

Test and Score

Sun Apr 20 25, 13:33:47

Settings

Sampling type: Stratified 5-fold Cross validation

Target class: 1

Scores

Model	AUC	CA	F1	Prec	Recall	MCC
kNN	0.905	0.994	0.663	0.855	0.541	0.678
Logistic Regression	0.977	0.995	0.694	0.938	0.550	0.716
Naive Bayes	0.942	0.989	0.174	0.414	0.110	0.209
Random Forest	0.980	0.998	0.893	0.948	0.844	0.894

Precision is greater than .90 and Recall is greater than .80, so overall, it can be assessed that the Random Forest is a good model.

Info

Data:  
**KeepSafe\_NewData:** 999 instances, 9 variables  
Features: 7 (1 categorical, 6 numeric) (no missing values)  
Metas: 2 string

Model: 1 model

• Random Forest

Data & Predictions

	Random Forest	error	nameOrig	nameDest	Transaction_ID	type	amount	oldbalanceOrg	newbalanceOrig	oldbalanceDest	newbalanceDest
50	1		C232270507	C1104042317	13108250	CASH_OUT	247596.18	0.00	0.00	0.00	247596.18
136	1		C835057101	C795962390	13108256	CASH_OUT	257237.51	233703.25	0.00	456511.57	713749.09
165	1		C1851550344	C1249354038	13108245	CASH_OUT	254832.45	254544.00	0.00	0.00	254832.45
339	1		C34714860	C1762242916	13108259	CASH_OUT	242597.00	222386.63	0.00	10300000.00	10600000.00
429	1		C1569408636	C1263973557	13108249	CASH_OUT	237245.66	202310.00	0.00	3190487.23	3427732.90
479	1		C194490642	C1687035681	13108259	CASH_OUT	277150.70	11.00	0.00	0.00	277150.70
491	1		C1396122691	C1505788568	13108251	CASH_OUT	227433.97	179776.19	0.00	4845636.14	5073070.11
549	1		C1726326177	C1540448785	13108249	TRANSFER	295664.18	295664.18	0.00	0.00	0.00
550	1		C1446413189	C185805228	13108250	CASH_OUT	295664.18	295664.18	0.00	10200000.00	10500000.00
560	1		C634243336	C1368075901	13108260	CASH_OUT	55655.27	39441.00	0.00	0.00	55655.27
657	1		C2134583132	C1467556774	13108257	CASH_OUT	40183.38	33359.00	0.00	0.00	40183.38
791	1		C1142866956	C1237617997	13108251	CASH_OUT	38547.13	42367.00	3819.87	0.00	38547.13
965	1		C931039094	C1658061985	13108245	CASH_OUT	64698.21	31460.00	0.00	0.00	64698.21
1	0		C1579486558	M1850653167	13108241	PAYMENT	42650.47	31125.00	0.00	0.00	0.00
2	0		C1373443569	M2118806160	13108242	PAYMENT	3818.44	122357.12	118538.67	0.00	0.00
3	0		C141809658	C469298476	13108243	CASH_OUT	251999.33	118538.67	0.00	1744702.85	1996702.18
4	0		C325687002	C613840514	13108244	CASH_OUT	150597.89	216119.72	65521.83	104549.67	255147.56
5	0		C706898907	M118590181	13108245	PAYMENT	12161.54	65521.83	53360.29	0.00	0.00
6	0		C290148858	C1043171418	13108246	CASH_IN	58234.62	31369.00	89603.62	284871.74	226637.12
7	0		C1313589839	C1494580010	13108247	CASH_OUT	325970.44	15591.00	0.00	12225.22	338195.66
8	0		C2005802222	C934651164	13108248	CASH_OUT	40860.83	0.00	0.00	943678.67	984539.50
9	0		C2093217368	C1379050026	13108249	CASH_IN	262061.02	33881.00	295942.02	0.00	0.00
10	0		C927775931	M667226543	13108250	PAYMENT	6409.96	64446.00	58036.04	0.00	0.00
11	0		C548077781	M1136219054	13108251	PAYMENT	5259.07	27775.00	22515.93	0.00	0.00
12	0		C289572358	M512079336	13108252	PAYMENT	13876.00	22515.93	8639.93	0.00	0.00
13	0		C1724953413	C2042648721	13108253	CASH_OUT	66722.61	26306.00	0.00	18190.00	84912.61
14	0		C1878894610	C308006848	13108254	CASH_IN	195798.82	119493.00	315291.82	340958.00	145159.18
15	0		C1779069277	C1829747368	13108255	CASH_OUT	64120.91	315291.82	251170.91	199757.49	263878.40
16	0		C1494459137	C1646698881	13108256	CASH_OUT	91948.33	251170.91	159222.59	164984.12	256932.45
17	0		C976910845	C1297893283	13108257	CASH_OUT	80111.03	159222.59	79111.56	378271.38	458382.41
18	0		C948304784	C1958641252	13108258	CASH_OUT	221811.79	79111.56	0.00	3162903.55	3384715.34
19	0		C20768068	C236017361	13108259	CASH_OUT	6996.50	0.00	0.00	115911.69	122908.19
20	0		C1173571017	C960984	13108260	CASH_OUT	341810.30	0.00	0.00	469105.96	810916.26
21	0		C753875227	C215096440	13108241	CASH_OUT	300136.85	0.00	0.00	795009.42	1095146.27
22	0		C1000414829	C827837524	13108242	CASH_OUT	196140.05	0.00	0.00	378127.87	574267.93
23	0		C1565641368	C338348088	13108243	CASH_OUT	1388.22	0.00	0.00	30845.00	32233.22
24	0		C47383030	C1198898950	13108244	CASH_OUT	81870.38	0.00	0.00	616319.75	698190.13
25	0		C1470224214	C1838243877	13108245	CASH_OUT	420303.21	0.00	0.00	712685.23	1132988.45
26	0		C1690364345	C1211312974	13108246	CASH_OUT	197545.93	0.00	0.00	386430.58	583976.51
27	0		C932641459	C63243575	13108247	CASH_OUT	220462.12	0.00	0.00	1381657.22	1602119.35
28	0		C760250630	C542420222	13108248	CASH_OUT	407528.99	0.00	0.00	960300.60	1367829.59
29	0		C1955784861	C1553483677	13108249	CASH_OUT	204626.99	0.00	0.00	361288.45	565915.45
30	0		C402410135	C1383559851	13108250	CASH_OUT	21068.62	0.00	0.00	378613.81	399682.43
31	0		C398424505	C427762732	13108251	CASH_OUT	111524.80	0.00	0.00	1127982.39	1239507.19
32	0		C1053721337	C144006118	13108252	CASH_OUT	87397.70	0.00	0.00	160109.20	247506.90
33	0		C1576747965	C1385714233	13108253	CASH_OUT	155816.06	0.00	0.00	358529.41	514345.47
34	0		C673583719	C266383440	13108254	CASH_OUT	126021.12	0.00	0.00	215970.84	341991.96
35	0		C1144575083	C307841806	13108255	CASH_OUT	198349.39	0.00	0.00	4874245.83	5072595.22
36	0		C237719391	M155849612	13108256	PAYMENT	12226.17	5569.00	0.00	0.00	0.00
37	0		C300387816	C932389355	13108257	CASH_OUT	132653.34	4180.00	0.00	12656.00	145309.34
38	0		C335452211	M1199271076	13108258	PAYMENT	18357.31	52548.00	34190.69	0.00	0.00
39	0		C519356852	M860981071	13108259	PAYMENT	6209.14	34190.69	27981.55	0.00	0.00
40	0		C1409924630	C1744864622	13108260	CASH_OUT	122723.48	51991.00	0.00	1768.00	124491.48
41	0		C1217128063	C437864036	13108241	CASH_IN	197342.12	60561.00	257903.12	437168.06	239825.94
42	0		C1892313019	C448070390	13108242	CASH_OUT	166110.41	12043.00	0.00	0.00	166110.41
43	0		C1327430930	C1727562137	13108243	CASH_OUT	174572.89	219.00	0.00	2897.65	177470.54
44	0		C1459491817	C1113244956	13108244	CASH_OUT	326399.62	5829.00	0.00	274698.00	601097.62

45	0	C1104260951	C1666211585	13108245	TRANSFER	103622.43	13508.00	0.00	610831.14	714453.58
46	0	C1644556137	M1523284054	13108246	PAYMENT	13275.16	961.00	0.00	0.00	0.00
47	0	C2089568701	C1234220290	13108247	CASH_OUT	46802.47	11399.00	0.00	110753.84	157556.31
48	0	C820771436	M2111321535	13108248	PAYMENT	1236.12	0.00	0.00	0.00	0.00
49	0	C2094066586	M1645188124	13108249	PAYMENT	15777.13	651335.00	635557.87	0.00	0.00
51	0	C831624034	M1248207601	13108251	PAYMENT	66.84	0.00	0.00	0.00	0.00
52	0	C1415049429	C289045778	13108252	TRANSFER	92977.29	651.00	0.00	3107462.04	3200439.33
53	0	C404100486	C1849300624	13108253	CASH_OUT	436383.15	122221.00	0.00	2660162.86	3096546.02
54	0	C631349093	C1959877812	13108254	CASH_OUT	97501.02	10375.00	0.00	110345.94	207846.97
55	0	C1588285578	M890356434	13108255	PAYMENT	1459.13	0.00	0.00	0.00	0.00
56	0	C486755283	M888186273	13108256	PAYMENT	977.31	0.00	0.00	0.00	0.00
57	0	C811310261	C745043193	13108257	CASH_OUT	41197.51	22225.00	0.00	457114.81	498312.32
58	0	C191352638	C611855891	13108258	CASH_OUT	183199.97	240990.27	57790.30	800998.07	984198.04
59	0	C205340754	M1037119961	13108259	PAYMENT	6662.86	57790.30	51127.44	0.00	0.00
60	0	C1367588066	C1364262243	13108260	CASH_OUT	197117.38	198.00	0.00	634865.14	831982.52
61	0	C1688766419	C886088157	13108241	CASH_OUT	219965.01	25095.00	0.00	203775.53	423740.55
62	0	C40989892	M916116138	13108242	PAYMENT	17673.99	21612.00	3938.01	0.00	0.00
63	0	C2050100279	C801357928	13108243	CASH_IN	166122.36	3851.00	169973.36	363932.79	197810.44
64	0	C1510247101	C1251825669	13108244	CASH_OUT	247945.18	910.00	0.00	0.00	247945.18
65	0	C1398411885	M859149614	13108245	PAYMENT	15341.03	3562.00	0.00	0.00	0.00
66	0	C1502377163	M656628773	13108246	PAYMENT	22016.49	0.00	0.00	0.00	0.00
67	0	C610921430	M996837008	13108247	PAYMENT	329.84	178259.00	177929.16	0.00	0.00
68	0	C33195802	C2137760777	13108248	TRANSFER	990979.54	619.00	0.00	4817704.73	5808684.28
69	0	C1006969204	C1172225915	13108249	CASH_IN	337520.03	49948.00	387468.03	121725.22	0.00
70	0	C1473862265	C288298363	13108250	TRANSFER	130237.97	11254.00	0.00	0.00	130237.97
71	0	C954730516	C669208078	13108251	DEBIT	472.87	0.00	0.00	2001374.99	2001847.87
72	0	C1837079108	C259373099	13108252	CASH_OUT	109473.79	20301.00	0.00	4293.00	113766.79
73	0	C2028214302	M1702076393	13108253	PAYMENT	15680.83	12548.00	0.00	0.00	0.00
74	0	C497259515	C1931240788	13108254	CASH_OUT	243386.23	0.00	0.00	6473397.89	6716784.13
75	0	C211781553	C2069134221	13108255	CASH_IN	69679.56	37421.00	107100.56	52128.88	0.00
76	0	C1415797460	C947486490	13108256	CASH_IN	34020.83	424.00	34444.83	0.00	0.00
77	0	C756419430	M741042548	13108257	PAYMENT	5766.00	157353.00	151587.00	0.00	0.00
78	0	C1559875919	C245368430	13108258	CASH_OUT	94322.54	151587.00	57264.46	109927.01	204249.54
79	0	C302155262	M257090019	13108259	PAYMENT	16757.23	90268.00	73510.77	0.00	0.00
80	0	C2026199476	M1789168714	13108260	PAYMENT	4976.62	73510.77	68534.15	0.00	0.00
81	0	C1812978069	M1951031310	13108241	PAYMENT	23826.06	0.00	0.00	0.00	0.00
82	0	C638619594	C1965816690	13108242	CASH_OUT	17485.06	0.00	0.00	319612.98	337098.04
83	0	C1754825118	M2060004969	13108243	PAYMENT	2272.69	51054.00	48781.31	0.00	0.00
84	0	C1562671918	C548785403	13108244	CASH_OUT	181338.78	20472.00	0.00	0.00	181338.78
85	0	C2137575839	M1406151581	13108245	PAYMENT	7271.81	250201.00	242929.19	0.00	0.00
86	0	C1616506344	C191447124	13108246	CASH_IN	207370.63	20983.00	228353.63	1096208.36	888837.73
87	0	C509216710	M654821819	13108247	PAYMENT	20833.87	30965.00	10131.13	0.00	0.00
88	0	C1977192965	C1241750549	13108248	CASH_OUT	115964.98	10131.13	0.00	884948.99	1000913.98

+ 799 more

Scores

Model

Using the Random Forest model to predict fraudulent transactions on new data, 13 instances were identified with a prediction of "1", indicating fraud. When examining the "type" column, it is noticeable that many of the predicted fraudulent transactions are of the "CASH\_OUT" type. Therefore, it is advisable to focus more on "CASH\_OUT" transactions and strengthen fraud prevention measures specifically for this transaction type.