4.1) MSE, MRE, R, R2 для Train-набору

4.2) MSE, MRE, R, R2 для B-набору

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| Мережа | MSE (10-3) | MRE (%) | R | R2 |
|  | 248 ± 1 | 293 ± 7 | 0.689 ± 0.002 | 0.325 ± 0.005 |
|  | 64 ± 0.4 | 57 ± 1 | 0.911 ± 0.001 | 0.799 ± 0.001 |
|  | 238 ± 1 | 223 ± 3 | 0.628 ± 0.002 | 0.185 ± 0.006 |
|  | 60 ± 1 | 62 ± 2 | 0.832 ± 0.002 | 0.662 ± 0.003 |
|  | 196.3 ± 0.4 | 137 ± 2 | 0.742 ± 0.001 | 0.506 ± 0.002 |
|  | 105.1 ± 0.2 | 87 ± 1 | 0.881 ± 0.001 | 0.734 ± 0.002 |
|  | 250.9 ± 0.4 | 284 ± 3 | 0.605 ± 0.001 | 0.067 ± 0.006 |
|  | 63 ± 1 | 49 ± 1 | 0.861 ± 0.001 | 0.653 ± 0.001 |
|  | 117 ± 1 | 77 ± 2 | 0.852 ± 0.001 | 0.700 ± 0.002 |
|  | 83 ± 1 | 51 ± 1 | 0.914 ± 0.001 | 0.820 ± 0.001 |
|  | 200 ± 1 | 118 ± 2 | 0.705 ± 0.001 | 0.445 ± 0.002 |
|  | 76 ± 1 | 40.8 ± 0.3 | 0.852 ± 0.001 | 0.667 ± 0.001 |
|  | 114 ± 0.4 | 70 ± 1 | 0.894 ± 0.001 | 0.771 ± 0.001 |
|  | 50 ± 1 | 74 ± 4 | 0.909 ± 0.002 | 0.796 ± 0.004 |
|  | 178.4 ± 0.3 | 100 ± 1 | 0.749 ± 0.001 | 0.537 ± 0.002 |
|  | 101 ± 2 | 217 ± 18 | 0.876 ± 0.001 | 0.742 ± 0.002 |

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| Мережа | MSE (10-3) | MRE (%) | R | R2 |
|  | 223 ± 1 | 288 ± 6 | 0.702 ± 0.003 | 0.421 ± 0.008 |
|  | 67 ± 1 | 55 ± 2 | 0.923 ± 0.001 | 0.816 ± 0.001 |
|  | 222 ± 1 | 165 ± 3 | 0.636 ± 0.002 | 0.213 ± 0.005 |
|  | 68 ± 1 | 84 ± 5 | 0.833 ± 0.001 | 0.622 ± 0.006 |
|  | 204 ± 1 | 175 ± 7 | 0.726 ± 0.003 | 0.434 ± 0.010 |
|  | 103 ± 1 | 75 ± 1 | 0.888 ± 0.001 | 0.728 ± 0.001 |
|  | 216 ± 3 | 157 ± 10 | 0.670 ± 0.004 | 0.355 ± 0.010 |
|  | 64 ± 4 | 46 ± 2 | 0.857 ± 0.004 | 0.663 ± 0.006 |
|  | 117 ± 1 | 85 ± 3 | 0.859 ± 0.003 | 0.720 ± 0.005 |
|  | 77 ± 3 | 40 ± 2 | 0.916 ± 0.004 | 0.829 ± 0.007 |
|  | 207 ± 2 | 152 ± 3 | 0.703 ± 0.002 | 0.397 ± 0.006 |
|  | 82 ± 2 | 28.9 ± 0.3 | 0.865 ± 0.003 | 0.728 ± 0.004 |
|  | 113 ± 1 | 76 ± 4 | 0.893 ± 0.004 | 0.773 ± 0.007 |
|  | 48 ± 2 | 69 ± 7 | 0.911 ± 0.004 | 0.801 ± 0.007 |
|  | 178 ± 1 | 105 ± 2 | 0.753 ± 0.004 | 0.540 ± 0.008 |
|  | 99 ± 4 | 192 ± 22 | 0.875 ± 0.002 | 0.740 ± 0.004 |

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| --- | --- | --- | --- | --- |
| Мережа | MSE (10-3) | MRE (%) | R | R2 |
|  | 231 | 191 | 0.786 | 0.553 |
|  | 231 | 190 | 0.785 | 0.550 |
|  | 218 | 194 | 0.779 | 0.577 |
|  | 218 | 194 | 0.779 | 0.572 |
|  | 211 | 162 | 0.781 | 0.554 |
|  | 247 | 193 | 0.771 | 0.533 |
|  | 214 | 166 | 0.757 | 0.481 |
|  | 217 | 168 | 0.760 | 0.537 |
|  | 193 | 51 | 0.757 | 0.412 |
|  | 217 | 67 | 0.739 | 0.260 |
|  | 185 | 121 | 0.791 | 0.569 |
|  | 211 | 136 | 0.739 | 0.487 |
|  | 157 | 51 | 0.761 | 0.443 |
|  | 158 | 48 | 0.773 | 0.501 |
|  | 166 | 106 | 0.781 | 0.514 |
|  | 195 | 113 | 0.808 | 0.623 |

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| --- | --- | --- | --- | --- |
| Мережа | MSE (10-3) | MRE (%) | R | R2 |
|  | 237 ± 2 | 351 ± 4 | 0.631 ± 0.007 | -0.267 ± 0.049 |
|  | 70 ± 1 | 44.2 ± 0.2 | 0.911 ± 0.001 | 0.809 ± 0.001 |
|  | 265.9 ± 0.4 | 360 ± 2 | 0.553 ± 0.001 | -0.378 ± 0.008 |
|  | 63 ± 1 | 48 ± 1 | 0.809 ± 0.002 | 0.635 ± 0.003 |
|  | 172.8 ± 0.4 | 207 ± 4 | 0.708 ± 0.002 | 0.136 ± 0.009 |
|  | 96 ± 1 | 61 ± 2 | 0.902 ± 0.003 | 0.790 ± 0.004 |
|  | 249.6 ± 0.3 | 319.9 ± 0.4 | 0.583 ± 0.001 | -0.525 ± 0.003 |
|  | 85 ± 1 | 32 ± 1 | 0.848 ± 0.005 | 0.710 ± 0.007 |
|  | 96 ± 1 | 87 ± 2 | 0.836 ± 0.001 | 0.604 ± 0.002 |
|  | 77 ± 4 | 32 ± 3 | 0.927 ± 0.002 | 0.856 ± 0.003 |
|  | 213 ± 1 | 215 ± 2 | 0.643 ± 0.001 | -0.019 ± 0.005 |
|  | 74 ± 3 | 30 ± 1 | 0.867 ± 0.004 | 0.742 ± 0.006 |
|  | 103 ± 2 | 89 ± 5 | 0.882 ± 0.002 | 0.696 ± 0.006 |
|  | 67 ± 1 | 70 ± 6 | 0.891 ± 0.004 | 0.771 ± 0.008 |
|  | 194 ± 3 | 134 ± 2 | 0.687 ± 0.001 | 0.223 ± 0.005 |
|  | 91 ± 3 | 132 ± 45 | 0.879 ± 0.001 | 0.759 ± 0.003 |

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| --- | --- | --- | --- | --- |
| Мережа | MSE (10-3) | MRE (%) | R | R2 |
|  | 54 | 29 | 0.961 | 0.922 |
|  | 71 | 58 | 0.923 | 0.842 |
|  | 60 | 14 | 0.947 | 0.897 |
|  | 54 | 22 | 0.954 | 0.910 |
|  | 30 | 13 | 0.973 | 0.947 |
|  | 81 | 43 | 0.935 | 0.870 |
|  | 63 | 13 | 0.967 | 0.930 |
|  | 55 | 53 | 0.662 | -0.989 |
|  | 43 | 14 | 0.977 | 0.955 |
|  | 43 | 7 | 0.984 | 0.967 |
|  | 126 | 19 | 0.785 | 0.326 |
|  | 78 | 14 | 0.956 | 0.910 |
|  | 34 | 10 | 0.934 | 0.869 |
|  | 63 | 13 | 0.932 | 0.865 |
|  | 33 | 34 | 0.926 | 0.764 |
|  | 28 | 12 | 0.983 | 0.965 |

4.3) MSE, MRE, R, R2 для Fe-набору

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| --- | --- | --- | --- | --- |
| Мережа | MSE (10-3) | MRE (%) | R | R2 |
|  | 43 ± 1 | 148 ± 11 | 0.968 ± 0.001 | 0.936 ± 0.003 |
|  | 40.8 ± 0.2 | 55 ± 1 | 0.9526 ± 0.0004 | 0.906 ± 0.001 |
|  | 1.95 ± 0.03 | 8.4 ± 0.1 | 0. 9910 ± 0.0001 | 0.9821 ± 0.0003 |
|  | 1.84 ± 0.04 | 8.14 ± 0.03 | 0.9928 ± 0.0003 | 0.986 ± 0.001 |
|  | 10.4 ± 0.2 | 16.4 ± 0.3 | 0.9815 ± 0.0001 | 0.9629 ± 0.0003 |
|  | 61 ± 1 | 76 ± 2 | 0.942 ± 0.001 | 0.884 ± 0.002 |
|  | 2.7 ± 0.1 | 9.8 ± 0.1 | 0.9895 ± 0.0003 | 0.977 ± 0.001 |
|  | 2.2 ± 0.1 | 7.98 ± 0.04 | 0.9947 ± 0.0001 | 0.9894 ± 0.0002 |
|  | 5.6 ± 0.2 | 9.52 ± 0.04 | 0.984 ± 0.001 | 0.968 ± 0.002 |
|  | 9.9 ± 0.1 | 17.7 ± 0.2 | 0.9911 ± 0.0004 | 0.982 ± 0.001 |
|  | 2.9 ± 0.1 | 10.9 ± 0.1 | 0.984 ± 0.001 | 0.968 ± 0.002 |
|  | 2.95 ± 0.04 | 10.9 ± 0.1 | 0.9852 ± 0.0003 | 0.970 ± 0.001 |
|  | 5.1 ± 0.1 | 10.4 ± 0.1 | 0.9867 ± 0.0004 | 0.973 ± 0.001 |
|  | 2.4 ± 0.1 | 7.9 ± 0.1 | 0.9945 ± 0.0002 | 0.9890 ± 0.0004 |
|  | 3.9 ± 0.1 | 12.1 ± 0.1 | 0.978 ± 0.001 | 0.956 ± 0.002 |
|  | 7.2 ± 0.1 | 10.96 ± 0.04 | 0.9889 ± 0.0002 | 0.976 ± 0.001 |

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| --- | --- | --- | --- | --- |
| Мережа | MSE (10-3) | MRE (%) | R | R2 |
|  | 38.5 ± 0.4 | 63.6 ± 2.4 | 0.977 ± 0.001 | 0.944 ± 0.001 |
|  | 33 ± 0.1 | 56 ± 2 | 0.970 ± 0.001 | 0.935 ± 0.001 |
|  | 1.58 ± 0.02 | 7.1 ± 0.1 | 0.989 ± 0.001 | 0.979 ± 0.001 |
|  | 1.6 ± 0.0 | 6.4 ± 0.1 | 0.9938 ± 0.0003 | 0.987 ± 0.001 |
|  | 13 ± 1 | 24 ± 4 | 0.983 ± 0.001 | 0.966 ± 0.002 |
|  | 40.7 ± 0.3 | 53 ± 1 | 0.968 ± 0.001 | 0.923 ± 0.001 |
|  | 2.0 ± 0.1 | 7.7 ± 0.1 | 0.987 ± 0.001 | 0.974 ± 0.001 |
|  | 1.2 ± 0.1 | 6.0 ± 0.1 | 0.9943 ± 0.0001 | 0.9884 ± 0.0002 |
|  | 4.5 ± 0.3 | 8.7 ± 0.1 | 0.987 ± 0.001 | 0.974 ± 0.002 |
|  | 8.8 ± 0.3 | 14.9 ± 0.4 | 0.987 ± 0.002 | 0.975 ± 0.004 |
|  | 1.9 ± 0.1 | 8.9 ± 0.1 | 0.989 ± 0.001 | 0.976 ± 0.002 |
|  | 2.8 ± 0.2 | 10.1 ± 0.1 | 0.985 ± 0.001 | 0.968 ± 0.003 |
|  | 4.0 ± 0.2 | 8.5 ± 0.1 | 0.987 ± 0.001 | 0.974 ± 0.001 |
|  | 2.0 ± 0.1 | 6.8 ± 0.2 | 0.991 ± 0.002 | 0.982 ± 0.005 |
|  | 3.2 ± 0.1 | 10.6 ± 0.1 | 0.981 ± 0.002 | 0.961 ± 0.003 |
|  | 6.7 ± 0.3 | 10.0 ± 0.1 | 0.989 ± 0.001 | 0.976 ± 0.001 |

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| --- | --- | --- | --- | --- |
| Мережа | MSE (10-3) | MRE (%) | R | R2 |
|  | 292 | 216 | 0.711 | 0.463 |
|  | 292 | 215 | 0.713 | 0.466 |
|  | 286 | 231 | 0.732 | 0.494 |
|  | 285 | 228 | 0.735 | 0.498 |
|  | 264 | 183 | 0.741 | 0.514 |
|  | 310 | 201 | 0.715 | 0.473 |
|  | 279 | 205 | 0.735 | 0.502 |
|  | 285 | 206 | 0.719 | 0.474 |
|  | 257 | 69 | 0.734 | 0.496 |
|  | 291 | 96 | 0.699 | 0.442 |
|  | 247 | 139 | 0.745 | 0.500 |
|  | 277 | 164 | 0.739 | 0.505 |
|  | 209 | 62 | 0.733 | 0.496 |
|  | 212 | 57 | 0.746 | 0.522 |
|  | 217 | 133 | 0.748 | 0.511 |
|  | 262 | 143 | 0.753 | 0.524 |

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| --- | --- | --- | --- | --- |
| Мережа | MSE (10-3) | MRE (%) | R | R2 |
|  | 35.6 ± 0.3 | 49 ± 2 | 0.9613 ± 0.0004 | 0.923 ± 0.001 |
|  | 40.1 ± 0.2 | 60 ± 1 | 0.947 ± 0.001 | 0.894 ± 0.003 |
|  | 2.35 ± 0.01 | 8.15 ± 0.03 | 0.9808 ± 0.0001 | 0.9617 ± 0.0002 |
|  | 4.79 ± 0.02 | 11.50 ± 0.02 | 0.98535 ± 0.00003 | 0.9703 ± 0.0001 |
|  | 8.7 ± 0.3 | 12.5 ± 0.3 | 0.9903 ± 0.0003 | 0.980 ± 0.001 |
|  | 68.4 ± 0.4 | 96 ± 1 | 0.924 ± 0.001 | 0.848 ± 0.002 |
|  | 1.46 ± 0.02 | 6.91 ± 0.03 | 0.9891 ± 0.0001 | 0.9760 ± 0.0001 |
|  | 5.13 ± 0.03 | 10.84 ± 0.04 | 0.9878 ± 0.0002 | 0.9746 ± 0.0004 |
|  | 2.5 ± 0.2 | 7.0 ± 0.2 | 0.994 ± 0.001 | 0.987 ± 0.003 |
|  | 12 ± 1 | 25 ± 3 | 0.981 ± 0.012 | 0.960 ± 0.027 |
|  | 1.47 ± 0.02 | 8.33 ± 0.03 | 0.9932 ± 0.0001 | 0.9779 ± 0.0003 |
|  | 4.72 ± 0.04 | 12.85 ± 0.04 | 0.986 ± 0.001 | 0.971 ± 0.002 |
|  | 2.6 ± 0.2 | 7.2 ± 0.2 | 0.989 ± 0.001 | 0.979 ± 0.003 |
|  | 2.0 ± 0.1 | 7.1 ± 0.1 | 0.990 ± 0.003 | 0.979 ± 0.007 |
|  | 2.0 ± 0.1 | 9.1 ± 0.1 | 0.9905 ± 0.0004 | 0.973 ± 0.001 |
|  | 11.6 ± 0.4 | 12.0 ± 0.2 | 0.987 ± 0.001 | 0.970 ± 0.001 |

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| --- | --- | --- | --- | --- |
| Мережа | MSE (10-3) | MRE (%) | R | R2 |
|  | 41 | 60 | 0.955 | 0.911 |
|  | 55 | 74 | 0.925 | 0.845 |
|  | 4 | 12 | 0.976 | 0.953 |
|  | 6 | 13 | 0.977 | 0.954 |
|  | 5 | 11 | 0.993 | 0.985 |
|  | 64 | 122 | 0.948 | 0.897 |
|  | 10 | 14 | 0.982 | 0.961 |
|  | 8 | 20 | 0.971 | 0.907 |
|  | 10 | 13 | 0.985 | 0.966 |
|  | 3 | 8 | 0.998 | 0.996 |
|  | 3 | 11 | 0.980 | 0.959 |
|  | 4 | 13 | 0.977 | 0.949 |
|  | 1 | 3 | 0.999 | 0.998 |
|  | 1 | 4 | 0.999 | 0.997 |
|  | 14 | 28 | 0.974 | 0.875 |
|  | 11 | 11 | 0.991 | 0.973 |

4.4) MSE, MRE, R, R2 для T-набору

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| --- | --- | --- | --- | --- |
| Мережа | MSE (10-3) | MRE (%) | R | R2 |
|  | 77.8 ± 0.4 | 32 ± 1 | 0.9401 ± 0.0004 | 0.878 ± 0.001 |
|  | 76.2 ± 0.4 | 60 ± 1 | 0.9391 ± 0.0004 | 0.876 ± 0.001 |
|  | 69.7 ± 0.2 | 15.8 ± 0.1 | 0.924 ± 0.001 | 0.845 ± 0.001 |
|  | 60 ± 1 | 93 ± 9 | 0.926 ± 0.001 | 0.849 ± 0.002 |
|  | 56 ± 0.2 | 15.43 ± 0.04 | 0.9345 ± 0.0004 | 0.862 ± 0.001 |
|  | 113.7 ± 0.4 | 190 ± 9 | 0.917 ± 0.001 | 0.825 ± 0.002 |
|  | 51.3 ± 0.1 | 13.67 ± 0.02 | 0.9255 ± 0.0001 | 0.8542 ± 0.0003 |
|  | 59 ± 1 | 108 ± 6 | 0.921 ± 0.001 | 0.832 ± 0.001 |
|  | 45.8 ± 0.2 | 9.6 ± 0.1 | 0.951 ± 0.001 | 0.897 ± 0.002 |
|  | 51 ± 1 | 24 ± 1 | 0.951 ± 0.001 | 0.900 ± 0.001 |
|  | 27.7 ± 0.1 | 12.19 ± 0.04 | 0.920 ± 0.001 | 0.844 ± 0.001 |
|  | 58 ± 1 | 67 ± 4 | 0.920 ± 0.001 | 0.835 ± 0.002 |
|  | 38.3 ± 0.4 | 8.37 ± 0.02 | 0.960 ± 0.001 | 0.920 ± 0.002 |
|  | 9.4 ± 0.2 | 9.4 ± 0.1 | 0.969 ± 0.001 | 0.935 ± 0.001 |
|  | 28.9 ± 0.3 | 12.52 ± 0.04 | 0.930 ± 0.001 | 0.862 ± 0.001 |
|  | 37 ± 1 | 40 ± 2 | 0.964 ± 0.001 | 0.925 ± 0.001 |

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| --- | --- | --- | --- | --- |
| Мережа | MSE (10-3) | MRE (%) | R | R2 |
|  | 77.0 ± 0.2 | 35 ± 0.3 | 0.939 ± 0.001 | 0.859 ± 0.001 |
|  | 81 ± 1 | 63 ± 2 | 0.943 ± 0.001 | 0.880 ± 0.001 |
|  | 70.0 ± 0.2 | 17 ± 0.2 | 0.926 ± 0.001 | 0.851 ± 0.001 |
|  | 67 ± 1 | 99 ± 5 | 0.919 ± 0.002 | 0.826 ± 0.004 |
|  | 54.8 ± 0.3 | 16.0 ± 0.3 | 0.938 ± 0.002 | 0.873 ± 0.003 |
|  | 118 ± 1 | 270 ± 14 | 0.923 ± 0.001 | 0.821 ± 0.003 |
|  | 49 ± 1 | 13.0 ± 0.1 | 0.922 ± 0.001 | 0.845 ± 0.001 |
|  | 63 ± 3 | 140 ± 23 | 0.919 ± 0.002 | 0.837 ± 0.004 |
|  | 44 ± 1 | 9.0 ± 0.1 | 0.958 ± 0.001 | 0.914 ± 0.003 |
|  | 50 ± 1 | 264 ± 2 | 0.941 ± 0.005 | 0.884 ± 0.009 |
|  | 23.9 ± 0.3 | 11.2 ± 0.1 | 0.926 ± 0.001 | 0.857 ± 0.001 |
|  | 65 ± 1 | 27 ± 2 | 0.937 ± 0.001 | 0.871 ± 0.002 |
|  | 36 ± 2 | 8.5 ± 0.1 | 0.958 ± 0.002 | 0.915 ± 0.004 |
|  | 9 ± 1 | 9.3 ± 0.2 | 0.970 ± 0.001 | 0.939 ± 0.002 |
|  | 28 ± 1 | 12.1 ± 0.2 | 0.933 ± 0.002 | 0.868 ± 0.004 |
|  | 37 ± 1 | 39 ± 6 | 0.964 ± 0.001 | 0.926 ± 0.002 |

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| --- | --- | --- | --- | --- |
| Мережа | MSE (10-3) | MRE (%) | R | R2 |
|  | 229 | 190 | 0.776 | 0.460 |
|  | 228 | 191 | 0.774 | 0.445 |
|  | 219 | 184 | 0.764 | 0.519 |
|  | 220 | 183 | 0.757 | 0.482 |
|  | 215 | 156 | 0.806 | 0.576 |
|  | 243 | 204 | 0.786 | 0.525 |
|  | 215 | 164 | 0.763 | 0.418 |
|  | 219 | 170 | 0.762 | 0.487 |
|  | 186 | 50 | 0.775 | 0.516 |
|  | 206 | 66 | 0.745 | 0.369 |
|  | 193 | 124 | 0.790 | 0.547 |
|  | 219 | 140 | 0.751 | 0.471 |
|  | 161 | 48 | 0.793 | 0.479 |
|  | 160 | 45 | 0.793 | 0.519 |
|  | 160 | 105 | 0.784 | 0.569 |
|  | 202 | 115 | 0.798 | 0.611 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Мережа | MSE (10-3) | MRE (%) | R | R2 |
|  | 72.3 ± 0.2 | 30.6 ± 0.1 | 0.929 ± 0.001 | 0.855 ± 0.001 |
|  | 68 ± 1 | 53 ± 1 | 0.935 ± 0.001 | 0.865 ± 0.001 |
|  | 68.8 ± 0.1 | 13.96 ± 0.02 | 0.9266 ± 0.0002 | 0.8535 ± 0.0003 |
|  | 80 ± 2 | 327 ± 41 | 0.917 ± 0.001 | 0.840 ± 0.002 |
|  | 50 ± 1 | 14.2 ± 0.1 | 0.944 ± 0.002 | 0.887 ± 0.004 |
|  | 87 ± 1 | 79 ± 3 | 0.918 ± 0.001 | 0.834 ± 0.001 |
|  | 43.8 ± 0.3 | 12.23 ± 0.03 | 0.9305 ± 0.0001 | 0.8637 ± 0.0002 |
|  | 54 ± 1 | 74 ± 2 | 0.922 ± 0.001 | 0.848 ± 0.001 |
|  | 44 ± 1 | 9.13 ± 0.03 | 0.960 ± 0.002 | 0.921 ± 0.004 |
|  | 60 ± 3 | 29 ± 5 | 0.891 ± 0.019 | 0.772 ± 0.045 |
|  | 25.9 ± 0.4 | 10.80 ± 0.02 | 0.9357 ± 0.0003 | 0.871 ± 0.001 |
|  | 98 ± 2 | 486 ± 47 | 0.9238 ± 0.0004 | 0.850 ± 0.001 |
|  | 32.0 ± 0.3 | 9.5 ± 0.2 | 0.963 ± 0.002 | 0.928 ± 0.003 |
|  | 9.9 ± 0.6 | 11.2 ± 0.3 | 0.969 ± 0.002 | 0.937 ± 0.003 |
|  | 24 ± 1 | 12.0 ± 0.1 | 0.945 ± 0.001 | 0.889 ± 0.002 |
|  | 37 ± 1 | 47 ± 4 | 0.960 ± 0.002 | 0.921 ± 0.003 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Мережа | MSE (10-3) | MRE (%) | R | R2 |
|  | 64 | 32 | 0.955 | 0.910 |
|  | 81 | 353 | 0.932 | 0.858 |
|  | 69 | 15 | 0.949 | 0.895 |
|  | 44 | 2 | 0.964 | 0.930 |
|  | 29 | 12 | 0.972 | 0.943 |
|  | 77 | 60 | 0.947 | 0.896 |
|  | 40 | 17 | 0.953 | 0.907 |
|  | 43 | 20 | 0.938 | 0.772 |
|  | 33 | 14 | 0.981 | 0.961 |
|  | 28 | 8 | 0.980 | 0.961 |
|  | 64 | 47 | 0.947 | 0.883 |
|  | 76 | 20 | 0.942 | 0.866 |
|  | 1 | 4 | 0.998 | 0.997 |
|  | 2 | 5 | 0.996 | 0.992 |
|  | 15 | 25 | 0.964 | 0.854 |
|  | 22 | 11 | 0.986 | 0.969 |

4.5) MSE, MRE, R, R2 для All-набору

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| --- | --- | --- | --- | --- |
| Мережа | MSE (10-3) | MRE (%) | R | R2 |
|  | 241.5 ± 0.6 | 109.1 ± 0.6 | 0.706 ± 0.001 | 0.013 ± 0.004 |
|  | 84.4 ± 0.4 | 60 ± 1 | 0.899 ± 0.001 | 0.800 ± 0.002 |
|  | 268 ± 1 | 240 ± 1 | 0.611 ± 0.001 | -0.292 ± 0.009 |
|  | 45.0 ± 0.4 | 40.0 ± 0.3 | 0.877 ± 0.001 | 0.742 ± 0.001 |
|  | 210 ± 1 | 69.4 ± 0.3 | 0.7495 ± 0.0004 | 0.305 ± 0.002 |
|  | 124 ± 1 | 82 ± 3 | 0.881 ± 0.002 | 0.752 ± 0.003 |
|  | 295 ± 1 | 350 ± 2 | 0.573 ± 0.002 | -0.673 ± 0.014 |
|  | 72 ± 2 | 43.0 ± 0.4 | 0.875 ± 0.003 | 0.686 ± 0.003 |
|  | 109 ± 1 | 28.8 ± 0.2 | 0.858 ± 0.001 | 0.699 ± 0.004 |
|  | 113 ± 1 | 32.5 ± 0.3 | 0.885 ± 0.001 | 0.779 ± 0.001 |
|  | 223 ± 1 | 184 ± 1 | 0.693 ± 0.003 | 0.292 ± 0.005 |
|  | 107 ± 1 | 55 ± 3 | 0.835 ± 0.001 | 0.654 ± 0.002 |
|  | 101.0 ± 0.4 | 24.5 ± 0.1 | 0.874 ± 0.001 | 0.749 ± 0.002 |
|  | 69.0 ± 0.3 | 46 ± 1 | 0.918 ± 0.001 | 0.841 ± 0.002 |
|  | 218 ± 1 | 165 ± 2 | 0.733 ± 0.001 | 0.435 ± 0.003 |
|  | 78 ± 1 | 51 ± 2 | 0.897 ± 0.002 | 0.794 ± 0.003 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Мережа | MSE (10-3) | MRE (%) | R | R2 |
|  | 232 ± 1 | 116 ± 2 | 0.722 ± 0.002 | 0.267 ± 0.006 |
|  | 90 ± 1 | 61 ± 1 | 0.903 ± 0.003 | 0.806 ± 0.005 |
|  | 273 ± 2 | 256 ± 6 | 0.605 ± 0.004 | -0.366 ± 0.013 |
|  | 57 ± 1 | 59 ± 2 | 0.867 ± 0.003 | 0.665 ± 0.005 |
|  | 217 ± 1 | 83.0 ± 0.2 | 0.742 ± 0.001 | 0.212 ± 0.007 |
|  | 122 ± 2 | 72 ± 3 | 0.889 ± 0.002 | 0.754 ± 0.004 |
|  | 260 ± 2 | 242 ± 5 | 0.644 ± 0.003 | -0.022 ± 0.029 |
|  | 78 ± 6 | 46 ± 5 | 0.869 ± 0.004 | 0.690 ± 0.005 |
|  | 105 ± 1 | 29.0 ± 0.4 | 0.881 ± 0.004 | 0.730 ± 0.009 |
|  | 98 ± 3 | 30.5 ± 0.4 | 0.891 ± 0.003 | 0.789 ± 0.006 |
|  | 244 ± 4 | 245 ± 12 | 0.670 ± 0.007 | 0.086 ± 0.024 |
|  | 105 ± 4 | 30 ± 2 | 0.864 ± 0.003 | 0.733 ± 0.005 |
|  | 104 ± 2 | 24.1 ± 0.2 | 0.880 ± 0.005 | 0.761 ± 0.010 |
|  | 66 ± 3 | 49 ± 3 | 0.919 ± 0.001 | 0.842 ± 0.002 |
|  | 224 ± 2 | 189 ± 6 | 0.732 ± 0.003 | 0.425 ± 0.011 |
|  | 78 ± 6 | 44 ± 1 | 0.896 ± 0.003 | 0.795 ± 0.005 |

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| --- | --- | --- | --- | --- |
| Мережа | MSE (10-3) | MRE (%) | R | R2 |
|  | 264 | 195 | 0.743 | 0.511 |
|  | 264 | 195 | 0.744 | 0.513 |
|  | 249 | 182 | 0.736 | 0.503 |
|  | 248 | 183 | 0.740 | 0.508 |
|  | 233 | 166 | 0.754 | 0.529 |
|  | 273 | 188 | 0.737 | 0.502 |
|  | 236 | 144 | 0.726 | 0.484 |
|  | 243 | 152 | 0.720 | 0.477 |
|  | 228 | 55 | 0.714 | 0.462 |
|  | 270 | 75 | 0.687 | 0.405 |
|  | 206 | 99 | 0.788 | 0.584 |
|  | 229 | 111 | 0.757 | 0.518 |
|  | 167 | 55 | 0.721 | 0.482 |
|  | 172 | 51 | 0.730 | 0.493 |
|  | 181 | 89 | 0.775 | 0.562 |
|  | 212 | 91 | 0.789 | 0.590 |

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| --- | --- | --- | --- | --- |
| Мережа | MSE (10-3) | MRE (%) | R | R2 |
|  | 255 ± 2 | 114 ± 1 | 0.6683 ± 0.0004 | 0.178 ± 0.005 |
|  | 92 ± 2 | 51 ± 1 | 0.913 ± 0.001 | 0.826 ± 0.002 |
|  | 378 ± 2 | 600 ± 6 | 0.515 ± 0.001 | -0.364 ± 0.002 |
|  | 54 ± 1 | 32.8 ± 0.2 | 0.8694 ± 0.0004 | 0.741 ± 0.001 |
|  | 226 ± 2 | 120 ± 3 | 0.676 ± 0.001 | 0.142 ± 0.007 |
|  | 119 ± 2 | 59 ± 2 | 0.908 ± 0.002 | 0.818 ± 0.002 |
|  | 333 ± 1 | 440 ± 4 | 0.554 ± 0.001 | -0.497 ± 0.013 |
|  | 119 ± 1 | 25.6 ± 0.1 | 0.877 ± 0.001 | 0.762 ± 0.002 |
|  | 140 ± 3 | 78 ± 4 | 0.863 ± 0.002 | 0.584 ± 0.005 |
|  | 113 ± 4 | 34 ± 1 | 0.914 ± 0.001 | 0.827 ± 0.003 |
|  | 248 ± 1 | 72 ± 1 | 0.6350 ± 0.0003 | 0.009 ± 0.001 |
|  | 101 ± 2 | 24.5 ± 0.3 | 0.879 ± 0.002 | 0.766 ± 0.003 |
|  | 121 ± 4 | 38 ± 2 | 0.866 ± 0.001 | 0.613 ± 0.004 |
|  | 85 ± 2 | 41 ± 2 | 0.885 ± 0.004 | 0.775 ± 0.007 |
|  | 221 ± 6 | 60 ± 1 | 0.642 ± 0.001 | 0.009 ± 0.012 |
|  | 87 ± 3 | 36 ± 1 | 0.895 ± 0.003 | 0.797 ± 0.006 |

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| --- | --- | --- | --- | --- |
| Мережа | MSE (10-3) | MRE (%) | R | R2 |
|  | 98 | 45 | 0.952 | 0.906 |
|  | 110 | 43 | 0.921 | 0.827 |
|  | 80 | 11 | 0.950 | 0.900 |
|  | 94 | 15 | 0.934 | 0.871 |
|  | 61 | 13 | 0.960 | 0.919 |
|  | 109 | 57 | 0.878 | 0.747 |
|  | 60 | 14 | 0.946 | 0.892 |
|  | 79 | 20 | 0.958 | 0.862 |
|  | 67 | 11 | 0.965 | 0.930 |
|  | 61 | 7 | 0.972 | 0.944 |
|  | 144 | 14 | 0.946 | 0.891 |
|  | 91 | 14 | 0.950 | 0.898 |
|  | 96 | 10 | 0.926 | 0.853 |
|  | 129 | 10 | 0.945 | 0.888 |
|  | 75 | 641 | 0.915 | 0.647 |
|  | 35 | 12 | 0.983 | 0.961 |

4.6) MSE, MRE, R, R2 для Full-набору

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| --- | --- | --- | --- | --- |
| Мережа | MSE (10-3) | MRE (%) | R | R2 |
|  | 20.0 ± 0.1 | 19.0 ± 0.1 | 0.9865 ± 0.0003 | 0.972 ± 0.001 |
|  | 32.4 ± 0.1 | 33.8 ± 0.2 | 0.9690 ± 0.0001 | 0.9364 ± 0.0001 |
|  | 1.48 ± 0.01 | 4.13 ± 0.02 | 0.9959 ± 0.0001 | 0.9908 ± 0.0001 |
|  | 2.6 ± 0.1 | 5.8 ± 0.1 | 0.9954 ± 0.0001 | 0.9896 ± 0.0002 |
|  | (38.8 ± 0.5) × 10-2 | 1.01 ± 0.01 | 0.999 | 0.999 |
|  | 50.4 ± 0.3 | 50.4 ± 0.4 | 0.9601 ± 0.0003 | 0.916 ± 0.001 |
|  | 1.02 ± 0.01 | (382.5 ± 0.7) × 10-2 | 0.99634 ± 0.00002 | 0.9923 ± 0.0001 |
|  | 1.19 ± 0.02 | 4.24 ± 0.01 | 0.99556 ± 0.00004 | 0.9893 ± 0.0001 |
|  | 0 | (1.7 ± 0.2) × 10-3 | 1.000 | 1.000 |
|  | (2.3 ± 0.4) × 10-3 | (5.3 ± 0.2) × 10-2 | 1.000 | 1.000 |
|  | 0 | (1.2 ± 0.4) × 10-3 | 1.000 | 1.000 |
|  | (5.5 ± 0.4) × 10-2 | (16.6 ± 0.4) × 10-2 | 0.99976 ± 0.00002 | 0.99952 ± 0.00004 |
|  | 0 | 0 | 1.000 | 1.000 |
|  | 0 | (0.1 ± 0.1) × 10-4 | 1.000 | 1.000 |
|  | 0 | 0 | 1.000 | 1.000 |
|  | (0.3 ± 0.1) × 10-3 | (1.1 ± 0.1) × 10-2 | 1.000 | 1.000 |

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| --- | --- | --- | --- | --- |
| Мережа | MSE (10-3) | MRE (%) | R | R2 |
|  | 15.3 ± 0.1 | 18.2 ± 0.1 | 0.9846 ± 0.0001 | 0.9598 ± 0.0002 |
|  | 20.5 ± 0.1 | 22.5 ± 0.1 | 0.9801 ± 0.0001 | 0.9550 ± 0.0002 |
|  | (135.5 ± 0.6) × 10-2 | 2.63 ± 0.02 | 0.99603 ± 0.00004 | 0.9919 ± 0.0001 |
|  | (146.5 ± 0.6) × 10-2 | 2.63 ± 0.02 | 0.99772 ± 0.00001 | 0.99537 ± 0.00002 |
|  | 0.1 × 10-3 | (2.8 ± 0.3) × 10-2 | 1.000 | 1.000 |
|  | 23.2 ± 0.2 | 25.6 ± 0.2 | 0.9828 ± 0.0002 | 0.952 ± 0.001 |
|  | (101.4 ± 0.7) × 10-3 | (78.5 ± 0.2) × 10-2 | 0.99910 ± 0.00001 | 0.99817 ± 0.00002 |
|  | (15.6 ± 0.3) × 10-3 | 0.39 ± 0.01 | 0.999 | 0.99981 ± 0.00001 |
|  | 0.8 × 10-3 | (45.1 ± 0.6) × 10-3 | 0.999 | 0.99995 ± 0.00001 |
|  | (18.0 ± 0.5) × 10-2 | (104.5 ± 0.6) × 10-2 | 0.9991 ± 0.0001 | 0.9982 ± 0.0001 |
|  | (1.7 ± 0.1) × 10-2 | 0.37 ± 0.02 | 0.99973 ± 0.00001 | 0.99945 ± 0.00003 |
|  | (10.3 ± 0.5) × 10-2 | 0.75 ± 0.01 | 0.99927 ± 0.00003 | 0.9985 ± 0.0001 |
|  | (7.4 ± 0.2) × 10-2 | 0.76 ± 0.01 | 0.99940 ± 0.00001 | 0.99880 ± 0.00002 |
|  | (1.2 ± 0.1) × 10-2 | (22.4 ± 0.4) × 10-2 | 0.99982 ± 0.00003 | 0.9997 ± 0.0001 |
|  | (4.3 ± 0.2) × 10-2 | 0.86 ± 0.02 | 0.99964 ± 0.00001 | 0.99929 ± 0.00002 |
|  | (2.3 ± 0.1) × 10-3 | (16.1 ± 0.4) × 10-2 | 0.999 | 0.99996 ± 0.00001 |

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| Мережа | MSE (10-3) | MRE (%) | R | R2 |
|  | 232 | 215 | 0.756 | 0.488 |
|  | 232 | 216 | 0.757 | 0.493 |
|  | 221 | 209 | 0.750 | 0.527 |
|  | 222 | 208 | 0.745 | 0.515 |
|  | 204 | 206 | 0.764 | 0.496 |
|  | 247 | 219 | 0.750 | 0.447 |
|  | 211 | 181 | 0.728 | 0.422 |
|  | 217 | 187 | 0.745 | 0.506 |
|  | 171 | 60 | 0.733 | 0.373 |
|  | 208 | 80 | 0.701 | 0.239 |
|  | 181 | 132 | 0.789 | 0.584 |
|  | 207 | 151 | 0.751 | 0.500 |
|  | 136 | 54 | 0.745 | 0.404 |
|  | 136 | 50 | 0.755 | 0.450 |
|  | 155 | 117 | 0.803 | 0.610 |
|  | 188 | 131 | 0.797 | 0.605 |

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| --- | --- | --- | --- | --- |
| Мережа | MSE (10-3) | MRE (%) | R | R2 |
|  | 27.26 ± 0.03 | 29.6 ± 0.1 | 0.9700 ± 0.0001 | 0.9381 ± 0.0003 |
|  | 32.9 ± 0.1 | 42.1 ± 0.3 | 0.9685 ± 0.0004 | 0.934 ± 0.001 |
|  | (497.4 ± 0.3) × 10-2 | 9.1 ± 0.1 | 0.98690± 0.00004 | 0.9733 ± 0.0001 |
|  | 7.10 ± 0.01 | 12.6 ± 0.1 | 0.9893 ± 0.0001 | 0.9773 ± 0.0001 |
|  | (44.1 ± 0.1) × 10-2 | 1.62 ± 0.01 | 0.998 | 0.99705 ± 0.00001 |
|  | 55.1 ± 0.1 | 65 ± 1 | 0.9549 ± 0.0004 | 0.906 ± 0.001 |
|  | 1.22 ± 0.01 | 2.88 ± 0.02 | 0.9950 ± 0.0001 | 0.9897 ± 0.0001 |
|  | 6.68 ± 0.01 | 9.7 ± 0.1 | 0.99095 ± 0.00002 | 0.98179 ± 0.00004 |
|  | (3.8 ± 0.1) × 10-2 | (102.5 ± 0.2) × 10-2 | 0.99971 ± 0.00001 | 0.99939 ± 0.00002 |
|  | (21.5 ± 0.2) × 10-2 | 2.44 ± 0.01 | 0.99901 ± 0.00005 | 0.9980 ± 0.0001 |
|  | 0.39 ± 0.01 | (153.1 ± 0.3) × 10-2 | 0.99845 ± 0.00004 | 0.9969 ± 0.0001 |
|  | 4.07 ± 0.01 | 7.4 ± 0.1 | 0.99305 ± 0.00004 | 0.9861 ± 0.0001 |
|  | (31.9 ± 0.4) × 10-2 | 1.82 ± 0.02 | 0.9984 ± 0.0001 | 0.9967 ± 0.0001 |
|  | (23.9 ± 0.2) × 10-2 | 2.22 ± 0.01 | 0.9985 ± 0.0001 | 0.9969 ± 0.0001 |
|  | (8.3 ± 0.1) × 10-2 | 1.14 ± 0.01 | 0.99961 ± 0.00002 | 0.99921 ± 0.00002 |
|  | 0.58 ± 0.01 | 2.34 ± 0.01 | 0.9994 ± 0.0001 | 0.9988 ± 0.0001 |

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| --- | --- | --- | --- | --- |
| Мережа | MSE (10-3) | MRE (%) | R | R2 |
|  | 31 | 36 | 0.975 | 0.950 |
|  | 86 | 108 | 0.906 | 0.820 |
|  | 12 | 29 | 0.975 | 0.941 |
|  | 23 | 101 | 0.976 | 0.953 |
|  | 14 | 36 | 0.979 | 0.955 |
|  | 54 | 58 | 0.964 | 0.919 |
|  | 11 | 15 | 0.983 | 0.962 |
|  | 10 | 15 | 0.984 | 0.967 |
|  | 18 | 41 | 0.975 | 0.949 |
|  | 7 | 12 | 0.991 | 0.980 |
|  | 14 | 22 | 0.919 | 0.835 |
|  | 15 | 20 | 0.970 | 0.937 |
|  | 5 | 15 | 0.997 | 0.993 |
|  | 1 | 7 | 0.998 | 0.996 |
|  | 18 | 641 | 0.915 | 0.647 |
|  | 9 | 19 | 0.990 | 0.980 |