tanh | ClipRound |
| CSEEM | zoo | 26.999 | 0.941 | 16 | N/A | 22 | SoftRelu | ClipRound |
| CSEEM | zoo | 30.985 | 1 | 16 | N/A | 22 | Relu | ClipRound |
| CSEEM | zoo | 59.0 | 0.96 | 32 | N/A | 21 | Tanh | ClipRound |
| CSEEM | zoo | 38.0 | 0.98 | 32 | N/A | 22 | SoftRelu | ClipRound |
| CSEEM | zoo | 43.999 | 0.95 | 32 | N/A | 20 | Relu | ClipRound |
| RMSprop | zoo | 696.959 | 0.99 | N/A | 1000 | 1000 | Tanh | SoftMax |
| RMSprop | zoo | 359.069 | 0.97 | N/A | 1000 | 26 | Tanh | SoftMax |
| RMSprop | zoo | 91.009 | 0.99 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| RMSprop | zoo | 378.793 | 0.97 | N/A | 1000 | 22 | SoftRelu | SoftMax |
| RMSprop | zoo | 173.105 | 0.99 | N/A | 1000 | 1000 | Relu | SoftMax |
| RMSprop | zoo | 319.485 | 0.97 | N/A | 1000 | 22 | Relu | SoftMax |
| SGD | zoo | 879.341 | 0.762 | N/A | 1000 | 1000 | Tanh | SoftMax |
| SGD | zoo | 297.788 | 0.475 | N/A | 1000 | 26 | Tanh | SoftMax |
| SGD | zoo | 844.504 | 0.663 | N/A | 1000 | 1000 | SoftRelu | SoftMax |
| SGD | zoo | 316.82 | 0.505 | N/A | 1000 | 22 | SoftRelu | SoftMax |
| SGD | zoo | 650.41 | 0.822 | N/A | 1000 | 1000 | Relu | SoftMax |
| SGD | zoo | 257.286 | 0.208 | N/A | 1000 | 22 | Relu | SoftMax |