| Time Period | Algorithm | Epochs | Batch Size | Optimiser | MSE | RMSE | MAPE | R- Square | Stop |
|---|---|---|---|---|---|---|---|---|---|
| 2019 - 2024 | LSTM | 10 | 4 | Adam | 20.2870 | 4.5041 | 0.0202 | 0.9347 | 10 |
| 2019 - 2024 | LSTM | 10 | 8 | Adam | 19.1450 | 4.3755 | 0.0202 | 0.9384 | 10 |
| 2019 - 2024 | LSTM | 10 | 16 | Adam | 27.2918 | 5.2242 | 0.0242 | 0.9121 | 10 |
| 2019 - 2024 | LSTM | 10 | 32 | Adam | 48.8492 | 6.9892 | 0.0332 | 0.8427 | 10 |
| 2019 - 2024 | LSTM | 10 | 64 | Adam | 36.8049 | 6.0667 | 0.0280 | 0.8815 | 10 |
| | | | | | | | | | |
| 2019 - 2024 | LSTM | 25 | 4 | Adam | 20.5029 | 4.5280 | 0.0206 | 0.9340 | 25/25 |
| 2019 - 2024 | LSTM | 25 | 8 | Adam | 14.1695 | 3.7642 | 0.0170 | 0.9544 | 25 |
| 2019 - 2024 | LSTM | 25 | 16 | Adam | 18.2969 | 4.2775 | 0.0200 | 0.9411 | 25/25 |
| 2019 - 2024 | LSTM | 25 | 32 | Adam | 26.7868 | 5.1756 | 0.0244 | 0.9138 | 25/25 |
| 2019 - 2024 | LSTM | 25 | 64 | Adam | 41.7051 | 6.4580 | 0.0309 | 0.8657 | 25/25 |
| | | | | | | | | | |
| 2019 - 2024 | LSTM | 50 | 4 | Adam | 11.0151 | 3.3189 | 0.0143 | 0.9645 | 39/50 |
| 2019 - 2024 | LSTM | 50 | 8 | Adam | 12.6584 | 3.5579 | 0.0163 | 0.9592 | 47/50 |
| 2019 - 2024 | LSTM | 50 | 16 | Adam | 12.6539 | 3.5572 | 0.0160 | 0.9593 | 50/50 |
| 2019 - 2024 | LSTM | 50 | 32 | Adam | 13.9349 | 3.7329 | 0.0176 | 0.9551 | 50/50 |
| 2019 - 2024 | LSTM | 50 | 64 | Adam | 32.0810 | 5.6640 | 0.0264 | 0.8967 | 48/50 |
| | | | | | | | | | |
| 2019 - 2024 | LSTM | 100 | 4 | Adam | 17.8216 | 4.2216 | 0.0195 | 0.9426 | 26/100 |
| 2019 - 2024 | LSTM | 100 | 8 | Adam | 11.2099 | 3.3481 | 0.0141 | 0.9639 | 62/100 |
| 2019 - 2024 | LSTM | 100 | 16 | Adam | 9.7696 | 3.1256 | 0.0134 | 0.9685 | 78/100 |
| 2019 - 2024 | LSTM | 100 | 32 | Adam | 18.6933 | 4.3236 | 0.0197 | 0.9398 | 62/100 |
| 2019 - 2024 | LSTM | 100 | 64 | Adam | 27.5942 | 5.2530 | 0.0245 | 0.9112 | 41/100 |
| | | | | | | | | | |
| 2019 - 2024 | LSTM | 200 | 4 | Adam | 15.2852 | 3.9096 | 0.0175 | 0.9508 | 29/200 |
| 2019 - 2024 | LSTM | 200 | 8 | Adam | 16.1337 | 4.0167 | 0.0182 | 0.9481 | 38/200 |
| 2019 - 2024 | LSTM | 200 | 16 | Adam | 18.8407 | 4.3406 | 0.0201 | 0.9393 | 37/200 |
| 2019 - 2024 | LSTM | 200 | 32 | Adam | 29.9132 | 5.4693 | 0.0254 | 0.9037 | 39/200 |
| 2019 - 2024 | LSTM | 200 | 64 | Adam | 18.1433 | 4.2595 | 0.0199 | 0.9416 | 60/200 |
| | | | | | | | | | |
| 2019 - 2024 | LSTM | 10 | 4 | Nadam | 24.9181 | 4.9918 | 0.0229 | 0.9198 | 10.0000 |
| 2019 - 2024 | LSTM | 10 | 8 | Nadam | 23.1055 | 4.8068 | 0.0221 | 0.9256 | 10.0000 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2019 - 2024 | LSTM | 10 | 16 | Nadam | 49.0203 | 7.0015 | 0.0332 | 0.8422 | 10.0000 |
| 2019 - 2024 | LSTM | 10 | 32 | Nadam | 50.9108 | 7.1352 | 0.0328 | 0.8361 | 10.0000 |
| 2019 - 2024 | LSTM | 10 | 64 | Nadam | 54.0863 | 7.3543 | 0.0351 | 0.8259 | 10.0000 |
| | | | | | | | | | |
| 2019 - 2024 | LSTM | 25 | 4 | Nadam | 16.2381 | 4.0297 | 0.0187 | 0.9477 | 25/25 |
| 2019 - 2024 | LSTM | 25 | 8 | Nadam | 18.6282 | 4.3160 | 0.0200 | 0.9400 | 25/25 |
| 2019 - 2024 | LSTM | 25 | 16 | Nadam | 15.2965 | 3.9111 | 0.0178 | 0.9508 | 25/25 |
| 2019 - 2024 | LSTM | 25 | 32 | Nadam | 19.0200 | 4.3612 | 0.0203 | 0.9388 | 25/25 |
| 2019 - 2024 | LSTM | 25 | 64 | Nadam | 26.5859 | 5.1562 | 0.0242 | 0.9144 | 25/25 |
| | | | | | | | | | |
| 2019 - 2024 | LSTM | 50 | 4 | Nadam | 13.8398 | 3.7202 | 0.0168 | 0.9554 | 36/50 |
| 2019 - 2024 | LSTM | 50 | 8 | Nadam | 13.6848 | 3.6993 | 0.0171 | 0.9559 | 33/50 |
| 2019 - 2024 | LSTM | 50 | 16 | Nadam | 12.1548 | 3.4864 | 0.0150 | 0.9609 | 50/50 |
| 2019 - 2024 | LSTM | 50 | 32 | Nadam | 20.4772 | 4.5252 | 0.0215 | 0.9341 | 43/50 |
| 2019 - 2024 | LSTM | 50 | 64 | Nadam | 33.2185 | 5.7635 | 0.0273 | 0.8931 | 47/50 |
| | | | | | | | | | |
| 2019 - 2024 | LSTM | 100 | 4 | Nadam | 17.2822 | 4.1572 | 0.0178 | 0.9444 | 42/100 |
| 2019 - 2024 | LSTM | 100 | 8 | Nadam | 14.9910 | 3.8718 | 0.0168 | 0.9517 | 50/100 |
| 2019 - 2024 | LSTM | 100 | 16 | Nadam | 12.2240 | 3.4963 | 0.0151 | 0.9606 | 76/100 |
| 2019 - 2024 | LSTM | 100 | 32 | Nadam | 13.1590 | 3.6275 | 0.0166 | 0.9576 | 100/100 |
| 2019 - 2024 | LSTM | 100 | 64 | Nadam | 26.9010 | 5.1866 | 0.0242 | 0.9134 | 44/100 |
| | | | | | | | | | |
| 2019 - 2024 | LSTM | 200 | 4 | Nadam | 12.6361 | 3.5547 | 0.0161 | 0.9593 | 34/200 |
| 2019 - 2024 | LSTM | 200 | 8 | Nadam | 14.4749 | 3.8046 | 0.0176 | 0.9534 | 56/200 |
| 2019 - 2024 | LSTM | 200 | 16 | Nadam | 12.7695 | 3.5734 | 0.0154 | 0.9589 | 72/200 |
| 2019 - 2024 | LSTM | 200 | 32 | Nadam | 19.6441 | 4.4322 | 0.0208 | 0.9368 | 42/200 |
| 2019 - 2024 | LSTM | 200 | 64 | Nadam | 25.4144 | 5.0413 | 0.0230 | 0.9182 | 57/200 |
| | | | | | | | | | |
| 2019 - 2024 | LSTM | 10 | 4 | RMSProp | 19.7985 | 4.4495 | 0.0202 | 0.9363 | 10.0000 |
| 2019 - 2024 | LSTM | 10 | 8 | RMSProp | 25.3772 | 5.0376 | 0.0232 | 0.9183 | 10.0000 |
| 2019 - 2024 | LSTM | 10 | 16 | RMSProp | 17.6337 | 4.1993 | 0.0193 | 0.9432 | 10.0000 |
| 2019 - 2024 | LSTM | 10 | 32 | RMSProp | 31.4020 | 5.6038 | 0.0255 | 0.8989 | 10.0000 |
| 2019 - 2024 | LSTM | 10 | 64 | RMSProp | 62.6340 | 7.9142 | 0.0364 | 0.7983 | 10.0000 |

| 2019 - 2024 | LSTM | 25 | 4 | RMSProp | 13.0889 | 3.6179 | 0.0162 | 0.9579 | 25.0000 |
|---|---|---|---|---|---|---|---|---|---|
| 2019 - 2024 | LSTM | 25 | 8 | RMSProp | 19.7223 | 4.4410 | 0.0200 | 0.9365 | 25.0000 |
| 2019 - 2024 | LSTM | 25 | 16 | RMSProp | 24.8033 | 4.9803 | 0.0235 | 0.9201 | 25.0000 |
| 2019 - 2024 | LSTM | 25 | 32 | RMSProp | 15.2140 | 3.9005 | 0.0181 | 0.9510 | 25.0000 |
| 2019 - 2024 | LSTM | 25 | 64 | RMSProp | 22.8049 | 4.7754 | 0.0219 | 0.9266 | 25.0000 |
| | | | | | | | | | |
| 2019 - 2024 | LSTM | 50 | 4 | RMSProp | 16.5033 | 4.0624 | 0.0174 | 0.9469 | 39/50 |
| 2019 - 2024 | LSTM | 50 | 8 | RMSProp | 12.3676 | 3.5168 | 0.0153 | 0.9602 | 50/50 |
| 2019 - 2024 | LSTM | 50 | 16 | RMSProp | 11.2876 | 3.3597 | 0.0148 | 0.9637 | 50/50 |
| 2019 - 2024 | LSTM | 50 | 32 | RMSProp | 13.5172 | 3.6766 | 0.0171 | 0.9565 | 50/50 |
| 2019 - 2024 | LSTM | 50 | 64 | RMSProp | 16.4704 | 4.0584 | 0.0190 | 0.9470 | 50/50 |
| | | | | | | | | | |
| 2019 - 2024 | LSTM | 100 | 4 | RMSProp | 15.3431 | 3.9170 | 0.0172 | 0.9506 | 43/100 |
| 2019 - 2024 | LSTM | 100 | 8 | RMSProp | 14.2201 | 3.7709 | 0.0164 | 0.9542 | 45/100 |
| 2019 - 2024 | LSTM | 100 | 16 | RMSProp | 11.4412 | 3.3825 | 0.0148 | 0.9632 | 71/100 |
| 2019 - 2024 | LSTM | 100 | 32 | RMSProp | 11.2018 | 3.3469 | 0.0148 | 0.9639 | 100/100 |
| 2019 - 2024 | LSTM | 100 | 64 | RMSProp | 16.5735 | 4.0711 | 0.0193 | 0.9466 | 60/100 |
| | | | | | | | | | |
| 2019 - 2024 | LSTM | 200 | 4 | RMSProp | 13.5636 | 3.6829 | 0.0167 | 0.9563 | 43/200 |
| 2019 - 2024 | LSTM | 200 | 8 | RMSProp | 11.8111 | 3.4367 | 0.0152 | 0.9620 | 37/200 |
| 2019 - 2024 | LSTM | 200 | 16 | RMSProp | 11.6509 | 3.4133 | 0.0154 | 0.9625 | 75/200 |
| 2019 - 2024 | LSTM | 200 | 32 | RMSProp | 10.0014 | 3.1625 | 0.0137 | 0.9678 | 114/200 |
| 2019 - 2024 | LSTM | 200 | 64 | RMSProp | 11.9916 | 3.4629 | 0.0158 | 0.9614 | 100/200 |
| 2019 - 2024 | GRU | 10 | 4 | Adam | 13.7893 | 3.7134 | 0.0163 | 0.9556 | 10 |
| 2019 - 2024 | GRU | 10 | 8 | Adam | 12.5315 | 3.5400 | 0.0160 | 0.9597 | 10 |
| 2019 - 2024 | GRU | 10 | 16 | Adam | 14.9961 | 3.8725 | 0.0181 | 0.9517 | 10 |
| 2019 - 2024 | GRU | 10 | 32 | Adam | 21.5657 | 4.6439 | 0.0209 | 0.9306 | 10 |
| 2019 - 2024 | GRU | 10 | 64 | Adam | 22.3789 | 4.7306 | 0.0221 | 0.9280 | 10 |
| | | | | | | | | | |
| 2019 - 2024 | GRU | 25 | 4 | Adam | 14.2111 | 3.7698 | 0.0157 | 0.9542 | 25/25 |
| 2019 - 2024 | GRU | 25 | 8 | Adam | 11.2207 | 3.3497 | 0.0150 | 0.9639 | 25/25 |
| 2019 - 2024 | GRU | 25 | 16 | Adam | 11.6189 | 3.4086 | 0.0152 | 0.9626 | 25/25 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2019 - 2024 | GRU | 25 | 32 | Adam | 13.0820 | 3.6169 | 0.0162 | 0.9579 | 25/25 |
| 2019 - 2024 | GRU | 25 | 64 | Adam | 16.6805 | 4.0842 | 0.0188 | 0.9463 | 25/25 |
| | | | | | | | | | |
| 2019 - 2024 | GRU | 50 | 4 | Adam | 13.5344 | 3.6789 | 0.0163 | 0.9564 | 22/50 |
| 2019 - 2024 | GRU | 50 | 8 | Adam | 10.5090 | 3.2418 | 0.0143 | 0.9662 | 32/50 |
| 2019 - 2024 | GRU | 50 | 16 | Adam | 11.4821 | 3.3885 | 0.0147 | 0.9630 | 49/50 |
| 2019 - 2024 | GRU | 50 | 32 | Adam | 14.3468 | 3.7877 | 0.0171 | 0.9538 | 41/50 |
| 2019 - 2024 | GRU | 50 | 64 | Adam | 11.8951 | 3.4489 | 0.0153 | 0.9617 | 50/50 |
| | | | | | | | | | |
| 2019 - 2024 | GRU | 100 | 4 | Adam | 12.9899 | 3.6042 | 0.0151 | 0.9582 | 32/100 |
| 2019 - 2024 | GRU | 100 | 8 | Adam | 10.2307 | 3.1985 | 0.0145 | 0.9671 | 37/100 |
| 2019 - 2024 | GRU | 100 | 16 | Adam | 10.6860 | 3.2689 | 0.0146 | 0.9656 | 39/100 |
| 2019 - 2024 | GRU | 100 | 32 | Adam | 11.0694 | 3.3271 | 0.0145 | 0.9644 | 43/100 |
| 2019 - 2024 | GRU | 100 | 64 | Adam | 9.2090 | 3.0346 | 0.0132 | 0.9704 | 72/100 |
| | | | | | | | | | |
| 2019 - 2024 | GRU | 200 | 4 | Adam | 11.8721 | 3.4456 | 0.0152 | 0.9618 | 34/200 |
| 2019 - 2024 | GRU | 200 | 8 | Adam | 10.2008 | 3.1939 | 0.0138 | 0.9672 | 45/200 |
| 2019 - 2024 | GRU | 200 | 16 | Adam | 10.7417 | 3.2774 | 0.0139 | 0.9654 | 64/200 |
| 2019 - 2024 | GRU | 200 | 32 | Adam | 9.1368 | 3.0227 | 0.0130 | 0.9706 | 77/200 |
| 2019 - 2024 | GRU | 200 | 64 | Adam | 14.5960 | 3.8205 | 0.0176 | 0.9530 | 34/200 |
| | | | | | | | | | |
| 2019 - 2024 | GRU | 10 | 4 | Nadam | 13.5578 | 3.6821 | 0.0164 | 0.9564 | 10.0000 |
| 2019 - 2024 | GRU | 10 | 8 | Nadam | 11.7721 | 3.4310 | 0.0153 | 0.9621 | 10.0000 |
| 2019 - 2024 | GRU | 10 | 16 | Nadam | 15.3397 | 3.9166 | 0.0174 | 0.9506 | 10.0000 |
| 2019 - 2024 | GRU | 10 | 32 | Nadam | 27.0948 | 5.2053 | 0.0248 | 0.9128 | 10.0000 |
| 2019 - 2024 | GRU | 10 | 64 | Nadam | 25.8098 | 5.0803 | 0.0236 | 0.9169 | 10.0000 |
| | | | | | | | | | |
| 2019 - 2024 | GRU | 25 | 4 | Nadam | 12.5565 | 3.5435 | 0.0166 | 0.9596 | 25/25 |
| 2019 - 2024 | GRU | 25 | 8 | Nadam | 11.9293 | 3.4539 | 0.0151 | 0.9616 | 25/25 |
| 2019 - 2024 | GRU | 25 | 16 | Nadam | 10.9929 | 3.3156 | 0.0145 | 0.9646 | 25/25 |
| 2019 - 2024 | GRU | 25 | 32 | Nadam | 13.9683 | 3.7374 | 0.0171 | 0.9550 | 25/25 |
| 2019 - 2024 | GRU | 25 | 64 | Nadam | 17.0128 | 4.1247 | 0.0194 | 0.9452 | 25/25 |
| | | | | | | | | | |

| 2019 - 2024 | GRU | 50 | 4 | Nadam | 12.8189 | 3.5803 | 0.0159 | 0.9587 | 25/50 |
|---|---|---|---|---|---|---|---|---|---|
| 2019 - 2024 | GRU | 50 | 8 | Nadam | 12.5630 | 3.5444 | 0.0156 | 0.9596 | 39/50 |
| 2019 - 2024 | GRU | 50 | 16 | Nadam | 9.7628 | 3.1246 | 0.0135 | 0.9686 | 50/50 |
| 2019 - 2024 | GRU | 50 | 32 | Nadam | 14.8612 | 3.8550 | 0.0173 | 0.9522 | 37/50 |
| 2019 - 2024 | GRU | 50 | 64 | Nadam | 12.6473 | 3.5563 | 0.0159 | 0.9593 | 49/50 |
| | | | | | | | | | |
| 2019 - 2024 | GRU | 100 | 4 | Nadam | 13.3370 | 3.6520 | 0.0162 | 0.9571 | 33/100 |
| 2019 - 2024 | GRU | 100 | 8 | Nadam | 11.1874 | 3.3448 | 0.0145 | 0.9640 | 46/100 |
| 2019 - 2024 | GRU | 100 | 16 | Nadam | 11.9523 | 3.4572 | 0.0155 | 0.9615 | 36/100 |
| 2019 - 2024 | GRU | 100 | 32 | Nadam | 11.1677 | 3.3418 | 0.0145 | 0.9640 | 72/100 |
| 2019 - 2024 | GRU | 100 | 64 | Nadam | 12.8297 | 3.5819 | 0.0161 | 0.9587 | 60/100 |
| | | | | | | | | | |
| 2019 - 2024 | GRU | 200 | 4 | Nadam | 12.2529 | 3.5004 | 0.0157 | 0.9606 | 31/200 |
| 2019 - 2024 | GRU | 200 | 8 | Nadam | 11.8895 | 3.4481 | 0.0149 | 0.9617 | 39/200 |
| 2019 - 2024 | GRU | 200 | 16 | Nadam | 11.8964 | 3.4491 | 0.0152 | 0.9617 | 39/200 |
| 2019 - 2024 | GRU | 200 | 32 | Nadam | 10.4513 | 3.2328 | 0.0147 | 0.9664 | 69/200 |
| 2019 - 2024 | GRU | 200 | 64 | Nadam | 8.9901 | 2.9983 | 0.0129 | 0.9711 | 83/200 |
| | | | | | | | | | |
| 2019 - 2024 | GRU | 10 | 4 | RMSProp | 13.1327 | 3.6239 | 0.0157 | 0.9577 | 10.0000 |
| 2019 - 2024 | GRU | 10 | 8 | RMSProp | 10.8104 | 3.2879 | 0.0145 | 0.9652 | 10.0000 |
| 2019 - 2024 | GRU | 10 | 16 | RMSProp | 13.4099 | 3.6619 | 0.0163 | 0.9568 | 10.0000 |
| 2019 - 2024 | GRU | 10 | 32 | RMSProp | 14.1645 | 3.7636 | 0.0175 | 0.9544 | 10.0000 |
| 2019 - 2024 | GRU | 10 | 64 | RMSProp | 15.7943 | 3.9742 | 0.0181 | 0.9491 | 10.0000 |
| | | | | | | | | | |
| 2019 - 2024 | GRU | 25 | 4 | RMSProp | 12.6258 | 3.5533 | 0.0157 | 0.9594 | 25.0000 |
| 2019 - 2024 | GRU | 25 | 8 | RMSProp | 11.4526 | 3.3842 | 0.0148 | 0.9631 | 25.0000 |
| 2019 - 2024 | GRU | 25 | 16 | RMSProp | 10.5321 | 3.2453 | 0.0141 | 0.9661 | 25.0000 |
| 2019 - 2024 | GRU | 25 | 32 | RMSProp | 11.9366 | 3.4549 | 0.0155 | 0.9616 | 25.0000 |
| 2019 - 2024 | GRU | 25 | 64 | RMSProp | 11.4442 | 3.3829 | 0.0151 | 0.9632 | 25.0000 |
| | | | | | | | | | |
| 2019 - 2024 | GRU | 50 | 4 | RMSProp | 13.9503 | 3.7350 | 0.0169 | 0.9551 | 21/50 |
| 2019 - 2024 | GRU | 50 | 8 | RMSProp | 11.4444 | 3.3830 | 0.0150 | 0.9632 | 28/50 |
| 2019 - 2024 | GRU | 50 | 16 | RMSProp | 10.5449 | 3.2473 | 0.0141 | 0.9661 | 50/50 |

| 2019 - 2024 | GRU | 50 | 32 | RMSProp | 10.2859 | 3.2072 | 0.0140 | 0.9669 | 50/50 |
|---|---|---|---|---|---|---|---|---|---|
| 2019 - 2024 | GRU | 50 | 64 | RMSProp | 10.1198 | 3.1812 | 0.0138 | 0.9674 | 50/50 |
| | | | | | | | | | |
| 2019 - 2024 | GRU | 100 | 4 | RMSProp | 13.8341 | 3.7194 | 0.0163 | 0.9555 | 29/100 |
| 2019 - 2024 | GRU | 100 | 8 | RMSProp | 13.1613 | 3.6279 | 0.0160 | 0.9576 | 27/100 |
| 2019 - 2024 | GRU | 100 | 16 | RMSProp | 10.3590 | 3.2185 | 0.0139 | 0.9666 | 39/100 |
| 2019 - 2024 | GRU | 100 | 32 | RMSProp | 9.3436 | 3.0567 | 0.0133 | 0.9699 | 76/100 |
| 2019 - 2024 | GRU | 100 | 64 | RMSProp | 8.8555 | 2.9758 | 0.0129 | 0.9715 | 100/100 |
| | | | | | | | | | |
| 2019 - 2024 | GRU | 200 | 4 | RMSProp | 13.1176 | 3.6218 | 0.0162 | 0.9578 | 34/200 |
| 2019 - 2024 | GRU | 200 | 8 | RMSProp | 13.0104 | 3.6070 | 0.0169 | 0.9581 | 42/200 |
| 2019 - 2024 | GRU | 200 | 16 | RMSProp | 10.0806 | 3.1750 | 0.0135 | 0.9675 | 40/200 |
| 2019 - 2024 | GRU | 200 | 32 | RMSProp | 9.6639 | 3.1087 | 0.0137 | 0.9689 | 55/200 |
| 2019 - 2024 | GRU | 200 | 64 | RMSProp | 9.8580 | 3.1397 | 0.0136 | 0.9683 | 72/200 |
| 2019 - 2024 | CNN | 10 | 4 | Adam | 26.9661 | 5.1929 | 0.0247 | 0.9132 | |
| 2019 - 2024 | CNN | 10 | 8 | Adam | 35.6283 | 5.9689 | 0.0294 | 0.8853 | |
| 2019 - 2024 | CNN | 10 | 16 | Adam | 40.6727 | 6.3775 | 0.0312 | 0.8691 | 10 |
| 2019 - 2024 | CNN | 10 | 32 | Adam | 37.4637 | 6.1208 | 0.0298 | 0.8794 | 10 |
| 2019 - 2024 | CNN | 10 | 64 | Adam | 73.1876 | 8.5550 | 0.0422 | 0.7644 | 10 |
| | | | | | | | | | |
| 2019 - 2024 | CNN | 25 | 4 | Adam | 27.2612 | 5.2212 | 0.0251 | 0.9122 | 25/25 |
| 2019 - 2024 | CNN | 25 | 8 | Adam | 27.9835 | 5.2899 | 0.0256 | 0.9099 | 25/25 |
| 2019 - 2024 | CNN | 25 | 16 | Adam | 35.6598 | 5.9716 | 0.0287 | 0.8852 | 25/25 |
| 2019 - 2024 | CNN | 25 | 32 | Adam | 38.2340 | 6.1834 | 0.0287 | 0.8769 | 25/25 |
| 2019 - 2024 | CNN | 25 | 64 | Adam | 43.9263 | 6.6277 | 0.0315 | 0.8586 | 25/25 |
| | | | | | | | | | |
| 2019 - 2024 | CNN | 50 | 4 | Adam | 25.2474 | 5.0247 | 0.0240 | 0.9187 | 41/50 |
| 2019 - 2024 | CNN | 50 | 8 | Adam | 25.8040 | 5.0798 | 0.0239 | 0.9169 | 50/50 |
| 2019 - 2024 | CNN | 50 | 16 | Adam | 26.2002 | 5.1186 | 0.0241 | 0.9156 | 44/50 |
| 2019 - 2024 | CNN | 50 | 32 | Adam | 28.5972 | 5.3476 | 0.0266 | 0.9079 | 50/50 |
| 2019 - 2024 | CNN | 50 | 64 | Adam | 30.1471 | 5.4906 | 0.0260 | 0.9029 | 50/50 |
| | | | | | | | | | |
| 2019 - 2024 | CNN | 100 | 4 | Adam | 27.9604 | 5.2878 | 0.0254 | 0.9100 | 46/100 |

| 2019 - 2024 | CNN | 100 | 8 | Adam | 25.3988 | 5.0397 | 0.0244 | 0.9182 | 61/100 |
| 2019 - 2024 | CNN | 100 | 16 | Adam | 28.8700 | 5.3731 | 0.0258 | 0.9071 | 52/100 |
| 2019 - 2024 | CNN | 100 | 32 | Adam | 28.1193 | 5.3028 | 0.0257 | 0.9095 | 50/100 |
| 2019 - 2024 | CNN | 100 | 64 | Adam | 33.8800 | 5.8207 | 0.0275 | 0.8909 | 47/100 |
| | | | | | | | | | |
| 2019 - 2024 | CNN | 200 | 4 | Adam | 24.9367 | 4.9937 | 0.0240 | 0.9197 | 53/200 |
| 2019 - 2024 | CNN | 200 | 8 | Adam | 27.4973 | 5.2438 | 0.0246 | 0.9115 | 43/200 |
| 2019 - 2024 | CNN | 200 | 16 | Adam | 23.7517 | 4.8736 | 0.0235 | 0.9235 | 63/200 |
| 2019 - 2024 | CNN | 200 | 32 | Adam | 28.8779 | 5.3738 | 0.0263 | 0.9070 | 46/200 |
| 2019 - 2024 | CNN | 200 | 64 | Adam | 34.3095 | 5.8574 | 0.0274 | 0.8895 | 55/200 |
| | | | | | | | | | |
| 2019 - 2024 | CNN | 10 | 4 | Nadam | 49.8829 | 7.0628 | 0.0380 | 0.8394 | 10.0000 |
| 2019 - 2024 | CNN | 10 | 8 | Nadam | 32.9772 | 5.7426 | 0.0273 | 0.8938 | |
| 2019 - 2024 | CNN | 10 | 16 | Nadam | 42.8027 | 6.5424 | 0.0315 | 0.8622 | 10.0000 |
| 2019 - 2024 | CNN | 10 | 32 | Nadam | 41.7378 | 6.4605 | 0.0316 | 0.8656 | 10.0000 |
| 2019 - 2024 | CNN | 10 | 64 | Nadam | 42.0398 | 6.4838 | 0.0317 | 0.8647 | 10.0000 |
| | | | | | | | | | |
| 2019 - 2024 | CNN | 25 | 4 | Nadam | 30.4706 | 5.5200 | 0.0276 | 0.9019 | 25/25 |
| 2019 - 2024 | CNN | 25 | 8 | Nadam | 29.4823 | 5.4298 | 0.0268 | 0.9051 | 25/25 |
| 2019 - 2024 | CNN | 25 | 16 | Nadam | 34.2760 | 5.8546 | 0.0275 | 0.8896 | 25/25 |
| 2019 - 2024 | CNN | 25 | 32 | Nadam | 32.5771 | 5.7076 | 0.0278 | 0.8951 | 25/25 |
| 2019 - 2024 | CNN | 25 | 64 | Nadam | 39.0218 | 6.2467 | 0.0291 | 0.8744 | 25/25 |
| | | | | | | | | | |
| 2019 - 2024 | CNN | 50 | 4 | Nadam | 28.1808 | 5.3086 | 0.0254 | 0.9093 | 37/50 |
| 2019 - 2024 | CNN | 50 | 8 | Nadam | 29.2236 | 5.4059 | 0.0266 | 0.9059 | 46/50 |
| 2019 - 2024 | CNN | 50 | 16 | Nadam | 29.0102 | 5.3861 | 0.0263 | 0.9066 | 36/50 |
| 2019 - 2024 | CNN | 50 | 32 | Nadam | 32.9970 | 5.7443 | 0.0278 | 0.8938 | 50/50 |
| 2019 - 2024 | CNN | 50 | 64 | Nadam | 25.7463 | 5.0741 | 0.0242 | 0.9171 | 50/50 |
| | | | | | | | | | |
| 2019 - 2024 | CNN | 100 | 4 | Nadam | 29.2498 | 5.4083 | 0.0253 | 0.9058 | 44/100 |
| 2019 - 2024 | CNN | 100 | 8 | Nadam | 26.6263 | 5.1601 | 0.0247 | 0.9143 | 55/100 |
| 2019 - 2024 | CNN | 100 | 16 | Nadam | 31.2112 | 5.5867 | 0.0273 | 0.8995 | 30/100 |
| 2019 - 2024 | CNN | 100 | 32 | Nadam | 25.1126 | 5.0113 | 0.0244 | 0.9191 | 100/100 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2019 - 2024 | CNN | 100 | 64 | Nadam | 34.3119 | 5.8576 | 0.0283 | 0.8895 | 57/100 |
| | | | | | | | | | |
| 2019 - 2024 | CNN | 200 | 4 | Nadam | 25.7905 | 5.0784 | 0.0242 | 0.9170 | 37/200 |
| 2019 - 2024 | CNN | 200 | 8 | Nadam | 24.2104 | 4.9204 | 0.0227 | 0.9221 | 79/200 |
| 2019 - 2024 | CNN | 200 | 16 | Nadam | 23.6934 | 4.8676 | 0.0242 | 0.9237 | 51/200 |
| 2019 - 2024 | CNN | 200 | 32 | Nadam | 40.0401 | 6.3277 | 0.0296 | 0.8711 | 35/200 |
| 2019 - 2024 | CNN | 200 | 64 | Nadam | 28.0944 | 5.3004 | 0.0256 | 0.9095 | 93/200 |
| | | | | | | | | | |
| 2019 - 2024 | CNN | 10 | 4 | RMSProp | 26.9112 | 5.1876 | 0.0244 | 0.9134 | 10.0000 |
| 2019 - 2024 | CNN | 10 | 8 | RMSProp | 37.6446 | 6.1355 | 0.0295 | 0.8788 | 10.0000 |
| 2019 - 2024 | CNN | 10 | 16 | RMSProp | 37.4796 | 6.1221 | 0.0297 | 0.8793 | 10.0000 |
| 2019 - 2024 | CNN | 10 | 32 | RMSProp | 40.1941 | 6.3399 | 0.0303 | 0.8706 | 10.0000 |
| 2019 - 2024 | CNN | 10 | 64 | RMSProp | 49.4841 | 7.0345 | 0.0333 | 0.8407 | 10.0000 |
| | | | | | | | | | |
| 2019 - 2024 | CNN | 25 | 4 | RMSProp | 27.8493 | 5.2772 | 0.0262 | 0.9103 | 25.0000 |
| 2019 - 2024 | CNN | 25 | 8 | RMSProp | 25.8517 | 5.0845 | 0.0245 | 0.9168 | 25.0000 |
| 2019 - 2024 | CNN | 25 | 16 | RMSProp | 33.9001 | 5.8224 | 0.0275 | 0.8909 | 25.0000 |
| 2019 - 2024 | CNN | 25 | 32 | RMSProp | 32.4697 | 5.6982 | 0.0274 | 0.8955 | 25.0000 |
| 2019 - 2024 | CNN | 25 | 64 | RMSProp | 36.9487 | 6.0785 | 0.0288 | 0.8810 | 25.0000 |
| | | | | | | | | | |
| 2019 - 2024 | CNN | 50 | 4 | RMSProp | 26.3882 | 5.1369 | 0.0233 | 0.9150 | 37/50 |
| 2019 - 2024 | CNN | 50 | 8 | RMSProp | 28.5771 | 5.3458 | 0.0250 | 0.9080 | 31/50 |
| 2019 - 2024 | CNN | 50 | 16 | RMSProp | 29.6721 | 5.4472 | 0.0265 | 0.9045 | 46/50 |
| 2019 - 2024 | CNN | 50 | 32 | RMSProp | 46.8427 | 6.8442 | 0.0330 | 0.8492 | 27/50 |
| 2019 - 2024 | CNN | 50 | 64 | RMSProp | 26.4331 | 5.1413 | 0.0252 | 0.9149 | 50/50 |
| | | | | | | | | | |
| 2019 - 2024 | CNN | 100 | 4 | RMSProp | 25.3561 | 5.0355 | 0.0243 | 0.9184 | 29/100 |
| 2019 - 2024 | CNN | 100 | 8 | RMSProp | 26.8128 | 5.1781 | 0.0235 | 0.9135 | 43/100 |
| 2019 - 2024 | CNN | 100 | 16 | RMSProp | 28.4346 | 5.3324 | 0.0258 | 0.9085 | 37/100 |
| 2019 - 2024 | CNN | 100 | 32 | RMSProp | 34.9162 | 5.9090 | 0.0287 | 0.8876 | 42/100 |
| 2019 - 2024 | CNN | 100 | 64 | RMSProp | 33.9046 | 5.8228 | 0.0284 | 0.8909 | 38/100 |
| | | | | | | | | | |
| 2019 - 2024 | CNN | 200 | 4 | RMSProp | 28.6867 | 5.3560 | 0.0256 | 0.9076 | 39/200 |

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|---|---|---|---|---|---|---|---|---|---|
| 2019 - 2024 | CNN | 200 | 8 | RMSProp | 23.3435 | 4.8315 | 0.0229 | 0.9248 | 33/200 |
| 2019 - 2024 | CNN | 200 | 16 | RMSProp | 33.3784 | 5.7774 | 0.0274 | 0.8925 | 30/200 |
| 2019 - 2024 | CNN | 200 | 32 | RMSProp | 24.3260 | 4.9321 | 0.0243 | 0.9217 | 38/200 |
| 2019 - 2024 | CNN | 200 | 64 | RMSProp | 35.2264 | 5.9352 | 0.0280 | 0.8866 | 33/200 |
| 2019 - 2024 | FFNN | 10 | 4 | Adam | 174.3652 | 13.2047 | 0.0689 | 0.4386 | 45940 |
| 2019 - 2024 | FFNN | 10 | 8 | Adam | 52.1904 | 7.2243 | 0.0349 | 0.8320 | 10 |
| 2019 - 2024 | FFNN | 10 | 16 | Adam | 184.5274 | 13.5841 | 0.0649 | 0.4059 | 10 |
| 2019 - 2024 | FFNN | 10 | 32 | Adam | 156.9833 | 12.5293 | 0.0618 | 0.4946 | 10 |
| 2019 - 2024 | FFNN | 10 | 64 | Adam | 199.2947 | 14.1172 | 0.0674 | 0.3584 | 10 |
| | | | | | | | | | |
| 2019 - 2024 | FFNN | 25 | 4 | Adam | 25.2796 | 5.0279 | 0.0240 | 0.9186 | 25/25 |
| 2019 - 2024 | FFNN | 25 | 8 | Adam | 59.0358 | 7.6835 | 0.0375 | 0.8099 | 25/25 |
| 2019 - 2024 | FFNN | 25 | 16 | Adam | 51.8137 | 7.1982 | 0.0347 | 0.8332 | 25/25 |
| 2019 - 2024 | FFNN | 25 | 32 | Adam | 62.2341 | 7.8889 | 0.0391 | 0.7996 | 25/25 |
| 2019 - 2024 | FFNN | 25 | 64 | Adam | 270.6998 | 16.4530 | 0.0798 | 0.1285 | 24/25 |
| | | | | | | | | | |
| 2019 - 2024 | FFNN | 50 | 4 | Adam | 26.3682 | 5.1350 | 0.0249 | 0.9151 | 50/50 |
| 2019 - 2024 | FFNN | 50 | 8 | Adam | 23.9427 | 4.8931 | 0.0225 | 0.9229 | 50/50 |
| 2019 - 2024 | FFNN | 50 | 16 | Adam | 26.4190 | 5.1399 | 0.0252 | 0.9149 | 50/50 |
| 2019 - 2024 | FFNN | 50 | 32 | Adam | 26.6244 | 5.1599 | 0.0242 | 0.9143 | 50/50 |
| 2019 - 2024 | FFNN | 50 | 64 | Adam | 40.7383 | 6.3827 | 0.0313 | 0.8688 | 50/50 |
| | | | | | | | | | |
| 2019 - 2024 | FFNN | 100 | 4 | Adam | 23.3128 | 4.8283 | 0.0228 | 0.9249 | 66/100 |
| 2019 - 2024 | FFNN | 100 | 8 | Adam | 20.0894 | 4.4821 | 0.0210 | 0.9353 | 100/100 |
| 2019 - 2024 | FFNN | 100 | 16 | Adam | 21.8102 | 4.6701 | 0.0221 | 0.9298 | 100/100 |
| 2019 - 2024 | FFNN | 100 | 32 | Adam | 23.1118 | 4.8075 | 0.0228 | 0.9256 | 100/100 |
| 2019 - 2024 | FFNN | 100 | 64 | Adam | 132.2057 | 11.4981 | 0.0552 | 0.5744 | 23/100 |
| | | | | | | | | | |
| 2019 - 2024 | FFNN | 200 | 4 | Adam | 27.2316 | 5.2184 | 0.0261 | 0.9123 | 70/200 |
| 2019 - 2024 | FFNN | 200 | 8 | Adam | 22.5691 | 4.7507 | 0.0228 | 0.9273 | 88/200 |
| 2019 - 2024 | FFNN | 200 | 16 | Adam | 23.4071 | 4.8381 | 0.0224 | 0.9246 | 78/200 |
| 2019 - 2024 | FFNN | 200 | 32 | Adam | 20.8826 | 4.5697 | 0.0211 | 0.9328 | 165/200 |
| 2019 - 2024 | FFNN | 200 | 64 | Adam | 169.1302 | 13.0050 | 0.0649 | 0.4555 | 22/200 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2019 - 2024 | FFNN | 10 | 4 | Nadam | 63.2089 | 7.9504 | 0.0378 | 0.7965 | 10.0000 |
| 2019 - 2024 | FFNN | 10 | 8 | Nadam | 128.4749 | 11.3347 | 0.0553 | 0.5864 | 10.0000 |
| 2019 - 2024 | FFNN | 10 | 16 | Nadam | 191.1191 | 13.8246 | 0.0653 | 0.3847 | 10.0000 |
| 2019 - 2024 | FFNN | 10 | 32 | Nadam | 84.4829 | 9.1915 | 0.0436 | 0.7280 | 10.0000 |
| 2019 - 2024 | FFNN | 10 | 64 | Nadam | 161.0105 | 12.6890 | 0.0593 | 0.4816 | 10.0000 |
| | | | | | | | | | |
| 2019 - 2024 | FFNN | 25 | 4 | Nadam | 28.6571 | 5.3532 | 0.0261 | 0.9077 | 25/25 |
| 2019 - 2024 | FFNN | 25 | 8 | Nadam | 33.6158 | 5.7979 | 0.0281 | 0.8918 | 25/25 |
| 2019 - 2024 | FFNN | 25 | 16 | Nadam | 31.4756 | 5.6103 | 0.0268 | 0.8987 | 25/25 |
| 2019 - 2024 | FFNN | 25 | 32 | Nadam | 59.9784 | 7.7446 | 0.0385 | 0.8069 | 25/25 |
| 2019 - 2024 | FFNN | 25 | 64 | Nadam | 199.7841 | 14.1345 | 0.0693 | 0.3568 | 22/25 |
| | | | | | | | | | |
| 2019 - 2024 | FFNN | 50 | 4 | Nadam | 24.1497 | 4.9142 | 0.0239 | 0.9222 | 50/50 |
| 2019 - 2024 | FFNN | 50 | 8 | Nadam | 24.2416 | 4.9236 | 0.0243 | 0.9220 | 50/50 |
| 2019 - 2024 | FFNN | 50 | 16 | Nadam | 28.5558 | 5.3438 | 0.0262 | 0.9081 | 50/50 |
| 2019 - 2024 | FFNN | 50 | 32 | Nadam | 32.7425 | 5.7221 | 0.0285 | 0.8946 | 50/50 |
| 2019 - 2024 | FFNN | 50 | 64 | Nadam | 164.2758 | 12.8170 | 0.0609 | 0.4711 | 21/50 |
| | | | | | | | | | |
| 2019 - 2024 | FFNN | 100 | 4 | Nadam | 25.0140 | 5.0014 | 0.0243 | 0.9195 | 50/100 |
| 2019 - 2024 | FFNN | 100 | 8 | Nadam | 26.4555 | 5.1435 | 0.0245 | 0.9148 | 49/100 |
| 2019 - 2024 | FFNN | 100 | 16 | Nadam | 21.8263 | 4.6719 | 0.0227 | 0.9297 | 100/100 |
| 2019 - 2024 | FFNN | 100 | 32 | Nadam | 111.6861 | 10.5682 | 0.0510 | 0.6404 | 21/100 |
| 2019 - 2024 | FFNN | 100 | 64 | Nadam | 60.8753 | 7.8023 | 0.0371 | 0.8040 | 45/100 |
| | | | | | | | | | |
| 2019 - 2024 | FFNN | 200 | 4 | Nadam | 30.1958 | 5.4951 | 0.0256 | 0.9028 | 45/200 |
| 2019 - 2024 | FFNN | 200 | 8 | Nadam | 24.3082 | 4.9303 | 0.0236 | 0.9217 | 88/200 |
| 2019 - 2024 | FFNN | 200 | 16 | Nadam | 20.5588 | 4.5342 | 0.0214 | 0.9338 | 76/200 |
| 2019 - 2024 | FFNN | 200 | 32 | Nadam | 106.5444 | 10.3220 | 0.0511 | 0.6570 | 22/200 |
| 2019 - 2024 | FFNN | 200 | 64 | Nadam | 25.2891 | 5.0288 | 0.0242 | 0.9186 | 111/200 |
| | | | | | | | | | |
| 2019 - 2024 | FFNN | 10 | 4 | RMSProp | 85.3331 | 9.2376 | 0.0428 | 0.7253 | 10.0000 |
| 2019 - 2024 | FFNN | 10 | 8 | RMSProp | 55.5114 | 7.4506 | 0.0372 | 0.8213 | 10.0000 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2019 - 2024 | FFNN | 10 | 16 | RMSProp | 86.0755 | 9.2777 | 0.0464 | 0.7229 | 10.0000 |
| 2019 - 2024 | FFNN | 10 | 32 | RMSProp | 68.3660 | 8.2684 | 0.0397 | 0.7799 | 10.0000 |
| 2019 - 2024 | FFNN | 10 | 64 | RMSProp | 89.0283 | 9.4355 | 0.0469 | 0.7134 | 10.0000 |
| | | | | | | | | | |
| 2019 - 2024 | FFNN | 25 | 4 | RMSProp | 36.0499 | 6.0042 | 0.0313 | 0.8839 | 25/25 |
| 2019 - 2024 | FFNN | 25 | 8 | RMSProp | 30.6410 | 5.5354 | 0.0273 | 0.9013 | 25.0000 |
| 2019 - 2024 | FFNN | 25 | 16 | RMSProp | 34.8742 | 5.9054 | 0.0293 | 0.8877 | 25.0000 |
| 2019 - 2024 | FFNN | 25 | 32 | RMSProp | 28.7822 | 5.3649 | 0.0258 | 0.9073 | 25.0000 |
| 2019 - 2024 | FFNN | 25 | 64 | RMSProp | 39.7596 | 6.3055 | 0.0295 | 0.8720 | 25.0000 |
| | | | | | | | | | |
| 2019 - 2024 | FFNN | 50 | 4 | RMSProp | 36.9989 | 6.0827 | 0.0286 | 0.8809 | 31/50 |
| 2019 - 2024 | FFNN | 50 | 8 | RMSProp | 33.0448 | 5.7485 | 0.0290 | 0.8936 | 50/50 |
| 2019 - 2024 | FFNN | 50 | 16 | RMSProp | 30.2988 | 5.5044 | 0.0258 | 0.9025 | 45/50 |
| 2019 - 2024 | FFNN | 50 | 32 | RMSProp | 28.5290 | 5.3413 | 0.0263 | 0.9081 | 50/50 |
| 2019 - 2024 | FFNN | 50 | 64 | RMSProp | 28.1563 | 5.3063 | 0.0262 | 0.9093 | 50/50 |
| | | | | | | | | | |
| 2019 - 2024 | FFNN | 100 | 4 | RMSProp | 34.1794 | 5.8463 | 0.0298 | 0.8900 | 48/100 |
| 2019 - 2024 | FFNN | 100 | 8 | RMSProp | 29.5365 | 5.4347 | 0.0266 | 0.9049 | 49/100 |
| 2019 - 2024 | FFNN | 100 | 16 | RMSProp | 28.8550 | 5.3717 | 0.0258 | 0.9071 | 43/100 |
| 2019 - 2024 | FFNN | 100 | 32 | RMSProp | 26.5719 | 5.1548 | 0.0245 | 0.9145 | 54/100 |
| 2019 - 2024 | FFNN | 100 | 64 | RMSProp | 25.9779 | 5.0968 | 0.0241 | 0.9164 | 90/100 |
| | | | | | | | | | |
| 2019 - 2024 | FFNN | 200 | 4 | RMSProp | 30.0414 | 5.4810 | 0.0266 | 0.9033 | 51/200 |
| 2019 - 2024 | FFNN | 200 | 8 | RMSProp | 31.6498 | 5.6258 | 0.0281 | 0.8981 | 41/200 |
| 2019 - 2024 | FFNN | 200 | 16 | RMSProp | 27.2070 | 5.2160 | 0.0251 | 0.9124 | 56/200 |
| 2019 - 2024 | FFNN | 200 | 32 | RMSProp | 25.2905 | 5.0290 | 0.0233 | 0.9186 | 65/200 |
| 2019 - 2024 | FFNN | 200 | 64 | RMSProp | 25.1873 | 5.0187 | 0.0244 | 0.9189 | 84/200 |

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