

Table 1

The results of computing the value of CTPH and the editorial distance between hashes of the obfuscated source code of engrat software

| File number in the dataset | engrat file hash values<br>(20 byte)         | engrat file hash values<br>(40 byte)         | Editorial distance | Percentage of malware samples<br>calculated using <b>scdeep</b> | Percentage of malware samples<br>computed using<br>convolutional neural<br>networks |    |     | Percentage of<br>malware samples<br>computed using<br>capsular<br>neural network |    |     |
|----------------------------|--|--|--------------------|---|---|----|-----|--|----|-----|
|                            |  |  |                    |   | Training epoch  |    |     | Training epoch   |    |     |
|                            |  |  |                    |   | I   | II | III | I  | II | III |
| 1.                         | 96191775819ee5d1e6e9<br>1dcc6d91e8de91c1555e | c11b9e6198ae95d179ad<br>c169b18e61b8d19515a1 | 27                 | 39  | 31  | 35 | 34  | 52   | 59 | 58  |
| 2.                         | 7d7dc6ad9d11181a7966<br>11a91ed1be18851e5671 | 185e87819acc11ee8a99<br>15b9e1d9118c11e8d96e | 31                 | 30  | 30  | 34 | 31  | 49   | 55 | 56  |
| 3.                         | b1891e9d7cbaad51d888<br>1971ad717971111151b9 | 9a1967e9ec5b91ce11e1<br>1711e68151a6bd1d5b5c | 31                 | 34  | 31  | 35 | 30  | 56   | 54 | 55  |
| 4.                         | 768ae91971dce8b16dec<br>e16c816176d1acce65e9 | 998ea9a9a9d195a1e6b9<br>7c5ce6e11e5b6ad1511a | 31                 | 36  | 30  | 31 | 32  | 49   | 49 | 47  |
| 5.                         | 897a19c1bdee11cce9d1<br>5b9ccd1ec511b55716a5 | 8ee1e9ba991ead95517e<br>cc1eee919b71e95a1598 | 31                 | 34  | 31  | 34 | 35  | 48   | 54 | 55  |
| 6.                         | eb1ce6869db1e55d1b7e<br>7d1d7e17596a111e51a1 | e1ce91151191c16111ae<br>9815bde1155eec97757c | 30                 | 28  | 30  | 31 | 32  | 48   | 49 | 47  |
| 7.                         | a1ea16158eca5bce11e1<br>1797ebeb981d9696eede | 5e511111777977ea1e19<br>6b1e515915118bcb5da6 | 31                 | 29  | 31  | 30 | 34  | 45   | 47 | 49  |
| 8.                         | 1511117a61e7ee988bed<br>eccc69a7b57da9e11919 | a11511dd191561191c15<br>1668be16adc791598e91 | 31                 | 30  | 31  | 32 | 34  | 45   | 46 | 42  |
| 9.                         | ac5b6571781e85e1911c<br>7e6e1ac168d68e5ad168 | 1e1e65c19b79cda791ab<br>b7a18d5671e9a891581e | 31                 | 34  | 30  | 31 | 32  | 48   | 47 | 49  |
| 10.                        | 6cbe5a1e75611beb11ed<br>ac1ea19e551c1ce7519c | 5981919b9c191e81de11<br>8a1117899e19ac9e1191 | 30                 | 28  | 30  | 34 | 31  | 46   | 45 | 46  |
| 11.                        | db8d81ebbabbc1bdb96e<br>5c11e1511b98d1188ebe | c13211d111155ae9e1e6<br>68cea5151e1e111ed5cb | 32                 | 34  | 30  | 31 | 32  | 48   | 47 | 49  |
| 12.                        | d5ede9d8eb181e1a6e11<br>61e181de9a99119e8e91 | 5597cd991cab1a1d1579<br>b1c7ba9111ae598199ad | 30                 | 30  | 31  | 30 | 32  | 44   | 47 | 48  |
| 13.                        | 189e1b199111deee6eb1<br>1799b55159c188e1c6cb | a9ec119b1edeeebec11a<br>a6115e969e91edee96e8 | 25                 | 27  | 30  | 31 | 32  | 47   | 48 | 49  |
| 14.                        | 6878e87c115d11d1178c<br>ee6ae7b61e91acb911b1 | c1e71111e917d5aa7117<br>86ba5d6eac1e155d8c9b | 31                 | 34  | 34  | 32 | 31  | 47   | 48 | 49  |
| 15.                        | b7bce91e761db8e1919a<br>aee1911ee8b7791d18e1 | 5c1b111eec998ecd6e87<br>8cbdae69a179ae85e566 | 34                 | 29  | 30  | 30 | 31  | 49   | 48 | 47  |
| 16.                        | 71c5b1987ad18119e178<br>911be5877be17a511111 | 95be1716a9be819e66a9<br>699b97981e6eedad11e  | 29                 | 34  | 31  | 32 | 31  | 42   | 45 | 45  |
| 17.                        | 91a661a11a1758eb168d<br>e881ee9ad761999a1e5d | e8818811a57eb89ed5de<br>d987e15e198179b16c89 | 31                 | 30  | 29  | 30 | 31  | 47   | 47 | 48  |
| 18.                        | 9aa119569e9b17e69cbd<br>8eb99e9a691c11e9b61b | 11d81c7e911a78cd6aba<br>111c6b17181d1eac5eca | 32                 | 28  | 27  | 29 | 28  | 49   | 41 | 42  |
| 19.                        | 9111191b76e587aa181e<br>a961d9cdc71ea191e6ba | dd1111187115151e111b<br>d89151919de61e151b1a | 26                 | 27  | 26  | 27 | 28  | 44   | 46 | 45  |
| 20.                        | c651d88b5e7c11e511c1<br>81c91aebabdb98b7eb95 | 9e611cc1abde8d7dc5d1<br>eda1e66b177a191ac61e | 34                 | 39  | 37  | 38 | 34  | 49   | 51 | 52  |