Table 1. Results of Machine Learning Algorithms After Sequential Feature Selection

ALGOR ITHM	ATTRIBUTE SELECTION METHOD	Acc (%)	Sen (%)	Spe (%)
GLM	No Feature Selection	74	43	87
	IG+RFE	74	35	90
	IG+GA	72	32	89
	IG+SA	73	32	90
	IG+BORUTA	72	30	90
	GR+RFE	74	35	90
	GR+GA	72	32	89
	GR+SA	73	32	90
	GR+BORUTA	72	30	90
	CFS+RFE	70	27	89
	CFS +GA	70	27	89
	CFS +SA	70	27	89
	CFS+BORUTA	70	27	89
	Kİ-KARE+RFE	74	35	90
	Kİ-KARE +GA	72	32	89
	Kİ-KARE +SA	73	32	90
	Kİ-KARE +BORUTA	72	30	90
	RELİEF+RFE	73	35	89
	RELİEF +GA	72	32	89
	RELİEF +SA	70	20	91
	RELIEF +BORUTA	75	37	91
	SU+RFE	70	38	88
	SU+GA	74	44	90
	SU+SA	73	39	91
	SU+BORUTA	72	30	90
	No Feature Selection	62	17	81
	IG+RFE	62	17	81
	IG+GA	62	17	81
	IG+SA	66	10	89
	IG+BORUTA	62	17	81
	GR+RFE	62	17	81
	GR+GA	62	17	81
	GR+SA	66	10	89
	GR+BORUTA	62	17	81
	CFS+RFE	70	27	89
		70	28	
	CFS +GA CFS +SA		28	88 88
KNN	CFS+BORUTA	<b>70</b>		
WIAIA	Kİ-KARE+RFE	70 62	28 17	88 81
	Kİ-KARE +GA	62	17	81
	KI-KARE +GA KI-KARE +SA	66	10	89
		62		
	Kİ-KARE +BORUTA		17	81
	RELIEF+RFE	66	12	89
	RELIEF +GA	62	17	81
	RELİEF +SA	67	30	83
	RELIEF +BORUTA	63	18	81
	SU+RFE	65	15	92
	SU+GA	66	15	93
	SU+SA	64	11	93
	SU+BORUTA	62	17	81
NB	No Feature Selection	69	62	72
	IG+RFE	73	50	82

ALGOR ITHM	ATTRIBUTE SELECTION METHOD	Acc (%)	Sen (%)	Spe (%)
	IG+GA	68	47	77
	IG+SA	71	40	84
	IG+BORUTA	70	53	76
	GR+RFE	73	50	82
	GR+GA	68	47	77
	GR+SA	71	40	84
	GR+BORUTA	70	53	76
	CFS+RFE	69	28	86
	CFS +GA	69	28	86
	CFS +SA	69	28	86
	CFS+BORUTA	69	28	86
	Kİ-KARE+RFE	73	50	82
	Kİ-KARE +GA	68	47	77
	Kİ-KARE +SA	71	40	84
	Kİ-KARE +BORUTA	70	53	76
	RELİEF+RFE	67	53	72
	RELİEF +GA	65	50	71
	RELİEF +SA	65	47	73
	RELİEF +BORUTA	68	53	74
	SU+RFE	72	54	82
	SU+GA	75	61	83
	SU+SA	71	51	81
	SU+BORUTA	70	53	76
	No Feature Selection	73	42	86
	IG+RFE	75	35	91
	IG+GA	73	33	90
	IG+SA	73	25	94
	IG+BORUTA	73	33	90
	GR+RFE	75	35	91
	GR+GA	73	33	90
	GR+SA	73	25	94
	GR+BORUTA	73	33	90
	CFS+RFE	69	10	95
AR	CFS +GA	69	10	95
≱	CFS +SA	69	10	95
. <del>Z</del>	CFS+BORUTA	69	10	95
SVMLINE	Kİ-KARE+RFE	75	35	91
S S	Kİ-KARE +GA	73	33	90
	Kİ-KARE +SA	73	25	94
	Kİ-KARE +BORUTA	73	33	90
	RELİEF+RFE	72	35	88
	RELİEF +GA	72	30	89
	RELİEF +SA	70	0	100
	RELIEF +BORUTA	75	32	93
	SU+RFE	72	31	94
	SU+GA	73	41	90
	SU+SA	65	0	100
	SU+BORUTA	73	33	90
	No Feature Selection	72	35	88
	IG+RFE	74	37	90
<u> </u>	IG+GA	74	33	91
Ŏ	IG+SA	75	37	91
Σ	IG+BORUTA	73	35	90
SVMPOLY	GR+RFE	74	37	90
	GR+GA	74	33	91
	GR+SA	75	37	91
<u> </u>			<u> </u>	<u> </u>

GR+BORUTA CFS+RFE 68 0 96 CFS+RFA 68 0 96 CFS+SA 68 0 96 CFS+SA 68 0 96 CFS+SA 68 0 96 CFS+SA 68 0 96 CFS+SA 68 0 96 CFS+SA 68 0 96 CFS+BORUTA 68 0 96 KI-KARE+FE 74 37 90 KI-KARE+GA 74 33 91 KI-KARE+GA 75 37 91 KI-KARE+GA 75 37 81 KI-KARE+BORUTA 73 35 88 RELIEF+RFE 72 33 88 RELIEF+GA 70 28 88 RELIEF+SA 66 15 88 RELIEF+SA 66 15 88 RELIEF+BORUTA 74 30 93 SU+RFE 71 41 87 SU+GA 74 45 90 SU+SA 70 31 91 IG+GA 73 35 89 IG+RFE 74 33 91 IG+SA 75 32 93 IG+SA 75 32 93 IG+SA 75 32 93 IG+SA 75 32 93 IGH-BORUTA 75 33 92 CFS+RFE 69 28 86 CFS+BORUTA 75 33 92 RR+GR GR+BORUTA 75 33 92 RR+GR GR+GA 73 28 92 GR+SA 75 32 93 KI-KARE+FE 74 33 91 KI-KARE+GA 73 28 92 RR+GA 73 75 32 93 KI-KARE+GA 73 75 32 93 KI-KARE+GA 73 33 91 RR+GR GR+BORUTA 75 33 92 RR+GR GR+GA 73 28 92 RR+GA 73 75 32 93 RR+GR GR+GA 73 39 91 RR+GR GR+GA 73 39 91 RI-KARE+FE 74 33 91 RR-GR+GA 73 39 91 RR-GR+GA 73 39 91 RR-IEF+RFE 74 33 91 RR-IEF+RFE 74 33 91 RR-IEF+RFE 75 33 92 RR-IEF+RFE 76 92 RR-IEF+RFE 77 33 93 RR-IEF-RFE 77 33 93 RR-IEF-RFE 78 RR-IEF-RFE 79 RELIEF+RFE 79 RELIEF+RFE 79 RELIEF+RFE 79 RELIEF-RGA 79 RELIEF	ALGOR	ATTRIBUTE SELECTION	Acc (%)	Sen (%)	Spe (%)
CFS+RFE	ITHM	METHOD			
CFS +GA   68				35	
CFS+SA 68 0 96 CFS+BORUTA 68 0 96 KI-KARE+RFE 74 33 91 KI-KARE+GA 74 33 91 KI-KARE+GA 74 33 91 KI-KARE+BORUTA 73 35 89 RELIEF+RFE 72 33 88 RELIEF+GA 70 28 88 RELIEF +SA 66 15 88 RELIEF +BORUTA 74 45 90 SU+GA 74 45 90 SU+SA 70 31 91 SU+SA 70 31 91 GFS-BORUTA 73 35 89  No Feature Selection 73 33 89 IG+RFE 74 33 91 IG+GA 73 28 92 IG+SA 75 32 93 IG+BORUTA 75 33 92 GR+SA 75 32 93 KI-KARE+GA 75 32 93 KI-KARE+FE 74 33 91 KI-KARE+FE 74 33 91 KI-KARE+FE 74 33 91 KI-KARE+FE 75 32 93 RELIEF 75 32 93 RELIEF 75 32 93 RELIEF 75 32 93 RELIEF 75 33 92 RELIEF 75 33 92 RELIEF 75 33 92 RELIEF 75 33 92 RELIEF 75 33 92 RELIEF 75 33 92 RELIEF 75 33 92 RELIEF 75 33 92 RELIEF 75 33 92 RELIEF 75 33 92 RELIEF 75 33 92 RELIEF 75 33 92 RELIEF 75 33 93 RELIEF 75 93 RELIEF 75				0	
CFS+BORUTA					
Ki-KARE+RFE					
Kİ-KARE +GA 74 33 91  Kİ-KARE +SA 75 37 91  Kİ-KARE +BORUTA 73 35 89  RELIEF+RFE 72 33 88  RELIEF +GA 70 28 88  RELIEF +SA 66 15 88  RELIEF +BORUTA 74 30 93  SU+RFE 71 41 87  SU+GA 74 45 90  SU+SA 70 31 91  SU+SA 70 31 91  IG+RFE 74 33 91  IG+RFE 74 33 91  IG+RFE 74 33 91  IG+RFE 75 32 93  IG+RFE 74 33 91  GR+GA 73 28 92  IG+SA 75 32 93  GR+SA 75 32 93  GR+SA 75 32 93  GR+SA 75 32 93  Kİ-KARE +BORUTA 75 33 92  GR+GA 73 28 92  Kİ-KARE +GA 73 28 92  Kİ-KARE +GA 73 28 92  RELIEF 74 33 91  RELIEF 75 32 93  RELIEF 75 32 93  RELIEF 75 32 93  RELIEF 75 32 93  RELIEF 75 32 93  GR+BORUTA 75 33 92  GR+BORUTA 75 33 92  GR+BORUTA 75 33 92  RELIEF 80 92 886  Kİ-KARE +BORUTA 75 33 92  RELIEF 80 92 886  RELIEF 80 92 93  RELIEF 80 92 93  RELIEF 80 92 93  RELIEF 80 92 93  RELIEF 80 92 93  RELIEF 80 92 93  RELIEF 80 92 93  RELIEF 80 93  RELIEF 80					
Ki-KARE +SA   75   37   91					90
KI-KARE +BORUTA					91
RELIEF+RFE RELIEF +GA RELIEF +SA RELIEF +SA RELIEF +BORUTA RELIEF +BORUTA RELIEF +BORUTA SU+RFE T1 41 87 SU+GA SU+SA SU+SA SU+BORUTA T3 35 89 No Feature Selection T3 33 91 IG+RFE T4 33 91 IG+SA T5 32 93 IG+BORUTA T5 33 92 GR+RFE T4 33 91 GR+SA T5 32 93 GR+BORUTA T5 33 92 GR+SA T5 32 93 GR+BORUTA T5 33 92 GR+BORUTA T5 33 92 GR+BORUTA T5 33 92 GR+BORUTA T5 33 92 GR+BORUTA T5 33 92 GR+BORUTA T5 33 92 GR+BORUTA T5 33 92 RELIEF+RFE T4 33 91 KI-KARE+RFE T5 33 92 KI-KARE+RFE T6 9 28 86 CFS+BORUTA T6 9 28 86 CFS+BORUTA T7 33 91 KI-KARE+RFE T7 4 33 91 KI-KARE+SA T7 5 32 93 KI-KARE+SA T7 5 32 93 KI-KARE+SA T7 5 32 93 KI-KARE+SA T7 5 32 93 SU+SA T7 5 33 92 RELIEF +GA T7 7 3 35 92 SU+SA T7 7 3 35 89 GR+SA T7 7 3 35 89 GR+SA T7 7 3 35 89 GR+SA T7 7 3 35 89 GR+SA T7 7 3 35 89 CFS+RFE T7 7 3 35 89 CFS+RFE T7 7 3 35 89 CFS+RFE T7 7 3 35 89 CFS+RFE T7 7 3 35 89 CFS+RFE T7 7 3 35 89 CFS+RFE T7 7 3 35 89 CFS+RFE T7 7 3 35 89 CFS+RFE T7 7 3 35 89 CFS+RFE T7 7 3 35 89 CFS+RFE T7 7 3 35 89 CFS+RFE T7 7 3 35 89 CFS+RFE T7 7 3 35 89					
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RELIEF +BORUTA  SU+RFE  71  41  87  SU+GA  74  45  90  SU+SA  70  31  91  SU+BORUTA  73  35  89  No Feature Selection  73  33  89  IG+RFE  74  33  91  IG+GA  75  32  93  IG+BORUTA  75  33  92  IG+SA  75  32  93  IG+BORUTA  75  33  91  GR+GA  75  33  92  GR+FE  74  33  91  GR+GA  75  33  92  GR+GA  75  33  92  GR+BORUTA  75  33  92  GR+BORUTA  75  33  92  GR+BORUTA  75  33  92  GR+BORUTA  75  33  92  GR+BORUTA  75  33  92  RELIEF +GA  73  88  RELIEF +GA  73  89  RELIEF +GA  75  80  RELIEF +BORUTA  75  80  RELIEF +BORUTA  75  80  RELIEF +BORUTA  75  80  RELIEF +GA  76  77  80  SU+SA  76  80  80  80  80  80  80  80  80  80  8					
SU+RFE   71					
SU+GA 74 45 90 SU+SA 70 31 91 SU+BORUTA 73 35 89  No Feature Selection 73 33 89 IG+RFE 74 33 91 IG+SA 75 32 93 IG+BORUTA 75 33 92 GR+RFE 74 33 91 GR+RFE 74 33 91 GR+RFE 74 33 91 GR+GA 73 28 92 GR+SA 75 32 93 GR+GA 73 28 92 GR+SA 75 32 93 GR+BORUTA 75 32 93 GR+BORUTA 75 33 92 CFS+RFE 69 28 86 CFS+GA 69 28 86 CFS+SA 69 28 86 CFS+SA 69 28 86 CFS+BORUTA 69 28 86 CFS+BORUTA 75 33 91 Kİ-KARE+GA 73 28 92 RELİEF+RFE 74 33 91 Kİ-KARE+BORUTA 75 33 92 RELİEF+RFE 73 25 93 RELİEF+RFE 73 25 93 RELİEF+GA 72 25 92 RELİEF+SA 65 20 84 RELİEF+BORUTA 73 30 91 SU+RFE 72 38 90 SU+GA 73 39 91 SU+SA 72 32 93 SU+BORUTA 75 33 92 IG+BORUTA 75 33 92 RELİEF +SA 65 20 84 RELİEF +SA 65 20 84 RELİEF +SA 73 39 91 SU+SA 72 32 93 SU+BORUTA 75 33 92 IG+GA 73 39 91 SU+SA 72 32 93 SU+BORUTA 75 33 92 IG+GA 73 39 91 SU+SA 72 32 93 SU+BORUTA 75 33 92 IG+GA 72 32 89 IG+GA 72 32 89 IG+SA 73 37 88 IG+BORUTA 73 35 89 GR+SA 73 37 88 IG+BORUTA 73 35 89 GR+SA 73 37 88 GR-SA 73 37 88 GR-SA 73 37 88 GR-SA 73 37 88 GR-SA 73 37 88 GR-SA 73 37 88 GR-SA 73 37 88 GR-SA 73 37 88 GR-SA 73 37 88 GR-SA 73 37 88 GR-SA 73 37 88 GR-SA 73 37 88 GR-SA 73 37 88 GR-SA 73 37 88 GR-SA 73 37 88 GR-SA 73 37 88 GR-SA 73 37 88 G					
SU+SA   70   31   91					
SU+BORUTA			1		
No Feature Selection   73   33   89     IG+RFE   74   33   91     IG+GA   73   28   92     IG+SA   75   32   93     IG+BORUTA   75   33   92     GR+RFE   74   33   91     GR+GA   73   28   92     GR+GA   73   28   92     GR+GA   73   28   92     GR+SA   75   32   93     GR+BORUTA   75   33   92     CFS+RFE   69   28   86     CFS +GA   69   28   86     CFS +GA   69   28   86     CFS +SA   69   28   86     CFS +BORUTA   69   28   86     Kİ-KARE +FE   74   33   91     Kİ-KARE +GA   73   28   92     Kİ-KARE +BORUTA   75   33   92     RELİEF +GA   75   32   93     RELİEF +GA   75   32   93     RELİEF +BORUTA   75   33   92     RELİEF +BORUTA   73   30   91     SU+RFE   72   38   90     SU+GA   73   39   91     SU+SA   72   32   93     SU+SA   72   32   93     SU+SA   72   32   93     IG+GA   72   32   89     IG+GA   72   32   89     IG+SA   73   37   88     GR+GA   72   32   89     GR+GA   72   32   89     GR+GA   73   37   88     GR+GA   73   37   88     GR+BORUTA   73   35   89     CFS+RFE   70   27   89     CFS +GA   70   27   89					
IG+RFE					
IG+GA   73   28   92   IG+SA   75   32   93   IG+BORUTA   75   33   92   GR+FE   74   33   91   GR+GA   73   28   92   GR+SA   75   32   93   GR+SA   75   32   93   GR+BORUTA   75   33   92   GR+SA   75   32   93   GR+BORUTA   75   33   92   GF+GA   69   28   86   GF+GA   69   28   86   GF+GA   69   28   86   GF+GA   69   28   86   GF+GA   69   28   86   GF+GA   69   28   86   GF+GA   69   28   86   GF+GA   73   28   92   GF+GA   73   28   92   GF+GA   75   32   93   GF+GA   75   32   93   GF+GA   75   32   93   GF+GA   75   32   93   GF+GA   75   33   92   GF+GA   75   33   92   GF+GA   75   35   93   GF+GA   75   35   93   GF+GA   75   35   93   GF+GA   75   35   93   GF+GA   75   35   93   GF+GA   75   35   35   35   35   35   35   35			73		89
IG+SA   75   32   93     IG+BORUTA   75   33   92     GR+RFE   74   33   91     GR+GA   73   28   92     GR+SA   75   32   93     GR+BORUTA   75   33   92     GR+BORUTA   75   33   92     CFS+RFE   69   28   86     CFS+GA   69   28   86     CFS+BORUTA   69   28   86     CFS+BORUTA   69   28   86     CFS+BORUTA   69   28   86     Kİ-KARE+RFE   74   33   91     Kİ-KARE+GA   73   28   92     Kİ-KARE+SA   75   32   93     Kİ-KARE+BORUTA   75   33   92     RELİEF+RFE   73   25   93     RELİEF+RFE   73   25   92     RELİEF+BORUTA   73   30   91     SU+RFE   72   38   90     SU+GA   73   39   91     SU+SA   72   32   93     SU+BORUTA   75   33   92     No Feature Selection   73   43   86     IG+RFE   73   33   89     IG+SA   73   37   88     IG+BORUTA   73   35   89     GR+BORUTA   73   35   89     GR+BORUTA   73   35   89     GR+BORUTA   73   35   89     CFS+RFE   70   27   89     CFS+GA   70   27   89					
IG+BORUTA					
GR+RFE 74 33 91 GR+GA 73 28 92 GR+SA 75 32 93 GR+BORUTA 75 33 92 CFS+RFE 69 28 86 CFS+GA 69 28 86 CFS+SA 69 28 86 CFS+BORUTA 69 28 86 KI-KARE+RFE 74 33 91 KI-KARE+GA 73 28 92 KI-KARE +BORUTA 75 33 92 RELIEF+RFE 73 25 93 RELIEF+SA 65 20 84 RELIEF +BORUTA 73 30 91 SU+RFE 72 38 90 SU+GA 73 39 91 SU+SA 72 32 93 SU+BORUTA 75 33 92 No Feature Selection 73 43 86 IG+RFE 73 33 89 IG+BORUTA 73 30 91 IG+RFE 73 33 89 IG+BORUTA 73 35 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89					93
GR+GA 73 28 92  GR+SA 75 32 93  GR+BORUTA 75 33 92  CFS+RFE 69 28 86  CFS +GA 69 28 86  CFS +SA 69 28 86  CFS +BORUTA 69 28 86  CFS +BORUTA 69 28 86  Ki-KARE+RFE 74 33 91  Ki-KARE+GA 73 28 92  Ki-KARE +SA 75 32 93  Ki-KARE +BORUTA 75 33 92  RELIEF +BORUTA 75 33 92  RELIEF +GA 72 25 92  RELIEF +BORUTA 73 30 91  SU+RFE 72 38 90  SU+GA 73 39 91  SU+SA 72 32 93  SU+BORUTA 75 33 92  No Feature Selection 73 43 86  IG+RFE 73 33 89  IG+GA 72 32 89  IG+SA 73 37 88  IGHBORUTA 73 35 89  GR+SA 72 32 89  CFS+RFE 73 33 89  GR+SA 73 37 88  GR+SA 73 37 88  GR+SA 73 37 88  GR+BORUTA 73 35 89  CFS+RFE 70 27 89  CFS+RFE 70 27 89			75		92
GR+SA   75   32   93		GR+RFE	74	33	91
GR+BORUTA 75 33 92  CFS+RFE 69 28 86  CFS +GA 69 28 86  CFS +SA 69 28 86  CFS+BORUTA 69 28 86  CFS+BORUTA 69 28 86  Ki-KARE+RFE 74 33 91  Ki-KARE +GA 73 28 92  Ki-KARE +SA 75 32 93  Ki-KARE +BORUTA 75 33 92  RELİEF+RFE 73 25 93  RELİEF +GA 72 25 92  RELİEF +SA 65 20 84  RELİEF +BORUTA 73 30 91  SU+RFE 72 38 90  SU+GA 73 39 91  SU+SA 72 32 93  SU+BORUTA 75 33 92  No Feature Selection 73 43 86  IG+RFE 73 33 89  IG+GA 72 32 89  IG+SA 73 37 88  IGHSORUTA 73 35 89  GR+GA 72 32 89  GR+GA 72 32 89  GR+GA 73 37 88  GR+GA 72 32 89		GR+GA	73	28	92
CFS+RFE 69 28 86 CFS +GA 69 28 86 CFS +SA 69 28 86 CFS +BORUTA 69 28 86 Ki-KARE+RFE 74 33 91 Ki-KARE +GA 73 28 92 Ki-KARE +SA 75 32 93 Ki-KARE +BORUTA 75 33 92 RELIEF +RFE 73 25 93 RELIEF +GA 72 25 92 RELIEF +SA 65 20 84 RELIEF +BORUTA 73 30 91 SU+RFE 72 38 90 SU+GA 73 39 91 SU+SA 72 32 93 SU+BORUTA 75 33 92 No Feature Selection 73 43 86 IG+RFE 73 33 89 IG+SA 73 37 88 IG+GA 72 32 89 GR+SA 73 37 88 GR+BORUTA 73 35 89 GR+SA 73 37 88 GR+BORUTA 73 35 89 CFS+RFE 70 27 89 CFS +GA		GR+SA	75	32	93
CFS +GA CFS +SA CFS +BORUTA Ki-KARE+RFE Ki-KARE +GA Ki-KARE +BORUTA Ki-KARE +BORUTA RELIEF +RFE RELIEF +BORUTA		GR+BORUTA	75	33	92
Ki-KARE +SA   75   32   93     Ki-KARE +BORUTA   75   33   92     RELİEF+RFE   73   25   93     RELİEF+GA   72   25   92     RELİEF +SA   65   20   84     RELİEF +BORUTA   73   30   91     SU+RFE   72   38   90     SU+GA   73   39   91     SU+SA   72   32   93     SU+BORUTA   75   33   92     No Feature Selection   73   43   86     IG+RFE   73   33   89     IG+GA   72   32   89     IG+SA   73   37   88     IG+BORUTA   73   35   89     GR+RFE   73   33   89     GR+GA   72   32   89     GR+SA   73   37   88     GR+SA   73   37   88     GR+BORUTA   73   35   89     CFS+RFE   70   27   89     CFS+RFE   70   27   89     CFS+GA   70   27   89		CFS+RFE	69	28	86
Kİ-KARE +SA   75   32   93     Kİ-KARE +BORUTA   75   33   92     RELİEF+RFE   73   25   93     RELİEF+GA   72   25   92     RELİEF +SA   65   20   84     RELİEF +BORUTA   73   30   91     SU+RFE   72   38   90     SU+GA   73   39   91     SU+SA   72   32   93     SU+BORUTA   75   33   92     No Feature Selection   73   43   86     IG+RFE   73   33   89     IG+GA   72   32   89     IGHBORUTA   73   35   89     GR+RFE   73   33   89     GR+RFE   73   33   89     GR+GA   72   32   89     GR+SA   73   37   88     GR+SA   73   37   88     GR+BORUTA   73   35   89     CFS+RFE   70   27   89     CFS+RFE   70   27   89     CFS+GA   70   27   89	\rightarrow	CFS +GA	69	28	86
Ki-KARE +SA   75   32   93     Ki-KARE +BORUTA   75   33   92     RELİEF+RFE   73   25   93     RELİEF+GA   72   25   92     RELİEF +SA   65   20   84     RELİEF +BORUTA   73   30   91     SU+RFE   72   38   90     SU+GA   73   39   91     SU+SA   72   32   93     SU+BORUTA   75   33   92     No Feature Selection   73   43   86     IG+RFE   73   33   89     IG+GA   72   32   89     IG+SA   73   37   88     IG+BORUTA   73   35   89     GR+RFE   73   33   89     GR+GA   72   32   89     GR+SA   73   37   88     GR+SA   73   37   88     GR+BORUTA   73   35   89     CFS+RFE   70   27   89     CFS+RFE   70   27   89     CFS+GA   70   27   89	Ö	CFS +SA	69	28	86
Ki-KARE +SA   75   32   93     Ki-KARE +BORUTA   75   33   92     RELİEF+RFE   73   25   93     RELİEF+GA   72   25   92     RELİEF +SA   65   20   84     RELİEF +BORUTA   73   30   91     SU+RFE   72   38   90     SU+GA   73   39   91     SU+SA   72   32   93     SU+BORUTA   75   33   92     No Feature Selection   73   43   86     IG+RFE   73   33   89     IG+GA   72   32   89     IG+SA   73   37   88     IG+BORUTA   73   35   89     GR+RFE   73   33   89     GR+GA   72   32   89     GR+SA   73   37   88     GR+SA   73   37   88     GR+BORUTA   73   35   89     CFS+RFE   70   27   89     CFS+RFE   70   27   89     CFS+GA   70   27   89	l	CFS+BORUTA	69	28	86
Ki-KARE +SA   75   32   93     Ki-KARE +BORUTA   75   33   92     RELİEF+RFE   73   25   93     RELİEF+GA   72   25   92     RELİEF +SA   65   20   84     RELİEF +BORUTA   73   30   91     SU+RFE   72   38   90     SU+GA   73   39   91     SU+SA   72   32   93     SU+BORUTA   75   33   92     No Feature Selection   73   43   86     IG+RFE   73   33   89     IG+GA   72   32   89     IG+SA   73   37   88     IG+BORUTA   73   35   89     GR+RFE   73   33   89     GR+GA   72   32   89     GR+SA   73   37   88     GR+SA   73   37   88     GR+BORUTA   73   35   89     CFS+RFE   70   27   89     CFS+RFE   70   27   89     CFS+GA   70   27   89	₹		74	33	91
Kİ-KARE +BORUTA	S		73		92
RELIEF+RFE 73 25 93 RELIEF +GA 72 25 92 RELIEF +SA 65 20 84 RELIEF +BORUTA 73 30 91 SU+RFE 72 38 90 SU+GA 73 39 91 SU+SA 72 32 93 SU+BORUTA 75 33 92 No Feature Selection 73 43 86 IG+RFE 73 33 89 IG+GA 72 32 89 IG+SA 73 37 88 IG+BORUTA 73 35 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 88 GR+RFE 73 89 GR+RFE 73 89 CFS+RFE 70 27 89		Kİ-KARE +SA	75	32	93
RELİEF +GA 72 25 92 RELİEF +SA 65 20 84 RELİEF +BORUTA 73 30 91 SU+RFE 72 38 90 SU+GA 73 39 91 SU+SA 72 32 93 SU+BORUTA 75 33 92 No Feature Selection 73 43 86 IG+RFE 73 33 89 IG+GA 72 32 89 IG+SA 73 37 88 IG+BORUTA 73 35 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 35 89 GR+RFE 73 36 89 GR+RFE 73 37 88 GR+RFE 73 38 89 GR+RFE 73 38 89 GR+RFE 73 38 89 GR+RFE 73 38 89 GR+RFE 73 38 89 GR+RFE 73 38 89 GR+RFE 73 38 89 GR+RFE 73 38 89 GR+RFE 73 38 89 GR+RFE 73 38 89 GR+RFE 73 38 89 GR+RFE 73 38 89 GR+RFE 73 38 89					
RELİEF +SA 65 20 84  RELİEF +BORUTA 73 30 91  SU+RFE 72 38 90  SU+GA 73 39 91  SU+SA 72 32 93  SU+BORUTA 75 33 92  No Feature Selection 73 43 86  IG+RFE 73 33 89  IG+GA 72 32 89  IG+SA 73 37 88  IG+BORUTA 73 35 89  GR+RFE 73 33 89  GR+RFE 73 33 89  GR+RFE 73 35 89  GR+RFE 73 36 89  GR+RFE 73 37 88  GR+RFE 73 38 89		RELİEF+RFE	73	25	93
RELIEF +BORUTA 73 30 91 SU+RFE 72 38 90 SU+GA 73 39 91 SU+SA 72 32 93 SU+BORUTA 75 33 92 No Feature Selection 73 43 86 IG+RFE 73 33 89 IG+GA 72 32 89 IG+SA 73 37 88 IG+BORUTA 73 35 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 32 89 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 32 89 GR+RFE 73 33 88 GR+RFE 73 33 89 GR+RFE 73 33 89 GR+RFE 73 33 89			72		92
SU+RFE       72       38       90         SU+GA       73       39       91         SU+SA       72       32       93         SU+BORUTA       75       33       92         No Feature Selection       73       43       86         IG+RFE       73       33       89         IG+GA       72       32       89         IG+SA       73       37       88         IG+BORUTA       73       35       89         GR+RFE       73       33       89         GR+GA       72       32       89         GR+BORUTA       73       37       88         GR+BORUTA       73       35       89         CFS+RFE       70       27       89         CFS +GA       70       27       89			65		84
SU+GA       73       39       91         SU+SA       72       32       93         SU+BORUTA       75       33       92         No Feature Selection       73       43       86         IG+RFE       73       33       89         IG+GA       72       32       89         IG+SA       73       37       88         IG+BORUTA       73       35       89         GR+RFE       73       33       89         GR+GA       72       32       89         GR+SA       73       37       88         GR+BORUTA       73       35       89         CFS+RFE       70       27       89         CFS +GA       70       27       89					91
SU+SA         72         32         93           SU+BORUTA         75         33         92           No Feature Selection         73         43         86           IG+RFE         73         33         89           IG+GA         72         32         89           IG+SA         73         37         88           IG+BORUTA         73         35         89           GR+RFE         73         33         89           GR+GA         72         32         89           GR+SA         73         37         88           GR+BORUTA         73         35         89           CFS+RFE         70         27         89           CFS +GA         70         27         89					
SU+BORUTA         75         33         92           No Feature Selection         73         43         86           IG+RFE         73         33         89           IG+GA         72         32         89           IG+SA         73         37         88           IG+BORUTA         73         35         89           GR+RFE         73         33         89           GR+GA         72         32         89           GR+SA         73         37         88           GR+BORUTA         73         35         89           CFS+RFE         70         27         89           CFS +GA         70         27         89					
No Feature Selection   73					
IG+RFE					
IG+GA     72     32     89       IG+SA     73     37     88       IG+BORUTA     73     35     89       GR+RFE     73     33     89       GR+GA     72     32     89       GR+SA     73     37     88       GR+BORUTA     73     35     89       CFS+RFE     70     27     89       CFS +GA     70     27     89		No Feature Selection	73		86
LDA  IG+SA IG+BORUTA IG+BORUTA IG+BORUTA IGHBO					89
LDA    IG+BORUTA   73   35   89     GR+RFE   73   33   89     GR+GA   72   32   89     GR+SA   73   37   88     GR+BORUTA   73   35   89     CFS+RFE   70   27   89     CFS+GA   70   27   89		IG+GA		32	89
GR+RFE         73         33         89           GR+GA         72         32         89           GR+SA         73         37         88           GR+BORUTA         73         35         89           CFS+RFE         70         27         89           CFS +GA         70         27         89		IG+SA			88
GR+GA     72     32     89       GR+SA     73     37     88       GR+BORUTA     73     35     89       CFS+RFE     70     27     89       CFS +GA     70     27     89	LDA	IG+BORUTA	73	35	89
GR+SA 73 37 88 GR+BORUTA 73 35 89 CFS+RFE 70 27 89 CFS +GA 70 27 89		GR+RFE			89
GR+SA 73 37 88 GR+BORUTA 73 35 89 CFS+RFE 70 27 89 CFS +GA 70 27 89		GR+GA		32	89
CFS+RFE         70         27         89           CFS+GA         70         27         89		GR+SA	73	37	88
CFS +GA 70 27 89		GR+BORUTA	73	35	89
		CFS+RFE	70	27	89
CFS +SA 70 27 89		CFS +GA	70	27	89
		CFS +SA	70	27	89
CFS+BORUTA 70 27 89					
Kİ-KARE+RFE 73 33 89					

ALGOR ITHM	ATTRIBUTE SELECTION METHOD	Acc (%)	Sen (%)	Spe (%)
	Kİ-KARE +GA	72	32	89
	Kİ-KARE +SA	73	37	88
	Kİ-KARE +BORUTA	73	35	89
	RELİEF+RFE	72	35	88
	RELİEF +GA	72	32	89
	RELİEF +SA	69	20	89
	RELİEF +BORUTA	75	37	91
	SU+RFE	71	41	87
	SU+GA	73	45	88
	SU+SA	72	44	88
	SU+BORUTA	73	35	89
	No Feature Selection	70	0	100
	IG+RFE	70	0	100
	IG+GA	70	0	100
	IG+SA	70	0	100
	IG+BORUTA	70	0	100
	GR+RFE	70	0	100
	GR+GA	70	0	100
	GR+SA	70	0	100
	GR+BORUTA	70	0	100
	CFS+RFE	70	27	89
	CFS +GA	70	27	89
	CFS +SA	70	27	89
MLP	CFS+BORUTA	70	27	89
	Kİ-KARE+RFE	70	0	100
	Kİ-KARE +GA	70	0	100
	Kİ-KARE +SA	70	0	100
	Kİ-KARE +BORUTA	70	0	100
	RELİEF+RFE	70	0	100
	RELİEF +GA	70	0	100
	RELİEF +SA	70	0	100
	RELİEF +BORUTA	70	0	100
	SU+RFE	65	0	100
	SU+GA	65	0	100
	SU+SA	65	0	100
	SU+BORUTA	70	0	100
	No Feature Selection	72	30	90
	IG+RFE	68	43	78
	IG+GA	70	38	84
	IG+SA	70	25	89
	IG+BORUTA	71	42	84
	GR+RFE	68	43	78
	GR+GA	70	38	84
	GR+SA	70	25	89
Щ	GR+BORUTA	71	42	84
NE NE	CFS+RFE	67	10	92
EVTREE	CFS +GA	67	10	92
	CFS +SA	67	10	92
	CFS+BORUTA	67	10	92
	Kİ-KARE+RFE	68	43	78
	Kİ-KARE +GA	70	38	84
	Kİ-KARE +SA	70	25	89
	Kİ-KARE +BORUTA	71	42	84
	RELİEF+RFE	69	13	92
	RELİEF +GA	69	32	84
	RELİEF +SA	66	18	86

ALGOR ITHM	ATTRIBUTE SELECTION METHOD	Acc (%)	Sen (%)	Spe (%)
	RELİEF +BORUTA	73	35	89
	SU+RFE	71	46	84
	SU+GA	73	39	91
	SU+SA	64	21	88
	SU+BORUTA	71	42	83
	No Feature Selection	70	42	81
	IG+RFE	70	42	81
	IG+GA	69	43	79
	IG+SA	70	25	89
	IG+BORUTA	70	42	81
	GR+RFE	70	42	81
	GR+GA	69	43	79
	GR+SA	70	25	89
	GR+BORUTA	70	42	81
	CFS+RFE	70	28	88
_	CFS +GA	70	28	88
T T	CFS +SA	70	28	88
RPART	CFS+BORUTA	70	28	88
<u>~</u>	Kİ-KARE+RFE	70	42	81
	Kİ-KARE +GA	69	43	79
	Kİ-KARE +SA	70	25	89
	Kİ-KARE +BORUTA	70	42	81
	RELİEF+RFE	70	30	86
	RELİEF +GA	70	30	86
	RELİEF +SA	66	18	86
	RELİEF +BORUTA	71	23	91
	SU+RFE	71	51	82
	SU+GA	69	27	91
	SU+SA	68	42	81
	SU+BORUTA	70	42	81
	No Feature Selection	72	47	83
	IG+RFE	73	43	86
	IG+GA	74	42	88
	IG+SA	71	47	81
	IG+BORUTA	72	27	91
	GR+RFE	73	43	86
	GR+GA	74	42	88
	GR+SA	71	47	81
	GR+BORUTA	72	27	91
	CFS+RFE	69	10	95
	CFS +GA	69	10	95
	CFS +SA	69	10	95
C5.0	CFS+BORUTA	69	10	95
	Kİ-KARE+RFE	73	43	86
	Kİ-KARE +GA	74	42	88
	Kİ-KARE +SA	71	47	81
	Kİ-KARE +BORUTA	72	27	91
	RELİEF+RFE	69	40	81
	RELİEF +GA	69	32	85
	RELIEF +SA	66	18	86
	RELİEF +BORUTA	73	35	89
	SU+RFE	69	56	76
	SU+GA	73	45	88
	SU+SA	70	44	84
	SU+BORUTA	72	27	91
J48	No Feature Selection	73	42	86

ALGOR ITHM	ATTRIBUTE SELECTION METHOD	Acc (%)	Sen (%)	Spe (%)
	IG+RFE	73	37	88
	IG+GA	70	22	90
	IG+SA	70	30	87
	IG+BORUTA	71	33	86
	GR+RFE	73	37	88
	GR+GA	70	22	90
	GR+SA	70	30	87
	GR+BORUTA	71	33	86
	CFS+RFE	70	28	88
	CFS +GA	70	28	88
	CFS +SA	70	28	88
	CFS+BORUTA	70	28	88
	Kİ-KARE+RFE	73	37	88
	Kİ-KARE +GA	70	22	90
	Kİ-KARE +SA	70	30	87
	Kİ-KARE +BORUTA	71	33	86
	RELİEF+RFE	65	27	81
	RELİEF +GA	69	28	86
	RELİEF +SA	65	20	85
	RELIEF +BORUTA	72	27	91
	SU+RFE	70	46	83
	SU+GA	68	42	81
	SU+SA	69	42	84
	SU+BORUTA	71	33	86
	No Feature Selection	73	37	88
	IG+RFE	73	33	90
	IG+GA	72	37	86
	IG+SA	72	38	86
	IG+BORUTA	74	38	89
	GR+RFE	73	33	90
	GR+GA	72	37	86
	GR+SA	72	38	86
	GR+BORUTA	74	38	89
	CFS+RFE	70	28	88
	CFS +GA	70	28	88
프	CFS +SA	70	28	88
R	CFS+BORUTA	70	28	88
EARTH	Kİ-KARE+RFE	73	33	90
	Kİ-KARE +GA	73	33	90
	Kİ-KARE +SA	72	38	86
	Kİ-KARE +BORUTA	74	38	89
	RELIEF+RFE	70	38	84
	RELIEF +GA	71	38	84
	RELIEF +SA	70	17	92
	RELIEF +BORUTA	72	37	86
	SU+RFE	76	49	91
	SU+GA	75	46	91
	SU+SA	70	44	84
	SU+BORUTA	74	38	89
	No Feature Selection	75	30	94
	IG+RFE	74	38	89
	IG+GA	73	40	87
RF	IG+SA	73	40	86
131	IG+BORUTA	71	45	82
	GR+RFE	74	38	89
	GR+GA	73	40	89
	UNTUA	13	40	01

ALGOR ITHM	ATTRIBUTE SELECTION METHOD	Acc (%)	Sen (%)	Spe (%)
	GR+SA	73	40	86
	GR+BORUTA	71	45	82
	CFS+RFE	69	28	86
	CFS +GA	69	28	86
	CFS +SA	69	28	86
	CFS+BORUTA	69	28	86
	Kİ-KARE+RFE	74	38	89
	Kİ-KARE +GA	73	40	86
	Kİ-KARE +SA	73	40	86
	Kİ-KARE +BORUTA	71	45	82
	RELİEF+RFE	70	20	91
	RELİEF +GA	70	27	88
	RELİEF +SA	67	25	85
	RELİEF +BORUTA	75	35	92
	SU+RFE	77	54	89
	SU+GA	74	38	93
	SU+SA	70	39	87
	SU+BORUTA	71	45	82
	No Feature Selection	72	42	84
	IG+RFE	73	38	87
	IG+GA	72	37	86
	IG+SA	73	28	91
	IG+BORUTA	74	40	89
	GR+RFE	73	38	87
	GR+GA	72	37	86
	GR+SA	73	28	91
	GR+BORUTA	74	40	89
	CFS+RFE	70	28	88
	CFS +GA	70	28	88
	CFS +SA	70	28	88
GBM	CFS+BORUTA	70	28	88
02	Kİ-KARE+RFE	73	38	87
	Kİ-KARE +GA	72	37	86
	Kİ-KARE +SA	73	28	91
	Kİ-KARE +BORUTA	74	40	89
	RELIEF+RFE	70	28	88
	RELIEF +GA	70	25	89
	RELIEF +SA	68	25	86
	RELIEF +BORUTA	75	35	91
	SU+RFE	70	41	86
	SU+GA	73	41	90
	SU+SA	70	39	86
	SU+BORUTA	74	40	89
	No Feature Selection	74	40	86
	IG+RFE	74	40	89
	IG+GA	74	42	87
	IG+SA	71	37	86
Ш	IG+BORUTA	76	45	89
<u>R</u>	GR+RFE	74	40	89
<u> </u>	GR+GA	74	42	87
XGBTREE	GR+SA	71	37	86
	GR+BORUTA	76	45	89
	CFS+RFE	70	28	88
	CFS +GA	70	28	88
	CFS +SA	70	28	88
	CFS+BORUTA	70	28	88

ALGOR	ATTRIBUTE SELECTION	Acc (%)	Sen (%)	Spe (%)
ITHM	METHOD	(11)	(**)	
	Kİ-KARE+RFE	74	40	89
	Kİ-KARE +GA	74	42	87
	Kİ-KARE +SA	71	37	86
	Kİ-KARE +BORUTA	76	45	89
	RELİEF+RFE	72	33	88
	RELİEF +GA	72	35	87
	RELİEF +SA	67	27	84
	RELİEF +BORUTA	75	35	91
	SU+RFE	76	51	89
	SU+GA	76	50	90
	SU+SA	69	45	82
	SU+BORUTA	76	45	89
	No Feature Selection	72	40	85
	IG+RFE	73	48	84
	IG+GA	75	48	86
	IG+SA	70	42	82
	IG+BORUTA	71	47	81
	GR+RFE	73	48	84
	GR+GA	75	48	86
	GR+SA	70	42	82
	GR+BORUTA	71	47	81
	CFS+RFE	69	28	86
	CFS +GA	69	28	86
TREEB	CFS +SA	69	28	86
AG	CFS+BORUTA	69	28	86
,	Kİ-KARE+RFE	73	48	84
	Kİ-KARE +GA	75	48	86
	Kİ-KARE +SA	70	42	82
	Kİ-KARE +BORUTA	71	47	81
	RELİEF+RFE	72	40	85
	RELİEF +GA	69	38	82
	RELİEF +SA	65	25	81
	RELIEF +BORUTA	75	40	89
	SU+RFE	74	56	83
	SU+GA	74	48	88
	SU+SA	70	41	85
	SU+BORUTA	71	47	81
	No Feature Selection	74	32	92
	IG+RFE	75	35	91
	IG+GA	74	38	89
	IG+SA	73	33	89
	IG+BORUTA	74	40	89
	GR+RFE	75	35	91
_	GR+GA	74	38	89
S	GR+SA	73	33	89
ADABOOST	GR+BORUTA	74	40	89
	CFS+RFE	67	10	94
	CFS +GA	67	10	94
	CFS+SA	67	10	94
	CFS+BORUTA	67 <b>75</b>	10	94
	Kİ-KARE+RFE	75 74	35	91
	Kİ-KARE +GA	74	38	89
	Kİ-KARE +SA	73	33	89
	Kİ-KARE +BORUTA	74	40	89
	RELİEF+RFE	72	27	91
	RELİEF +GA	70	22	91

ALGOR ITHM	ATTRIBUTE SELECTION METHOD	Acc (%)	Sen (%)	Spe (%)
	RELİEF +SA	65	10	92
	RELİEF +BORUTA	74	38	89
	SU+RFE	72	46	86
	SU+GA	70	35	88
	SU+SA	70	35	88
	SU+BORUTA	74	40	89
	No Feature Selection	73	32	91
	IG+RFE	73	30	91
	IG+GA	73	32	90
	IG+SA	74	30	92
	IG+BORUTA	73	28	91
	GR+RFE	73	30	91
	GR+GA	73	32	91
	GR+SA	74	30	92
	GR+BORUTA	73	28	91
	CFS+RFE	70	23	89
<u> </u>	CFS +GA	70	23	89
GLMBOOST	CFS +SA	70	23	89
8	CFS+BORUTA	70	23	89
₹.	Kİ-KARE+RFE	73	30	91
	Kİ-KARE +GA	73	32	90
	Kİ-KARE +SA	73	33	90
	Kİ-KARE +BORUTA	73	28	91
	RELİEF+RFE	72	28	90
	RELİEF +GA	72	28	90
	RELİEF +SA	70	20	91
	RELİEF +BORUTA	73	30	91
	SU+RFE	70	37	88
	SU+GA	72	38	90
	SU+SA	74	38	93
	SU+BORUTA	73	28	91
	No Feature Selection	70	40	83
	IG+RFE	70	57	76
	IG+GA	70	33	86
	IG+SA	69	60	73
	IG+BORUTA	70	57	76
	GR+RFE	70	57	76
	GR+GA	70	33	86
	GR+SA	69	60	73
	GR+BORUTA	70	57	76
	CFS+RFE	69	10	95
ST	CFS +GA	69	10	95
Ö	CFS +SA	69	10	95
LOGITBOOST	CFS+BORUTA	69	10	95
<u>;</u>	Kİ-KARE+RFE	70	57	76
00	Kİ-KARE +GA	70	33	86
77	KI-KARE +SA	69	60	73
	Kİ-KARE +BORUTA	70	57	76
	RELİEF+RFE	70	40	83
	RELİEF +GA	70	40	83
	RELIEF +SA	67	30	82
	RELIEF +BORUTA	66	19	86
	SU+RFE	64	32	81
	SU+GA	71	48	84
	SU+SA	71	46 <b>49</b>	84
	SU+BORUTA	70	<b>49</b> 57	76
	30+DURUTA	10	<i>ن</i> ا	10

ALGOR ITHM	ATTRIBUTE SELECTION METHOD	Acc (%)	Sen (%)	Spe (%)
	No Feature Selection	73	42	86
	IG+RFE	73	38	87
	IG+GA	70	35	85
	IG+SA	73	42	86
	IG+BORUTA	72	40	86
	GR+RFE	73	38	87
	GR+GA	70	35	85
	GR+SA	73	42	86
<b>-</b>	GR+BORUTA	72	40	86
FOREST	CFS+RFE	70	28	88
N N	CFS +GA	70	28	88
F	CFS +SA	70	28	88
ROTATION	CFS+BORUTA	70	28	88
	Kİ-KARE+RFE	73	38	87
_ ₹	Kİ-KARE +GA	70	35	85
l Ö	Kİ-KARE +SA	73	42	86
LE .	Kİ-KARE +BORUTA	72	40	86
	RELİEF+RFE	74	33	91
	RELİEF +GA	72	32	89
	RELİEF +SA	67	10	91
	RELİEF +BORUTA	75	38	91
	SU+RFE	72	48	84
	SU+GA	67	32	86
	SU+SA	69	44	82
	SU+BORUTA	72	40	86

Table 2. Results of Machine Learning Algorithms After Sequential Feature Selection\_ undersampling

ALGOR ITHM	ATTRIBUTE SELECTION METHOD	Acc (%)	Sen (%)	Spe (%)
GLM	No Feature Selection	74	77	72
	IG+RFE	68	60	77
	IG+GA	73	80	67
	IG+SA	68	75	62
	IG+BORUTA	75	67	83
	GR+RFE	69	70	68
	GR+GA	56	52	60
	GR+SA	67	68	65
	GR+BORUTA	75	77	73
	CFS+RFE	64	80	48
	CFS +GA	69	80	58
	CFS +SA	69	80	58
	CFS+BORUTA	69	80	58
	Kİ-KARE+RFE	75	68	82
	Kİ-KARE +GA	69	65	73
	Kİ-KARE +SA	67	65	68
	Kİ-KARE +BORUTA	71	73	68
	RELİEF+RFE	66	70	62
	RELİEF +GA	67	68	65
	RELİEF +SA	65	67	63
	RELİEF +BORUTA	69	70	68
	SU+RFE	77	83	73
	SU+GA	68	75	64

ALGOR ITHM	ATTRIBUTE SELECTION METHOD	Acc (%)	Sen (%)	Spe (%)
	SU+SA	66	68	64
	SU+BORUTA	70	74	67
	No Feature Selection	57	63	50
	IG+RFE	58	63	53
	IG+GA	58	63	53
	IG+SA	57	55	58
	IG+BORUTA	53	53	53
	GR+RFE	49	48	50
	GR+GA	51	48	53
	GR+SA	56	60	52
	GR+BORUTA	50	55	45
	CFS+RFE	64	80	48
	CFS +GA	69	80	58
	CFS +SA	69	80	58
KNN	CFS+BORUTA	69	80	58
	Kİ-KARE+RFE	51	50	52
	Kİ-KARE +GA	53	48	58
	Kİ-KARE +SA	58	62	55
	Kİ-KARE +BORUTA	55	52	58
	RELİEF+RFE	56	60	52
	RELIEF +GA	65	68	62
	RELIEF +SA	58	62	53
	RELIEF +BORUTA	59	58	60
	SU+RFE	55	57	53
	SU+GA	66	79	58
	SU+SA	61	72	53
	SU+BORUTA	58	62	55
	No Feature Selection	73	82	65
	IG+RFE	68	55	80
	IG+GA	72	77	67
	IG+SA	67	63	70
	IG+BORUTA	73	67	78
	GR+RFE	67	62	72
	GR+GA	63	42	85
	GR+SA	69	70	68
	GR+BORUTA	75	73	77
	CFS+RFE	64	80	48
	CFS +GA	69	80	58
	CFS +SA	69	80	58
NB	CFS+BORUTA	69	80	58
	Kİ-KARE+RFE	78	72	83
	Kİ-KARE +GA	72	63	80
	Kİ-KARE +SA	69	75	63
	Kİ-KARE +BORUTA	69	75	63
	RELİEF+RFE	58	85	30
	RELİEF +GA	56	80	32
	RELİEF +SA	60	83	37
	RELİEF +BORUTA	70	62	78
	SU+RFE	80	77	82
	SU+GA	69	72	67
	SU+SA	71	62	77
	SU+BORUTA	68	70	67
	No Feature Selection	74	77	72
M A R	IG+RFE	67	53	80
SVMLİ NEAR	IG+GA	75	83	67
<i>o</i> , ∠	IG+SA	69	82	57
	1	, 00	- J-	. J.

ITHM	ATTRIBUTE SELECTION METHOD	Acc (%)	Sen (%)	Spe (%)
	IG+BORUTA	76	70	82
	GR+RFE	68	70	65
	GR+GA	56	50	62
	GR+SA	64	67	62
	GR+BORUTA	73	78	68
	CFS+RFE	64	80	48
	CFS +GA	69	80	58
	CFS +SA	69	80	58
	CFS+BORUTA	69	80	58
	Kİ-KARE+RFE	74	70	78
	Kİ-KARE +GA	69	68	70
	Kİ-KARE +SA	70	78	62
	Kİ-KARE +BORUTA	69	73	65
	RELİEF+RFE	63	70	55
	RELİEF +GA	63	67	58
	RELİEF +SA	62	68	55
	RELİEF +BORUTA	67	72	62
	SU+RFE	76	83	71
	SU+GA	73	77	70
	SU+SA	66	72	62
	SU+BORUTA	68	74	64
	No Feature Selection			
	IG+RFE	70	62	78
	IG+GA	73	83	62
	IG+SA	71	75	67
	IG+BORUTA	74	67	82
	GR+RFE	62	70	53
	GR+GA	64	48	80
	GR+SA	64	65	63
	GR+BORUTA	74	77	72
	CFS+RFE	64	80	48
>	CFS +GA	69	80	58
VMPOLY	CFS +SA	69	80	58
Ĕ	CFS+BORUTA	69	80	58
5	Kİ-KARE+RFE	77	68	85
S	Kİ-KARE +GA	70	72	68
	Kİ-KARE +SA	69	73	65
	Kİ-KARE +BORUTA	73	80	67
	RELİEF+RFE	63	72	55
	RELİEF +GA	64	70	58
	RELİEF +SA	62	68	55
	RELİEF +BORUTA	64	58	70
	SU+RFE	74	85	67
	SU+GA	72	77	68
	SU+SA	66	72	62
	SU+BORUTA	68	74	63
	No Feature Selection	78	78	77
	IG+RFE	71	62	80
_	IG+GA	70	73	67
SVMRADİAL	IG+SA	68	80	55
AD	IG+BORUTA	74	70	78
₽.	GR+RFE	68	67	68
>	GR+GA	61	60	62
S	GR+SA	68	68	68
	GR+BORUTA	70	77	63
	CFS+RFE	64	80	48

ALGOR ITHM	ATTRIBUTE SELECTION METHOD	Acc (%)	Sen (%)	Spe (%)
	CFS +GA	69	80	58
	CFS +SA	69	80	58
	CFS+BORUTA	69	80	58
	Kİ-KARE+RFE	77	70	83
	Kİ-KARE +GA	72	75	68
	Kİ-KARE +SA	68	77	60
	Kİ-KARE +BORUTA	73	75	70
	RELİEF+RFE	67	67	67
	RELİEF +GA	62	63	60
	RELİEF +SA	66	63	68
	RELİEF +BORUTA	67	65	68
	SU+RFE	73	83	66
	SU+GA	73	77	70
	SU+SA	69	70	68
	SU+BORUTA	71	77	67
	No Feature Selection	73	77	70
	IG+RFE	68	60	75
	IG+GA	73	80	65
	IG+SA	68	75	62
	IG+BORUTA	74	68	80
	GR+RFE	69	70	68
	GR+GA	57	52	62
	GR+SA	66	68	63
	GR+BORUTA	74	77	72
	CFS+RFE	64	80	48
	CFS +GA	69	80	58
	CFS +SA	69	80	58
LDA	CFS+BORUTA	69	80	58
	Kİ-KARE+RFE	74	67	82
	Kİ-KARE +GA	67	65	68
	Kİ-KARE +SA	68	68	68
	Kİ-KARE +BORUTA	72	75	68
	RELİEF+RFE	65	70	60
	RELİEF +GA	67	68	65
	RELİEF +SA	65	67	63
	RELİEF +BORUTA	70	72	68
	SU+RFE	77	83	73
	SU+GA	70	72	68
	SU+SA	66	68	63
	SU+BORUTA	69	74	66
	No Feature Selection	50	100	0
	IG+RFE	50	0	100
	IG+GA	50	0	100
	IG+SA	50	0	100
	IG+BORUTA	50	0	100
	GR+RFE	50	0	100
	GR+GA	50	0	100
МІР	GR+SA	50	100	0
MLP	GR+BORUTA	50	0	100
	CFS+RFE	64	80	48
	CFS +GA	69	80	58
	CFS +SA	69	80	58
	CFS+BORUTA	69	80	58
	Kİ-KARE+RFE	50	0	100
	Kİ-KARE +GA	50	0	100
	Kİ-KARE +SA	50	0	100

KI-KARE +BORUTA	ALGOR	ATTRIBUTE SELECTION	Acc (%)	Sen (%)	Spe (%)
RELIEF+RFE RELIEF +GA RELIEF +GA RELIEF +SA RELIEF +BORUTA RELIEF +BORUTA RELIEF +BORUTA SU+RFE RELIEF +BORUTA SU+GA SU+	ITHM	METHOD			
RELIEF +GA RELIEF +SA RELIEF +SA RELIEF +BORUTA SU-RFE SU+GA SU+GA SU+GA SU+BORUTA SU+BORUTA NO Feature Selection RELIEF +BORUTA SU+BORUTA RELIEF +BORUTA SU+BORUTA SU+BORUTA RELIEF +BORU					100
RELIEF +SA					100
RELIEF +BORUTA 50 0 11 SU+RFE 39 100 SU+GA 39 100 SU+SA 61 0 11 SU+BORUTA 39 100 No Feature Selection 71 75 66 IG+RFE 70 65 74 IG+RFE 70 65 74 IG+SA 69 90 4 IG+BORUTA 68 73 66 IG+SA 69 90 4 IG+BORUTA 68 73 66 GR+RFE 64 80 4 GR+GA 55 67 8 6 GR+SA 62 68 68 GR+BORUTA 69 78 66 GR+SA 62 68 56 GR+BORUTA 69 78 66 CFS +RFE 64 80 65 KI-KARE+RFE 73 73 73 73 KI-KARE+GA 66 73 66 RELIEF +GA 63 77 55 RELIEF +GA 63 77 55 SU+RFE 66 83 55 SU+GA 70 79 66 SU+SA 60 77 46 SU+SA 60 77 46 SU+SA 60 77 46 SU+SA 60 77 46 GR+SA 61 70 79 66 SU+SA 60 77 65 GR+SA 60 77 66 IG+SA 70 79 66 SU+SA 60 77 66 IG+SA 70 79 66 IG+SA 70 79 66 IG+SA 70 79 66 IG+SA 70 79 66 GR+SA 63 77 78 66 GR+SA 63 77 78 66 GR+SA 63 77 78 66 GR+SA 63 77 78 66 GR+SA 70 79 79 66 GR+SA 70 79 66 GR+SA 70 79 79 66 GR+SA 70 79 66 GR+SA 70 79 66 GR+SA 70 79 66 GR+SA 70 79 79 66 GR+SA 70 79 66 GR+SA 70 79 79 66 GR+SA 70 79 79 66 GR+SA 70 79 66 GR+SA 70 79 79 66 GR+SA 70 79 66 GR+SA 70 79 66 GR+SA 69 80 69 80 65 GR+SA 69 80 69 80 65 GR+SA 69 80 65 GR+SA 69 80 65 GR+SA 69 80 65 GR+SA 69 80 65 GR+SA 69 80 65 GR+SA 69 80 65 KI-KARE+RFE 67 62 76 KI-KARE+RFE 67 62 76 KI-KARE+RFE 67 62 76 KI-KARE+RFE 67 62 76 KI-KARE+RFE 67 62 76 KI-KARE+RFE 67 62 76 KI-KARE+RFE 67 62 76 KI-KARE+RFE 67 62 76 KI-KARE+RFE 67 62 76 KI-KARE+RFE 67 62 76 KI-KARE+RFE 67 62 76 KI-KARE+RFE 67 62 76 KI-KARE+RFE 67 62 76 KI-KARE+RFE 67 62 77 KI-KARE+RFE 67 62 77 KI-KARE+RFE 67 62 76 KI-KARE+RFE 67 62 77 KI-KARE+R	•				0
SU+RFE 39 100 SU+GA 39 100 SU+SA 61 0 0 1 SU+SA 61 0 0 0 SU+SA 39 100 SU+SA 39 100 No Feature Selection 71 75 66 IG+RFE 70 65 77 IG+RFE 70 65 77 IG+RFE 70 65 77 IG+SA 69 90 IG+BORUTA 68 73 66 IG+BORUTA 68 73 66 IG+BORUTA 69 78 66 GR+SA 62 68 87 GR+SA 62 68 80 56 GR+SA 69 80 56 GR+SA 69 80 55 CFS +GA 69 80 55 Kİ-KARE+RFE 73 73 73 73 Kİ-KARE+GA 66 73 56 Kİ-KARE+SA 71 75 66 RELIEF+RFE 64 62 66 RELIEF+RFE 64 62 66 RELIEF+RFE 64 62 66 RELIEF+RFE 66 83 56 SU+GA 70 79 66 SU+SA 60 77 44 SU+SA 70 79 66 IG+SA 70 79 79 IG+SORUTA 68 77 IG+SORUTA 68 77 IG+SORUTA 69 80 40 IG+SA 70 79 66 IG+SA 70 79 66 IG+SA 70 79 79 IG+SORUTA 68 77 IG+SORUTA 68 77 IG+SORUTA 69 80 40 IG+SA 70 79 66 IG+SA 70 79 66 IG+SA 70 79 79 IG+SORUTA 69 80 40 IG+SA 70 79 66 IG+SA 70 79 66 IG+SA 70 79 66 IG+SA 70 79 66 IG+SA 70 79 66 IG+SA 70 79 66 IG+SA 70 79 66 IG+SA 70 79 66 IG+SA 70 79 66 IG+SA 70 79 66 IG+SA 70 79 66 IG+SA 70 79 66 IG+SA 70 79 66 IG+SA 70 79 66 IG+SA 70 79 66 IG+SA 70 79 66 IG+SA 70 79 66 IG+SA 70 79 66 IG+SA 70 79 66 IG+SA 69 80 65 I	•				0
SU+GA SU+SA 61 0 11 SU+BORUTA 39 100 No Feature Selection 71 16+RFE 70 65 7 1G+RFE 70 65 7 1G+GA 1G+SA 69 90 4 1G+BORUTA 68 73 6R+RFE 64 80 48 6R+GA 68 68 68 73 6R+SA 69 90 68 68 68 68 73 68 68 73 68 68 73 68 68 73 68 68 73 68 68 73 68 68 73 68 68 73 68 68 73 68 68 73 68 68 68 73 68 68 73 68 68 68 73 68 68 68 73 68 68 68 73 68 68 68 73 68 68 68 68 73 68 68 68 73 68 68 68 68 68 68 68 68 68 68 68 68 68	•				100
SU+SA SU+BORUTA SU+BORUTA SU+BORUTA SU+BORUTA SU+BORUTA SU+BORUTA SU+FRE SU-FRE	•				0
SU+BORUTA  No Feature Selection  71 75 6  IG+RFE 70 65 7  IG+GA 68 87 4  IG+SA 69 90 4  IG+BORUTA 68 73 66  GR+RFE 64 80 46  GR+GA 55 67 46  GR+SA 62 68 56  GR+SA 62 68 56  GR+SA 69 80 56  CFS+RFE 64 80 46  CFS+GA 69 80 56  CFS+GA 69 80 56  CFS+GA 69 80 56  KI-KARE+RFE 73 73 73 73  KI-KARE+BORUTA 69 78 66  KI-KARE+BORUTA 67 73 66  RELIEF+RFE 64 62 66  RELIEF+GA 63 77 56  RELIEF+BORUTA 66 75 56  SU+RFE 66 83 56  SU+GA 70 79 66  SU+SA 60 77 46  SU+SA 60 77 46  SU+BORUTA 68 77 66  IG+RFE 68 58 77  IG+GA 66 77 46  IG+SA 70 79 66  GR+SA 70 79 66  GR+SA 70 79 66  GR+SA 70 79 66  GR+SA 70 79 66  GR+SA 70 79 66  GR+SA 70 79 66  GR+SA 70 79 66  GR+SA 70 77 76  IG+BORUTA 68 77 77 66  GR+SA 70 77 77 66  GR+SA 70 77 77 66  GR+SA 70 77 77 66  GR+SA 70 77 77 66  GR+SA 77 77 77 66  GR+SA 77 77 77 66  GR+SA 77 77 77 66  GR+SA 63 43 86  GR+SA 63 43 86  GR+SA 63 43 86  GR+SA 69 80 55  CFS+SA 69 80 55  CFS+SA 69 80 55  CFS+SA 69 80 55  CFS+SA 69 80 55  KI-KARE+FFE 67 62 77  KI-KARE+FGE 67 62 77  KI-KARE+FFE -KARE+FFE 77  KI-KARE+FFE 77  KI-KARE+FFE 77  KI-KARE+FFE 77  KI-KARE+FFE					0
No Feature Selection	•				100
IG+RFE					0
IG+GA				75	67
IG+SA   69   90   44     IG+BORUTA   68   73   68     GR+RFE   64   80   44     GR+GA   55   67   44     GR+BORUTA   69   78   62     GR+BORUTA   69   78   64     CFS+RFE   64   80   44     CFS+RFE   64   80   44     CFS+GA   69   80   55     CFS+BORUTA   69   80   55     Kİ-KARE+RFE   73   73   73     Kİ-KARE+GA   66   73   55     Kİ-KARE +BORUTA   67   73   68     RELIEF+RFE   64   62   66     RELIEF+RFE   64   62   66     RELIEF+BORUTA   66   75   55     SU+GA   70   79   66     SU+SA   60   77   67     SU+SA   60   77   67     SU+SA   60   77   67     IG+SA   72   77   67     IG+SA   72   77   67     IG+SA   72   77   67     GR+RFE   64   80   44     GR+RFE   64   80   44     GR+SA   63   43   88     GR+BORUTA   68   77   67     GR+SA   63   43   88     GR+BORUTA   68   77   67     GR+SA   63   43   88     GR+BORUTA   68   77   67     GR+SA   63   43   88     GR+SA   63   43   88     GR+SA   63   43   88     GR+SA   67   62   78     Kİ-KARE+RFE   64   80   44     Kİ-KARE+RFE   67   62   78     Kİ-KARE-RFE   67   62   78     Kİ-KARE-RFE   67   62   78     Kİ-KARE-RFE   67   62   78     Kİ-KARE-RFE   67   62   78     Kİ-KARE-RFE   67   62   78     Kİ-KARE-RFE   67   62   78     Kİ-KARE-RFE   67   62   78     Kİ-KARE-RFE   67   62   78     Kİ-KARE-		IG+RFE	70		75
IG+BORUTA			68	87	48
GR+RFE GR+GA GR+SA GR+SA GR+BORUTA GR+BORUTA GR+BORUTA GR+BORUTA GR+BORUTA GR+BORUTA GR+BORUTA GR+BORUTA GR+BORUTA GR-BORUTA G		IG+SA	69	90	48
GR+GA		IG+BORUTA	68	73	63
GR+SA   62   68   58   68   69   78   60   69   78   60   60   60   60   60   60   60   6		GR+RFE	64	80	48
GR+BORUTA  CFS+RFE  CFS+GA  CFS+SA  CFS+BORUTA  CFS+BORUTA  CFS+SA  CFS+BORUTA  CFS-BORUTA  CFS-BORUTA  CFS-BORUTA  CFS-BORUTA			55	67	43
CFS+RFE CFS+GA CFS+GA CFS+SA CFS+BORUTA CFS+BORUTA CFS+BORUTA CFS+BORUTA CFS+BORUTA CFS+BORUTA CFS+BORUTA CFS+BORUTA CFS+BORUTA CFS+BORUTA CFS+BORUTA CFS+BORUTA CFS+BORUTA CFS+BORUTA CFS+BORUTA CFS+BORUTA CFS+BORUTA CFS+BORUTA CFS-CFS CFS+BORUTA CFS+CFS CFS+CA					55
CFS +GA CFS +SA CFS +SA CFS +BORUTA Ki-KARE+RFE Ki-KARE +GA Ki-KARE +GA Ki-KARE +BORUTA RELIEF +GA RELIEF +GA RELIEF +GA RELIEF +BORUTA RELIE			69	78	60
CFS+SA 69 80 55 CFS+BORUTA 69 80 55 Ki-KARE+RFE 73 73 73 73 Ki-KARE+GA 66 73 55 Ki-KARE +BORUTA 67 73 66 RELIEF+RFE 64 62 66 RELIEF+GA 63 77 55 RELIEF+SA 61 70 55 SU+RFE 66 83 55 SU+GA 70 79 66 SU+SA 60 77 46 SU+BORUTA 68 77 66 IG+RFE 68 58 77 IG+BORUTA 73 78 66 GR+RFE 64 80 46 GR+SA 63 43 86 GR+SA 63 43 86 GR+BORUTA 68 77 66 GR+SA 63 43 86 GR+BORUTA 68 77 66 GR+SA 63 43 86 GR+BORUTA 68 77 66 CFS+SA 69 80 55 CFS+BORUTA 69 80 55 Ki-KARE+RFE 67 62 77 Ki-KARE+RFE 67 Ki-KARE+RFE 67 62 77 Ki-KARE+RFE 67 Ki-KARE+RFE 67 62 77 Ki-KARE+RFE 67 Ki-KARE+RFE 67 62 77 Ki-KARE+RFE 67 Ki-KARE+RFE 67 Ki-KARE+RFE 67 Ki-KARE+RFE 67 Ki-KARE+RFE 67 Ki-KARE+RFE 67 Ki-KARE+R					48
Kİ-KARE +GA 66 73 55 66 Kİ-KARE +SA 71 75 66 Kİ-KARE +SA 71 75 66 Kİ-KARE +BORUTA 67 73 66 RELİEF+RFE 64 62 66 RELİEF+RFE 64 62 66 RELİEF +SA 61 70 55 RELİEF +BORUTA 66 75 55 55 SU+RFE 66 83 55 SU+RFE 66 83 55 SU+RFE 66 83 77 66 SU+RFE 68 58 77 66 RELİEF +BORUTA 68 77 66 RELİEF +BORUTA 68 77 66 RELİEF +BORUTA 68 77 66 RELİEF +BORUTA 68 77 66 RELİEF +BORUTA 73 78 66 RELİEF +BORUTA 73 78 66 RELİEF +BORUTA 73 78 66 RELİEF +BORUTA 73 78 66 RELİEF +BORUTA 73 78 66 RELİEF +BORUTA 68 77 66 RELİEF +BORUTA 68 77 66 RELİEF +BORUTA 68 77 66 RELİEF +BORUTA 68 77 66 RELİEF +BORUTA 68 77 66 RELİEF +BORUTA 68 77 66 RELİEF +BORUTA 68 77 66 RELİEF +BORUTA 69 80 55 Kİ-KARE +RFE 67 62 77 Kİ-KARE +RFE 67 62 77 Kİ-KARE +RFE 67 62 77 Kİ-KARE +GA 64 80 44 8	111				58
Kİ-KARE +GA 66 73 55 66 Kİ-KARE +SA 71 75 66 Kİ-KARE +SA 71 75 66 Kİ-KARE +BORUTA 67 73 66 RELİEF+RFE 64 62 66 RELİEF+RFE 64 62 66 RELİEF +SA 61 70 55 RELİEF +BORUTA 66 75 55 55 SU+RFE 66 83 55 SU+RFE 66 83 55 SU+RFE 66 83 77 66 SU+RFE 68 58 77 66 RELİEF +BORUTA 68 77 66 RELİEF +BORUTA 68 77 66 RELİEF +BORUTA 68 77 66 RELİEF +BORUTA 68 77 66 RELİEF +BORUTA 73 78 66 RELİEF +BORUTA 73 78 66 RELİEF +BORUTA 73 78 66 RELİEF +BORUTA 73 78 66 RELİEF +BORUTA 73 78 66 RELİEF +BORUTA 68 77 66 RELİEF +BORUTA 68 77 66 RELİEF +BORUTA 68 77 66 RELİEF +BORUTA 68 77 66 RELİEF +BORUTA 68 77 66 RELİEF +BORUTA 68 77 66 RELİEF +BORUTA 68 77 66 RELİEF +BORUTA 69 80 55 Kİ-KARE +RFE 67 62 77 Kİ-KARE +RFE 67 62 77 Kİ-KARE +RFE 67 62 77 Kİ-KARE +GA 64 80 44 8	ij				58
Kİ-KARE +GA  Kİ-KARE +SA  Kİ-KARE +SA  Kİ-KARE +BORUTA  RELİEF+RFE  64  RELİEF+RFE  64  RELİEF +GA  RELİEF +SA  RELİEF +BORUTA	H		69	80	58
Kİ-KARE +SA       71       75       6         Kİ-KARE +BORUTA       67       73       6         RELİEF+RFE       64       62       6         RELİEF +GA       63       77       5         RELİEF +SA       61       70       5         RELİEF +BORUTA       66       75       5         SU+RFE       66       83       5         SU+GA       70       79       6         SU+SA       60       77       4         SU+BORUTA       68       77       6         No Feature Selection       69       68       7         IG+RFE       68       58       7         IG+SA       72       77       6         IG+BORUTA       73       78       6         GR+RFE       64       80       4         GR+SA       63       43       8         GR+SA       63       43       8         GR+SA       69       80       5         CFS +RFE       64       80       4         CFS +BORUTA       69       80       5         Kİ-KARE+RFE       67       62       7	<b>≥</b> [	Kİ-KARE+RFE	73	73	72
Kİ-KARE +BORUTA			66	73	58
RELİEF+RFE RELİEF +GA RELİEF +GA RELİEF +SA RELİEF +SA RELİEF +BORUTA RELİEF +GA		Kİ-KARE +SA	71	75	67
RELIEF +GA 63 77 55 RELIEF +SA 61 70 55 RELIEF +BORUTA 66 75 55 SU+RFE 66 83 55 SU+GA 70 79 66 SU+SA 60 77 46 SU+BORUTA 68 77 66 IG+RFE 68 58 76 IG+RFE 68 58 77 IG+BORUTA 73 78 66 GR+GA 55 67 46 GR+SA 63 43 88 GR+BORUTA 68 77 66 CFS +GA 69 80 55 CFS +BORUTA 69 80 55 Ki-KARE+RFE 67 62 77 Ki-KARE+RFE 67 Ki-KARE+RFE 67 62 77 Ki-KARE+RFE 67 KI-KARE+RFE 67 KI-KARE+RFE 67 KI-KARE+RFE 67 KI-KARE+RFE 67 KI-KARE+RFE 67 KI-KARE+RFE 67 KI-KARE+RFE 67 KI-KAR		Kİ-KARE +BORUTA	67	73	60
RELIEF +SA 61 70 55 RELIEF +BORUTA 66 75 55 SU+RFE 66 83 55 SU+GA 70 79 66 SU+SA 60 77 46 SU+BORUTA 68 77 66 No Feature Selection 69 68 77 IG+RFE 68 58 77 IG+GA 70 79 66 IG+SA 70 70 79 67 IG+SA 70 70 79 67 IG+RFE 68 77 66 IG+SA 70 70 70 70 70 70 70 70 70 70 70 70 70		RELİEF+RFE	64	62	67
RELIEF +BORUTA 66 75 55 SU+RFE 66 83 55 SU+GA 70 79 66 SU+SA 60 77 4 SU+BORUTA 68 77 66 No Feature Selection 69 68 7 IG+RFE 68 58 7 IG+GA 66 77 55 IG+SA 72 77 66 IG+SA 72 77 66 GR+RFE 64 80 46 GR+RFE 64 80 46 GR+SA 63 43 88 GR+BORUTA 68 77 66 GR+SA 63 43 88 GR+BORUTA 68 77 66 CFS+RFE 64 80 46 CFS+SA 69 80 55 CFS+BORUTA 69 80 55 Ki-KARE+RFE 67 62 76 Ki-KARE+RFE 67 62 77		RELİEF +GA	63	77	50
SU+RFE 66 83 55 SU+GA 70 79 66 SU+SA 60 77 44 SU+BORUTA 68 77 66 No Feature Selection 69 68 7 IG+RFE 68 58 7 IG+GA 66 77 55 IG+SA 72 77 66 IG+BORUTA 73 78 66 GR+RFE 64 80 44 GR+GA 55 67 46 GR+SA 55 67 46 GR+SA 63 43 88 GR+BORUTA 68 77 66 CFS+RFE 64 80 44 CFS+RFE 64 80 44 CFS+RFE 64 80 45 CFS+BORUTA 69 80 55 CFS+BORUTA 69 80 55 Kİ-KARE+RFE 67 62 7 Kİ-KARE+GA 64 80 44		RELİEF +SA	61	70	52
SU+GA 70 79 66 SU+SA 60 77 44 SU+BORUTA 68 77 66 No Feature Selection 69 68 7 IG+RFE 68 58 7 IG+GA 66 77 55 IG+BORUTA 73 78 66 GR+RFE 64 80 46 GR+GA 55 67 46 GR+SA 63 43 86 GR+BORUTA 68 77 66 GR+SA 63 43 86 GR+BORUTA 68 77 66 CFS+RFE 64 80 46 CFS+GA 69 80 55 CFS+BORUTA 69 80 55 Ki-KARE+RFE 67 62 76 Ki-KARE+GA 64 80 44		RELİEF +BORUTA	66	75	57
SU+SA 60 77 44 SU+BORUTA 68 77 66 No Feature Selection 69 68 7 IG+RFE 68 58 7 IG+GA 66 77 55 IG+BORUTA 73 78 66 IG+BORUTA 73 78 66 GR+RFE 64 80 44 GR+SA 55 67 44 GR+SA 63 43 88 GR+BORUTA 68 77 66 CFS+RFE 64 80 44 CFS+GA 69 80 55 CFS+BORUTA 69 80 55 Kİ-KARE+RFE 67 62 7 Kİ-KARE+GA 64 80 44		SU+RFE	66	83	55
SU+BORUTA   68   77   68   77   68   77   69   68   77   79   68   79   68   79   68   79   68   79   68   79   79   69   68   79   79   69   69   69   69   69   69		SU+GA	70	79	64
No Feature Selection   69   68   77     IG+RFE   68   58   77     IG+GA   66   77   58     IG+SA   72   77   68     IG+BORUTA   73   78   69     GR+GA   55   67   44     GR+GA   55   67   44     GR+SA   63   43   88     GR+BORUTA   68   77   68     CFS+RFE   64   80   48     CFS+GA   69   80   58     CFS+BORUTA   69   80   58     CFS+BORUTA   69   80   58     Ki-KARE+RFE   67   62   78     Ki-KARE+GA   64   80   44     Ki-KARE+GA   64   80   44     Ki-KARE+GA   64   80   44     CFS+GA   69   80   58     CFS+BORUTA   69   80   58     CFS+BORUTA   69   80   58     CFS+BORUTA   69   80   68     CFS-BORUTA   69   80   68     CFS-BORUTA   69   80   68     CFS-BORUTA   69   80   68     CFS-B		SU+SA	60	77	49
IG+RFE		SU+BORUTA	68	77	63
IG+GA   66   77   55     IG+SA   72   77   66     IG+BORUTA   73   78   66     GR+RFE   64   80   44     GR+GA   55   67   44     GR+SA   63   43   85     GR+BORUTA   68   77   66     CFS+RFE   64   80   44     CFS+GA   69   80   55     CFS+BORUTA   69   80   55     CFS+BORUTA   69   80   55     Kİ-KARE+RFE   67   62   77     Kİ-KARE+GA   64   80   44		No Feature Selection	69	68	70
IG+SA   72   77   66     IG+BORUTA   73   78   66     GR+RFE   64   80   44     GR+GA   55   67   44     GR+SA   63   43   88     GR+BORUTA   68   77   66     CFS+RFE   64   80   44     CFS+GA   69   80   55     CFS+BORUTA   69   80   55     CFS+BORUTA   69   80   55     Kİ-KARE+RFE   67   62   75     Kİ-KARE+GA   64   80   44	•	IG+RFE			77
IG+SA   72   77   66     IG+BORUTA   73   78   66     GR+RFE   64   80   44     GR+GA   55   67   44     GR+SA   63   43   88     GR+BORUTA   68   77   66     CFS+RFE   64   80   44     CFS+GA   69   80   55     CFS+BORUTA   69   80   55     CFS+BORUTA   69   80   55     Kİ-KARE+RFE   67   62   77     Kİ-KARE+GA   64   80   44	•	IG+GA	66	77	55
GR+RFE 64 80 4 GR+GA 55 67 4 GR+SA 63 43 8 GR+BORUTA 68 77 66 CFS+RFE 64 80 4 CFS+GA 69 80 5 CFS+BORUTA 69 80 5 Kİ-KARE+RFE 67 62 7 Kİ-KARE+GA 64 80 4	•		72	77	67
GR+GA 55 67 4 GR+SA 63 43 8 GR+BORUTA 68 77 66 CFS+RFE 64 80 4 CFS +GA 69 80 5 CFS +SA 69 80 5 CFS+BORUTA 69 80 5 Kİ-KARE+RFE 67 62 7 Kİ-KARE +GA 64 80 4	•	IG+BORUTA	73	78	67
GR+SA 63 43 88 GR+BORUTA 68 77 66 CFS+RFE 64 80 4 CFS+GA 69 80 5 CFS+BORUTA 69 80 5 Kİ-KARE+RFE 67 62 7 Kİ-KARE+GA 64 80 4		GR+RFE	64	80	48
GR+SA 63 43 88 GR+BORUTA 68 77 66 CFS+RFE 64 80 4 CFS+GA 69 80 5 CFS+BORUTA 69 80 5 Kİ-KARE+RFE 67 62 7 Kİ-KARE+GA 64 80 4	•	GR+GA	55		43
CFS+RFE 64 80 44 CFS+GA 69 80 55 CFS+SA 69 80 55 Kİ-KARE+RFE 67 62 7 Kİ-KARE+GA 64 80 44		GR+SA	63	43	82
CFS +GA 69 80 55 CFS +SA 69 80 55 CFS +BORUTA 69 80 55 Kİ-KARE+RFE 67 62 7 Kİ-KARE +GA 64 80 4		GR+BORUTA	68	77	60
CFS +GA     69     80     5       CFS +SA     69     80     5       CFS+BORUTA     69     80     5       Ki-KARE+RFE     67     62     7       Ki-KARE +GA     64     80     4	<b>⊢</b>	CFS+RFE		80	48
CFS+BORUTA	.X		69		58
CFS+BORUTA	/ <b>L</b>	CFS +SA			58
Kİ-KARE+RFE         67         62         7           Kİ-KARE +GA         64         80         4	œ				58
Kİ-KARE +GA 64 80 4	ļ				72
					48
Kİ-KARE +SA 70 72 6					68
	-				50
	-				78
	-				77
	-				43
	-				53
	-				55

ALGOR ITHM	ATTRIBUTE SELECTION METHOD	Acc (%)	Sen (%)	Spe (%)
	SU+GA	70	79	64
	SU+SA	60	77	49
	SU+BORUTA	62	87	45
	No Feature Selection	73	80	67
	IG+RFE	66	58	73
	IG+GA	69	75	63
	IG+SA	71	88	53
	IG+BORUTA	74	65	83
	GR+RFE	60	65	55
	GR+GA	60	65	55
	GR+SA	64	55	73
	GR+BORUTA	66	57	75
	CFS+RFE	64	80	48
	CFS +GA	69	80	58
	CFS +SA	69	80	58
C5.0	CFS+BORUTA	69	80	58
	Kİ-KARE+RFE	73	67	78
	Kİ-KARE +GA	63	70	57
	Kİ-KARE +SA	68	65	72
	Kİ-KARE +BORUTA	69	73	65
	RELİEF+RFE	61	62	60
	RELİEF +GA	60	60	60
	RELİEF +SA	61	80	42
	RELİEF +BORUTA	68	72	63
	SU+RFE	68	70	66
	SU+GA	66	64	67
	SU+SA	65	70	62
	SU+BORUTA	63	72	58
	No Feature Selection	75	83	67
	IG+RFE	72	72	72
	IG+GA	70	75	65
	IG+SA	69	90	48
	IG+BORUTA	76	78	73
	GR+RFE	64	80	48
	GR+GA	57	62	52
	GR+SA	63	68	57
	GR+BORUTA	69	78	60
	CFS+RFE	64	80	48
	CFS +GA	69	80	58
	CFS +SA	69	80	58
J48	CFS+BORUTA	69	80	58
	Kİ-KARE+RFE	75	75	75
	Kİ-KARE +GA	59	63	55
	Kİ-KARE +SA	72	77	67
	Kİ-KARE +BORUTA	68	70	65
	RELİEF+RFE	63	58	67
	RELİEF +GA	63	73	52
	RELİEF +SA	63	75	50
	RELİEF +BORUTA	65	80	50
	SU+RFE	71	79	66
	SU+GA	70	79	64
	SU+SA	60	77	49
	SU+BORUTA	66	72	62
	No Feature Selection	73	77	68
EAR	IG+RFE	63	63	63
IJН	IG+GA	70	78	62
		10	70	UZ

ALGOR ITHM	ATTRIBUTE SELECTION METHOD	Acc (%)	Sen (%)	Spe (%)
	IG+SA	69	90	48
	IG+BORUTA	74	75	73
	GR+RFE	62	63	60
	GR+GA	59	55	57
	GR+SA	68	65	72
	GR+BORUTA	69	78	60
	CFS+RFE	64	80	48
	CFS +GA	69	80	58
	CFS +SA	69	80	58
	CFS+BORUTA	69	80	58
	Kİ-KARE+RFE	73	73	72
	Kİ-KARE +GA	64	80	48
	Kİ-KARE +SA	68	72	65
	Kİ-KARE +BORUTA	70	73	67
	RELIEF+RFE	59	62	57
	RELİEF +GA	66	63	68
	RELIEF +SA	62	65	58
	RELIEF +BORUTA	67	67	67
	SU+RFE	74	83	68
	SU+GA	73	77	71
	SU+SA	66	66	66
	SU+BORUTA	63	72	56
	No Feature Selection	78	80	77
	IG+RFE	68	62	75
	IG+GA	70	77	63
	IG+SA	68	70	65
	IG+BORUTA	74	68	80
	GR+RFE	67	68	65
	GR+GA	62	53	70
	GR+SA	63	70	57
	GR+BORUTA	71	72	70
	CFS+RFE	64	80	48
	CFS +GA	69	80	58
	CFS +SA	69	80	58
RF	CFS+BORUTA	69	80	58
133	Kİ-KARE+RFE	74	70	78
	Kİ-KARE +GA	66	67	65
	Kİ-KARE +SA	66	70	62
	Kİ-KARE +BORUTA	68	77	60
	RELİEF+RFE	65	67	63
	RELİEF +GA	65	67	63
	RELIEF +SA	65	73	57
	RELIEF +BORUTA	60	62	58
	SU+RFE	72	83	64
	SU+GA	73	79	70
	SU+SA	61	79	55
	SU+BORUTA	69	74	66
	No Feature Selection	74	82	67
	IG+RFE	73	67	78
	IG+GA	73	78	68
		69	78	
GBM	IG+SA	<b>76</b>	73 73	65 <b>78</b>
GDIVI	IG+BORUTA			
	GR+RFE	64	63	65 60
	GR+GA	62	63	60
	GR+SA	64	65	63
	GR+BORUTA	73	73	73

ALGOR ITHM	ATTRIBUTE SELECTION METHOD	Acc (%)	Sen (%)	Spe (%)
	CFS+RFE	64	80	48
	CFS +GA	69	80	58
	CFS +SA	69	80	58
	CFS+BORUTA	69	80	58
	Kİ-KARE+RFE	74	75	73
	Kİ-KARE +GA	69	68	70
	Kİ-KARE +SA	65	67	63
	Kİ-KARE +BORUTA	68	75	62
	RELİEF+RFE	57	55	58
	RELİEF +GA	64	57	72
	RELİEF +SA	59	67	52
	RELİEF +BORUTA	71	75	67
	SU+RFE	73	79	70
	SU+GA	71	77	67
	SU+SA	69	70	68
	SU+BORUTA	71	79	66
	No Feature Selection	76	77	75
	IG+RFE	75	70	80
	IG+GA	73	78	67
	IG+SA	72	77	67
	IG+BORUTA	74	73	75
	GR+RFE	66	70	62
	GR+GA	57	52	62
	GR+SA	68	67	68
	GR+BORUTA	70	72	68
	CFS+RFE	64	80	48
ш	CFS +GA	69	80	58
XGBTREE	CFS +SA	69	80	58
E	CFS+BORUTA	69	80	58
5	Kİ-KARE+RFE	73	75	70
×	Kİ-KARE +GA	71	68	73
	Kİ-KARE +SA	65	68	62
	Kİ-KARE +BORUTA	73	82	65
	RELİEF+RFE	60	60	60
	RELİEF +GA	62	65	58
	RELİEF +SA	63	67	58
	RELİEF +BORUTA	72	78	65
	SU+RFE	70	77	66
	SU+GA	73	72	73
	SU+SA	68	66	70
	SU+BORUTA	71	77	67
	No Feature Selection	77	80	73
	IG+RFE	70	62	78
	IG+GA	72	80	63
	IG+SA	68	72	63
	IG+BORUTA	75	72	78
	GR+RFE	66	65	67
TREEB	GR+GA	60	55	65
AG	GR+SA	63	70	55
AG	GR+BORUTA	65	65	65
	CFS+RFE	64	80	48
	CFS +GA	69	80	58
	CFS +SA	69	80	58
	CFS+BORUTA	69	80	58
	Kİ-KARE+RFE	70	67	73
	Kİ-KARE +GA	69	68	70

ALGOR	ATTRIBUTE SELECTION	Acc (%)	Sen (%)	Spe (%)
ITHM	METHOD	1100 (70)	(/0)	<b>GPG (76)</b>
	Kİ-KARE +SA	68	68	67
	Kİ-KARE +BORUTA	74	80	68
	RELİEF+RFE	63	62	65
	RELİEF +GA	63	62	65
	RELİEF +SA	62	65	58
	RELİEF +BORUTA	67	73	60
	SU+RFE	72	81	66
	SU+GA	69	70	68
	SU+SA	62	72	55
	SU+BORUTA	66	72	62
	No Feature Selection	75	73	77
	IG+RFE	67	57	77
	IG+GA	70	77	63
	IG+SA	64	67	62
	IG+BORUTA	68	65	70
	GR+RFE	60	60	60
	GR+GA	51	48	53
	GR+SA	58	60	55
	GR+BORUTA	72	72	72
_	CFS+RFE	64	80	48
ADABOOST	CFS +GA	69	80	58
00	CFS+SA	69	80	58 58
AB	CFS+BORUTA Ki-KARE+RFE	69 <b>72</b>	80 <b>65</b>	<b>78</b>
Q'	Kİ-KARE +GA	61	60	62
4	Kİ-KARE +SA	65	60	70
	Kİ-KARE +BORUTA	76	82	<b>70</b>
	RELIEF+RFE	58	57	58
	RELIEF +GA	66	63	68
	RELIEF +SA	69	70	68
	RELIEF +BORUTA	62	68	55
	SU+RFE	69	79	63
	SU+GA	73	74	71
	SU+SA	59	53	63
	SU+BORUTA	68	68	67
	No Feature Selection	73	77	68
	IG+RFE	69	60	73
	IG+GA	73	80	67
	IG+SA	69	77	62
	IG+BORUTA	76	68	83
	GR+RFE	68	68	68
	GR+GA	57	52	62
	GR+SA	68	68	67
ST	GR+BORUTA	75	77	73
GLMBOOST	CFS+RFE	64	80	48
ВС	CFS +GA	69	80	58
Σ	CFS +SA	69	80	58
<u>ত</u>	CFS+BORUTA	69	80	58
	Kİ-KARE+RFE	74	68	80
	Kİ-KARE +GA	68	67	70
	Kİ-KARE +SA	67	65	68
	Kİ-KARE +BORUTA	70	73	67
	RELİEF+RFE	67	70	63
	RELİEF +GA	64	65	63
	RELİEF +SA	63	67	60
	RELİEF +BORUTA	70	72	68

ALGOR ITHM	ATTRIBUTE SELECTION METHOD	Acc (%)	Sen (%)	Spe (%)
	SU+RFE	78	83	74
	SU+GA	70	72	68
	SU+SA	69	68	70
	SU+BORUTA	71	74	68
	No Feature Selection	67	58	75
	IG+RFE	64	67	62
	IG+GA	73	77	70
	IG+SA	65	67	63
	IG+BORUTA	73	73	72
	GR+RFE	64	65	63
	GR+GA	54	62	47
	GR+SA	58	65	52
	GR+BORUTA	61	72	50
_	CFS+RFE	64	80	48
SS.	CFS +GA	69	80	58
0	CFS +SA	69	80	58
LOGITBOOST	CFS+BORUTA	69	80	58
<u> </u>	Kİ-KARE+RFE	73	70	77
9	Kİ-KARE +GA	65	63	67
	Kİ-KARE +SA	71	73	68
	Kİ-KARE +BORUTA	65	63	67
	RELİEF+RFE	65	65	65
	RELİEF +GA	57	83	30
	RELİEF +SA	58	70	47
	RELİEF +BORUTA	63	52	75
	SU+RFE	63	74	56
	SU+GA	72	74	70
	SU+SA	58	70	49
	SU+BORUTA	66	72	62
	No Feature Selection	73	77	70
	IG+RFE	70	58	82
	IG+GA	73	78	68
	IG+SA	74	78	70
	IG+BORUTA	77	80	73
	GR+RFE	65	72	58
	GR+GA	60	60	60
	GR+SA	63	67	58
L.	GR+BORUTA	71	75	67
Щ	CFS+RFE			
6	CFS +GA			
L T	CFS +SA			
6	CFS+BORUTA	70	00	7-
ROTATION FOREST	Kİ-KARE+RFE	72	68	75
Ţ	Kİ-KARE +GA	67	68	65
RO	Kİ-KARE +SA	67	70	63
	Kİ-KARE +BORUTA	69	75	63
	RELIEF+RFE	63	60	65 57
	RELİEF +GA	64	72	57 57
	RELİEF +SA	63	68	57
	RELIEF +BORUTA	69	68	70
	SU+RFE	73	83	66
	SU+GA	68	70	67
	SU+SA	63	74	56
	SU+BORUTA	70	81	63

Table 3. Results of Machine Learning Algorithms After Sequential Feature Selection\_ oversampling

ALGOR İTMA	ÖZNİTELİK SEÇİM YÖNTEMİ	Acc (%)	Sen (%)	Spe (%)
GLM	No Feature Selection	73	69	76
	IG+RFE	75	72	78
	IG+GA	72	69	74
	IG+SA	71	68	74
	IG+BORUTA	71	72	70
	GR+RFE	71	72	70
	GR+GA	71	72	70
	GR+SA	67	61	74
	GR+BORUTA	72	73	71
	CFS+RFE	70	62	78
	CFS +GA	69	64	74
	CFS +SA	69	62	75
	CFS+BORUTA	69	62	75
	Kİ-KARE+RFE	74	75	73
	Kİ-KARE +GA	73	72	74
	Kİ-KARE +SA	66	62	70
	Kİ-KARE +BORUTA	73	71	74
	RELIEF+RFE	72	72	71
	RELİEF +GA	72	72	71
	RELİEF +SA	61	69	54
	RELİEF +BORUTA	71	76	67
	SU+RFE	74	70	78
	SU+GA	74	70	78
	SU+SA	66	69	63
	SU+BORUTA	71	66	75
	No Feature Selection	66	54	77
	IG+RFE	65	49	80
	IG+GA	64	53	75
	IG+SA	71	65	78
	IG+BORUTA	60	51	68
	GR+RFE	64	57	71
	GR+GA	64	57	71
	GR+SA	64	57	71
	GR+BORUTA	65	54	77
	CFS+RFE	68	58	79
	CFS +GA	69	64	74
	CFS +SA	64	54	74
KNN	CFS+BORUTA	64	54	74
KININ	Kİ-KARE+RFE	63	49	77
	Kİ-KARE +GA	64	57	71
	Kİ-KARE +SA	61	46	77
	Kİ-KARE +BORUTA	68	57	78
	RELIEF+RFE			70
		63	54 54	
	RELİEF +GA	61	54 57	69
	RELİEF +SA	64	57 52	71
	RELIEF +BORUTA	59	52	66
	SU+RFE	67	58	75 75
	SU+GA	67	58	75
	SU+SA	62	55	69
	SU+BORUTA	66	55	76
NB	No Feature Selection	75	62	87
	IG+RFE	68	59	78

ALGOR İTMA	ÖZNİTELİK SEÇİM YÖNTEMİ	Acc (%)	Sen (%)	Spe (%)
	IG+GA	72	64	79
	IG+SA	72	66	78
	IG+BORUTA	73	69	78
	GR+RFE	75	79	70
	GR+GA	73	76	70
	GR+SA	69	74	63
	GR+BORUTA	73	74	72
	CFS+RFE	67	48	86
	CFS +GA	70	62	77
	CFS +SA	68	61	75
	CFS+BORUTA	68	61	75
	Kİ-KARE+RFE	73	76	69
	Kİ-KARE +GA	73	77	68
	Kİ-KARE +SA	64	69	59
	Kİ-KARE +BORUTA	74	74	73
	RELİEF+RFE	73	78	69
	RELİEF +GA	68	76	60
	RELİEF +SA	64	80	48
	RELİEF +BORUTA	70	79	61
	SU+RFE	69	72	66
	SU+GA	69	72	66
	SU+SA	62	33	87
	SU+BORUTA	73	69	76
	No Feature Selection	73	69	78
	IG+RFE	73	70	76
	IG+GA	72	65	79
	IG+SA	69	59	78
	IG+BORUTA	72	72	72
	GR+RFE	71	65	76
	GR+GA	70	66	75
	GR+SA	67	59	76
	GR+BORUTA	71	69	74
	CFS+RFE	68	54	81
~	CFS +GA	68	54	81
EAR	CFS +SA	67	54	80
Ë	CFS+BORUTA	67	54	
SVMLİN	Kİ-KARE+RFE	73	71	80 <b>75</b>
5	_	71		
Ø	Kİ-KARE +GA		66	76
	Kİ-KARE +SA	65	64	66
	Kİ-KARE +BORUTA	70	66	74
	RELİEF+RFE	73	68	78
	RELIEF +GA	70 65	69	71 55
	RELIEF +SA	65	75	55
	RELIEF +BORUTA	71	73	69
	SU+RFE	73	67	78
	SU+GA	73	67	78
	SU+SA	64	67	62
	SU+BORUTA	71	66	75
	No Feature Selection	84	77	90
	IG+RFE	82	74	90
Ž	IG+GA	80	73	87
8	IG+SA	71	61	81
SVMPOLY	IG+BORUTA	78	71	86
S	GR+RFE	78	73	83
	GR+GA	78	72	83
	GR+SA	67	77	56

ALGOR İTMA	ÖZNİTELİK SEÇİM YÖNTEMİ	Acc (%)	Sen (%)	Spe (%)
	GR+BORUTA	77	74	79
	CFS+RFE	68	54	81
	CFS +GA	69	54	83
	CFS +SA	68	64	72
	CFS+BORUTA	68	64	72
	Kİ-KARE+RFE	78	69	87
	Kİ-KARE +GA	78	71	84
	Kİ-KARE +SA	73	66	81
	Kİ-KARE +BORUTA	80	72	88
	RELİEF+RFE	79	73	86
	RELİEF +GA	79	76	81
	RELİEF +SA	65	60	71
	RELİEF +BORUTA	78	75	81
	SU+RFE	81	75	86
	SU+GA	81	75	86
	SU+SA	69	72	67
	SU+BORUTA	78	70	85
	No Feature Selection	78	75	80
	IG+RFE	77	73	81
	IG+GA	76	71	80
	IG+SA	71	66	76
	IG+BORUTA	76	75	78
	GR+RFE	74	72	76
	GR+GA	74	72	76
	GR+SA	67	76	58
	GR+BORUTA	75	74	76
	CFS+RFE	68	54	81
AL	CFS +GA	68	53	84
SVMRADIAL	CFS +SA	66	53	80
l	CFS+BORUTA	66	53	80
₹	Kİ-KARE+RFE	75	74	76
S	Kİ-KARE +GA	78	75	81
	Kİ-KARE +SA	72	64	80
	Kİ-KARE +BORUTA	78	74	81
	RELİEF+RFE	77	76	77
	RELİEF +GA	78	75	81
	RELİEF +SA	61	64	59
	RELİEF +BORUTA	78	78	78
	SU+RFE	76	70	81
	SU+GA	76	70	81
	SU+SA	67	67	68
	SU+BORUTA	74	69	78
	No Feature Selection	72	68	76
	IG+RFE	75	71	78
	IG+GA	72	68	76
	IG+SA	71	69	74
	IG+BORUTA	72	72	72
	GR+RFE	71	71	72
LDA	GR+GA	72	71	72
LDA	GR+SA	67	61	74
	GR+BORUTA	71	71	71
	CFS+RFE	70	62	78
	CFS +GA	69	62	77
	CFS +SA	69	62	77
	CFS+BORUTA	69	62	75
Ì	Kİ-KARE+RFE	73	71	75

ALGOR İTMA	ÖZNİTELİK SEÇİM YÖNTEMİ	Acc (%)	Sen (%)	Spe (%)
	Kİ-KARE +GA	72	70	74
	Kİ-KARE +SA	66	62	70
	Kİ-KARE +BORUTA	73	70	75
	RELİEF+RFE	72	70	74
	RELİEF +GA	72	72	71
	RELİEF +SA	61	69	54
	RELİEF +BORUTA	72	76	69
	SU+RFE	73	67	77
	SU+GA	73	67	77
	SU+SA	65	68	61
	SU+BORUTA	71	65	76
	No Feature Selection	50	0	100
	IG+RFE	50	0	100
	IG+GA	50	0	100
	IG+SA	50	0	100
	IG+BORUTA	50	0	100
	GR+RFE	50	0	100
	GR+GA	50	0	100
	GR+SA	50	0	100
	GR+BORUTA	50	0	100
	CFS+RFE	68	53	82
	CFS +GA	69	70	68
	CFS +SA	68	64	72
MLP	CFS+BORUTA	68	64	72
	Kİ-KARE+RFE	50	0	100
	Kİ-KARE +GA	50	0	100
	Kİ-KARE +SA	50	0	100
	Kİ-KARE +BORUTA	50	0	100
	RELİEF+RFE	50	0	100
	RELİEF +GA	50	0	100
	RELİEF +SA	50	0	100
	RELİEF +BORUTA	50	0	100
	SU+RFE	47	100	0
	SU+GA	47	100	0
	SU+SA	47	100	0
	SU+BORUTA	47	100	0
	No Feature Selection	76	71	81
	IG+RFE	70	69	72
	IG+GA	73	66	79
	IG+SA	70	71	69
	IG+BORUTA	74	66	82
	GR+RFE	73	67	78
	GR+GA	74	69	79
	GR+SA	73	69	77
Щ	GR+BORUTA	70	69	71
EVTREE	CFS+RFE	68	54	81
<b>&gt;</b>	CFS +GA	68	54	81
Ē	CFS +SA	67	54	80
	CFS+BORUTA	67	54	80
	Kİ-KARE+RFE	75	74	75
	Kİ-KARE +GA	71	65	78
	Kİ-KARE +SA	69	61	77
	Kİ-KARE +BORUTA	75	68	82
	RELİEF+RFE	72	70	74
	RELİEF +GA	74	68	80

ALGOR İTMA	ÖZNİTELİK SEÇİM YÖNTEMİ	Acc (%)	Sen (%)	Spe (%)
	RELİEF +BORUTA	75	72	79
	SU+RFE	70	62	77
	SU+GA	70	62	77
	SU+SA	68	64	70
	SU+BORUTA	70	61	78
	No Feature Selection	72	66	78
	IG+RFE	67	63	71
	IG+GA	71	68	75
	IG+SA	68	63	73
	IG+BORUTA	70	72	68
	GR+RFE	70	66	74
	GR+GA	70	66	74
	GR+SA	61	95	28
	GR+BORUTA	68	66	70
	CFS+RFE	69	56	81
_	CFS +GA	69	64	74
R	CFS +SA	67	62	71
RPART	CFS+BORUTA	67	62	71
2	Kİ-KARE+RFE	68	66	69
	Kİ-KARE +GA	70	66	74
	Kİ-KARE +SA	66	59	74
	Kİ-KARE +BORUTA	65	59	71
	RELİEF+RFE	70	66	74
	RELİEF +GA	69	66	71
	RELİEF +SA	67	77	56
	RELİEF +BORUTA	70	72	68
	SU+RFE	72	64	78
	SU+GA	72	64	78
	SU+SA	64	50	77
	SU+BORUTA	72	64	79
	No Feature Selection	86	79	93
	IG+RFE	86	81	91
	IG+GA	89	83	94
	IG+SA	78	68	88
	IG+BORUTA	86	81	91
	GR+RFE	87	83	91
	GR+GA	88	85	91
	GR+SA	76	61	91
	GR+BORUTA	86	84	89
	CFS+RFE	68	54	81
	CFS +GA	68	54	81
	CFS +SA	68	64	72
C5.0	CFS+BORUTA	68	64	72
	Kİ-KARE+RFE	88	82	94
	Kİ-KARE +GA	89	85	94
	Kİ-KARE +SA	83	75	91
	Kİ-KARE +BORUTA	88	81	94
	RELİEF+RFE	86	81	91
	RELİEF +GA	88	86	89
	RELIEF +SA	78	69	88
	RELİEF +BORUTA	85	78	91
	SU+RFE	89	85	92
	SU+GA	89	85	92
	SU+SA	75	73	78
	SU+BORUTA	90	86	93
J48	No Feature Selection	82	76	89

ALGOR İTMA	ÖZNİTELİK SEÇİM YÖNTEMİ	Acc (%)	Sen (%)	Spe (%)
	IG+RFE	80	75	85
	IG+GA	84	74	94
	IG+SA	83	74	92
	IG+BORUTA	80	67	93
	GR+RFE	83	74	93
	GR+GA	84	75	92
	GR+SA	74	75	72
	GR+BORUTA	80	71	89
	CFS+RFE	68	54	81
	CFS +GA	69	64	74
	CFS +SA	67	54	80
	CFS+BORUTA	67	54	80
	Kİ-KARE+RFE	83	71	95
	Kİ-KARE +GA	83	74	91
	Kİ-KARE +SA	78	70	86
	Kİ-KARE +BORUTA	79	73	85
	RELİEF+RFE	80	70	90
	RELİEF +GA	80	76	84
	RELİEF +SA	78	69	86
	RELİEF +BORUTA	82	69	94
	SU+RFE	82	76	87
	SU+GA	82	76	87
	SU+SA	81	70	90
	SU+BORUTA	85	77	93
	No Feature Selection	74	72	76
	IG+RFE	75	71	79
	IG+GA	74	73	75
	IG+SA	70	66	74
	IG+BORUTA	74	74	74
	GR+RFE	73	71	75
	GR+GA	73	71	76
	GR+SA	67	71	64
	GR+BORUTA	71	72	70
	CFS+RFE	68	54	81
	CFS +GA	69	61	78
工	CFS +SA	66	53	80
EARTH	CFS+BORUTA	66	53	80
¥	Kİ-KARE+RFE	71	71	72
	Kİ-KARE +GA	74	70	77
	Kİ-KARE +SA	73	70	75
	Kİ-KARE +BORUTA	70	66	74
	RELIEF+RFE	73	71	75
	RELİEF +GA	74	76	71
	RELIEF +SA	66	64	67
	RELIEF +BORUTA	73	74	71
	SU+RFE	73	68	71
	SU+GA	73	68	78
	SU+SA	69	67	70
	SU+BORUTA	74	67	70
	No Feature Selection	88	81	94
	IG+RFE	85	78	92
DE	IG+GA	88	80	95
RF	IG+SA	87	78	96
	IG+BORUTA	89	81	96
	GR+RFE	87	82	91
	GR+GA	89	84	94

ALGOR İTMA	ÖZNİTELİK SEÇİM YÖNTEMİ	Acc (%)	Sen (%)	Spe (%)
	GR+SA	84	78	90
	GR+BORUTA	86	79	93
	CFS+RFE	68	55	81
	CFS +GA	68	64	73
	CFS +SA	64	54	74
	CFS+BORUTA	64	54	74
	Kİ-KARE+RFE	88	84	93
	Kİ-KARE +GA	88	82	94
	Kİ-KARE +SA	90	86	94
	Kİ-KARE +BORUTA	89	84	94
	RELİEF+RFE	86	82	91
	RELİEF +GA	87	84	91
	RELİEF +SA	84	77	91
	RELİEF +BORUTA	88	80	96
	SU+RFE	88	83	93
	SU+GA	88	83	93
	SU+SA	85	78	91
	SU+BORUTA	90	85	95
	No Feature Selection	77	76	78
	IG+RFE	78	75	81
	IG+GA	78	74	81
	IG+SA	71	66	76
	IG+BORUTA	79	77	81
	GR+RFE	78	76	80
	GR+GA	76	75	78
	GR+SA	75	74	76
	GR+BORUTA	78	75	81
	CFS+RFE	68	54	81
	CFS +GA	68	62	74
	CFS +SA	67	62	71
GBM	CFS+BORUTA	67	62	71
	Kİ-KARE+RFE	75	74	76
	Kİ-KARE +GA	76	74	79
	Kİ-KARE +SA	74	72	76
	Kİ-KARE +BORUTA	80	75	85
	RELİEF+RFE	79	75	83
	RELİEF +GA	78	78	77
	RELİEF +SA	71	69	73
	RELIEF +BORUTA	88	80	96
	SU+RFE	80	78	82
	SU+GA	80	78	82
	SU+SA	74	73	74
	SU+BORUTA	84	81	86
	No Feature Selection	85	78	93
	IG+RFE	84	80	88
	IG+GA	86	79	94
	IG+SA	81	75	87
XGBTREE	IG+BORUTA	87	79	95
	GR+RFE	86	81	92
Ë	GR+GA	83	76	90
B B	GR+SA	78	71	84
×	GR+BORUTA	83	77	88
	CFS+RFE	70	61	79
	CFS +GA	69	61	78
	CFS +SA	68	61	75
	CFS+BORUTA	68	61	75 75
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İTMA	ÖZNİTELİK SEÇİM YÖNTEMİ	Acc (%)	Sen (%)	Spe (%)
	Kİ-KARE+RFE	87	81	94
	Kİ-KARE +GA	85	76	93
	Kİ-KARE +SA	83	73	92
	Kİ-KARE +BORUTA	87	82	91
	RELİEF+RFE	86	79	93
	RELİEF +GA	83	81	85
	RELİEF +SA	77	71	82
	RELİEF +BORUTA	85	77	93
	SU+RFE	86	81	91
	SU+GA	86	81	91
	SU+SA	79	75	83
	SU+BORUTA	88	82	93
	No Feature Selection	87	80	94
	IG+RFE	83	75	90
	IG+GA	89	82	95
	IG+SA	87	77	96
	IG+BORUTA	87	77	96
	GR+RFE	84	76	93
-	GR+GA	85	77	93
-	GR+SA	84	78	89
_	GR+BORUTA	85	79	91
_	CFS+RFE	68	55	81
_	CFS +GA	68	62	74
TREEB	CFS +SA	64	46	81
AG	CFS+BORUTA	64	46	81
-	Kİ-KARE+RFE	85	78	92
-	Kİ-KARE +GA	86	80	93
-	Kİ-KARE +SA	85	75	95
-	Kİ-KARE +BORUTA	85	75	94
-	RELİEF+RFE RELİEF +GA	87	83	91
-	RELIEF +GA RELIEF +SA	86 85	81	90 91
-	RELIEF +SA RELIEF +BORUTA	85	79 77	93
-	SU+RFE	85	80	89
-	SU+GA	85	80	89
-	SU+SA	83	75	91
	SU+BORUTA	89	81	95
	No Feature Selection	89	86	93
	IG+RFE	88	84	93
	IG+GA	89	85	94
	IG+SA	89	83	96
	IG+BORUTA	88	86	91
-	GR+RFE	88	86	89
	GR+GA	88	84	91
ļ <u></u>	GR+SA	86	83	89
OS	GR+BORUTA	90	86	93
) Ř	CFS+RFE	69	62	76
) AE	CFS +GA	68	62	74
ADABOOST	CFS +SA	64	46	81
, ,	CFS+BORUTA	64	46	81
	Kİ-KARE+RFE	90	88	92
	Kİ-KARE +GA	89	86	92
	Kİ-KARE +SA	89	86	93
•	Kİ-KARE +BORUTA	89	84	93
•	RELİEF+RFE	88	88	89
	RELİEF +GA	86	84	88

ALGOR	ÖZNİTELİK SEÇİM	Acc (%)	Sen (%)	Spe (%)
İTMA	YÖNTEMİ			
	RELİEF +SA	83	76	90
	RELİEF +BORUTA	90	85	95
	SU+RFE	86	85	86
	SU+GA	86	85	86
	SU+SA	88	86	91
	SU+BORUTA	90	88	91
	No Feature Selection	73	69	76
	IG+RFE	74	70	79
	IG+GA	72	69	76
	IG+SA	71	69	74
	IG+BORUTA	72	73	71
	GR+RFE	73	71	74
	GR+GA	72	71	72
	GR+SA	67	61	74
	GR+BORUTA	71	71	72
	CFS+RFE	70	62	78
GLMBOOST	CFS +GA	69	64	74
8	CFS +SA	69	62	75
<u>Jā</u>	CFS+BORUTA	69	62	75
ال ا	Kİ-KARE+RFE	73	71	74
ق ا	Kİ-KARE +GA	72	69	74
	Kİ-KARE +SA	66	64	69
	Kİ-KARE +BORUTA	73	70	76
	RELIEF+RFE	73	71	75
	RELIEF +GA	71	71	71
	RELİEF +SA	62	70	54
	RELIEF +BORUTA	71	74	69
	SU+RFE	73	67	78
	SU+GA	73	67	78
	SU+SA	64 71	67	61
	SU+BORUTA	_	67	75
	No Feature Selection	70	69	71
	IG+RFE	71	77	66
	IG+GA	70	73	67
	IG+SA	68	59	77
	IG+BORUTA	70	66	74
	GR+RFE	69	73	66
	GR+GA	69	73 56	66
	GR+SA	63	56 71	70
	GR+BORUTA	70	71 53	69
L.	CFS+RFE CFS+GA	68	53	83
ŏ	CFS +SA	69 67	53	84 81
LOGITBOOST	CFS+SA CFS+BORUTA	67	53	81
Ë	Kİ-KARE+RFE		72	59
90	KI-KARE +GA	66 69	73	66
	KI-KARE +GA KI-KARE +SA	64	49	79
	Kİ-KARE +BORUTA	68	70	66
	RELİEF+RFE	69	73	66
	RELIEF +GA	70	73	66
	RELIEF +SA	62	52	72
	RELIEF +BORUTA	72	57	87
	SU+RFE	73	70	76
	SU+GA	73	70	76
	SU+SA	65	58	70
	SU+BORUTA	72	63	80
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ALGOR İTMA	ÖZNİTELİK SEÇİM YÖNTEMİ	Acc (%)	Sen (%)	Spe (%)
	No Feature Selection	78	74	82
	IG+RFE	74	71	77
	IG+GA	75	74	76
	IG+SA	73	70	76
	IG+BORUTA	76	74	78
	GR+RFE	75	69	80
	GR+GA	75	72	78
	GR+SA	74	74	73
<u>⊢</u>	GR+BORUTA	73	69	77
FOREST	CFS+RFE	66	48	85
X	CFS +GA	67	49	84
<u>F</u>	CFS +SA	67	54	80
ROTATION	CFS+BORUTA	67	54	80
	Kİ-KARE+RFE	77	74	79
≰	Kİ-KARE +GA	75	71	78
l Ö	Kİ-KARE +SA	70	61	79
"	Kİ-KARE +BORUTA	75	73	78
	RELİEF+RFE	72	72	71
	RELİEF +GA	74	71	76
	RELİEF +SA	73	71	74
	RELİEF +BORUTA	76	74	79
	SU+RFE	73	70	76
	SU+GA	73	70	76
	SU+SA	70	69	70
	SU+BORUTA	76	70	81