

Apéndice D

Resultados de precisión y rendimiento al repetir las simulaciones en las topologías con mejores resultados

Nota: En color naranja se marcan las casillas correspondientes al mayor valor promedio de los 2 porcentajes de predicciones correctamente clasificadas. Se escoge una configuración topológica por cada una de las funciones de entrenamiento evaluadas.																			
TIPO DE RED	FUNCIÓN DE ENTRENAMIENTO		N. DE CAPAS OCULTAS	N.DE NEURONAS EN CAPAS OCULTAS	FUNCIÓN DE TRANSFERENCIA	# RE-ENTRENAMIENT O	RENDIMIENTO-Entropía Cruzada	MATRIZ DE CONFUSIÓN DE ENTRENAMIENTO		MATRIZ DE CONFUSIÓN DE VALIDACIÓN		MATRIZ DE CONFUSIÓN DE PRUEBA		TODA LA MATRIZ DE CONFUSIÓN		TIEMPO (S)	Porcentaje de clasificaciones correctas totales al repetir el experimento		Promedio de clasificaciones es correctas totales
								Correctamente clasificados (%)	Errorosamente clasificados (%)	Correctamente clasificados (%)	Errorosamente clasificados (%)	Correctamente clasificados (%)	Errorosamente clasificados (%)	Correctamente clasificados (%)	Errorosamente clasificados (%)		Correctamente clasificados (%)	TIEMPO (S)	
Resilient Backpropagation																			
Feed-Forward backpropagation	TRAINRP	Resilient Backpropagation	3	15	SIGMOID	2	0.0449	91.7%	8.3%	87.4%	12.6%	88.1%	11.9%	90.5%	9.5%	0	90.1%	0	90.3%
Feed-Forward backpropagation	TRAINRP	Resilient Backpropagation	3	20	SIGMOID	1	0.0429	92.9%	7.1%	86.6%	13.4%	89.9%	10.1%	91.5%	8.5%	0	92.3%	0	91.9%
Feed-Forward backpropagation	TRAINRP	Resilient Backpropagation	3	20	SIGMOID	2	0.0528	90.4%	9.6%	84.1%	15.9%	83.8%	16.2%	88.5%	11.5%	0	89.5%	0	89.0%
Feed-Forward backpropagation	TRAINRP	Resilient Backpropagation	3	25	SIGMOID	1	0.0448	91.6%	8.4%	86.6%	13.4%	88.4%	11.6%	90.4%	9.6%	0	92.6%	0	91.5%
Feed-Forward backpropagation	TRAINRP	Resilient Backpropagation	3	25	SIGMOID	2	0.0388	93.0%	7.0%	88.8%	11.2%	87.7%	12.3%	91.6%	8.4%	0	91.2%	0	91.4%
Feed-Forward backpropagation	TRAINRP	Resilient Backpropagation	3	30	SIGMOID	1	0.0409	93.0%	7.0%	86.6%	13.4%	89.2%	10.8%	91.5%	8.5%	0	92.2%	0	91.9%
Feed-Forward backpropagation	TRAINRP	Resilient Backpropagation	3	30	SIGMOID	2	0.0296	95.7%	4.3%	91.7%	8.3%	90.0%	9.4%	94.3%	5.7%	0	94.5%	0	94.4%
Feed-Forward backpropagation	TRAINRP	Resilient Backpropagation	5	20	SIGMOID	1	0.0438	92.8%	7.2%	85.6%	14.4%	87.4%	12.6%	90.9%	9.1%	0	91.7%	0	91.3%
Feed-Forward backpropagation	TRAINRP	Resilient Backpropagation	5	25	SIGMOID	1	0.0396	92.9%	7.1%	90.6%	9.4%	86.6%	13.4%	91.6%	8.4%	0	91.3%	0	91.5%
Feed-Forward backpropagation	TRAINRP	Resilient Backpropagation	5	30	SIGMOID	1	0.0396	93.3%	6.7%	86.6%	13.4%	86.3%	13.7%	91.3%	8.7%	0	92.6%	0	92.0%
Feed-Forward backpropagation	TRAINRP	Resilient Backpropagation	5	30	SIGMOID	2	0.0386	92.3%	7.7%	87.7%	12.3%	89.2%	10.8%	91.2%	8.8%	0	89.0%	0	90.1%
REPETICIÓN DE LOS EXPERIMENTOS CON MEJORES PORCENTAJES DE CLASIFICACIONES CORRECTAS																			
Feed-Forward backpropagation	TRAINRP	Resilient Backpropagation	3	15	SIGMOID	2	0.0466	91.7%	8.3%	89.2%	10.8%	83.8%	16.2%	90.1%	9.9%	0			
Feed-Forward backpropagation	TRAINRP	Resilient Backpropagation	3	20	SIGMOID	1	0.0369	92.9%	7.1%	91.0%	9.0%	90.6%	9.4%	92.3%	7.7%	0			
Feed-Forward backpropagation	TRAINRP	Resilient Backpropagation	3	20	SIGMOID	2	0.0444	90.3%	9.7%	88.1%	11.9%	87.4%	12.6%	89.5%	10.5%	0			
Feed-Forward backpropagation	TRAINRP	Resilient Backpropagation	3	25	SIGMOID	1	0.0403	93.2%	6.8%	88.8%	11.2%	93.5%	6.5%	92.6%	7.4%	0			
Feed-Forward backpropagation	TRAINRP	Resilient Backpropagation	3	25	SIGMOID	2	0.0402	92.0%	8.0%	88.4%	11.6%	90.3%	9.7%	91.2%	8.8%	0			
Feed-Forward backpropagation	TRAINRP	Resilient Backpropagation	3	30	SIGMOID	1	0.0369	93.2%	6.8%	90.3%	9.7%	89.5%	10.5%	92.2%	7.8%	0			
Feed-Forward backpropagation	TRAINRP	Resilient Backpropagation	3	30	SIGMOID	2	0.0272	96.0%	4.0%	91.3%	8.7%	91.0%	9.0%	94.5%	5.5%	0			
Feed-Forward backpropagation	TRAINRP	Resilient Backpropagation	5	20	SIGMOID	1	0.0425	93.5%	6.5%	88.4%	11.6%	86.3%	13.7%	91.7%	8.3%	0			
Feed-Forward backpropagation	TRAINRP	Resilient Backpropagation	5	25	SIGMOID	1	0.046	93.4%	6.6%	88.4%	11.6%	84.5%	15.5%	91.3%	8.7%	0			
Feed-Forward backpropagation	TRAINRP	Resilient Backpropagation	5	30	SIGMOID	1	0.0381	94.6%	5.4%	90.3%	9.7%	85.6%	14.4%	92.6%	7.4%	0			
Feed-Forward backpropagation	TRAINRP	Resilient Backpropagation	5	30	SIGMOID	2	0.0523	89.6%	10.4%	87.7%	12.3%	87.4%	12.6%	89.0%	11.0%	0			
Scaled Conjugate Gradient																			
Feed-Forward backpropagation	TRAINSCG	Scaled Conjugate Gradient	3	15	SIGMOID	1	0.0421	91.0%	9.0%	90.3%	9.7%	89.2%	10.8%	90.6%	9.4%	1	90.4%	1	90.5%
Feed-Forward backpropagation	TRAINSCG	Scaled Conjugate Gradient	3	20	SIGMOID	1	0.0387	93.1%	6.9%	88.8%	11.2%	91.0%	9.0%	92.1%	7.9%	1	91.0%	1	91.6%
Feed-Forward backpropagation	TRAINSCG	Scaled Conjugate Gradient	3	25	SIGMOID	1	0.0403	92.1%	7.9%	86.6%	13.4%	88.4%	11.6%	90.7%	9.3%	1	92.0%	1	91.4%
Feed-Forward backpropagation	TRAINSCG	Scaled Conjugate Gradient	3	30	SIGMOID	2	0.0424	92.3%	7.7%	87.7%	12.3%	88.4%	11.6%	91.1%	8.9%	1	93.6%	1	92.4%
Feed-Forward backpropagation	TRAINSCG	Scaled Conjugate Gradient	5	15	SIGMOID	2	0.0449	91.4%	8.6%	86.3%	13.7%	88.8%	11.2%	90.2%	9.8%	1	86.7%	1	88.5%

Feed-Forward backpropagation	TRAINSCG	Scaled Conjugate Gradient	5	20	SIGMOID	1	0.0417	92.6%	7.4%	88.4%	11.6%	87.0%	13.0%	91.2%	8.8%	1	91.7%	1	91.5%
Feed-Forward backpropagation	TRAINSCG	Scaled Conjugate Gradient	5	25	SIGMOID	1	0.045	91.0%	9.0%	88.8%	11.2%	88.4%	11.6%	90.3%	9.7%	1	91.6%	1	91.0%
Feed-Forward backpropagation	TRAINSCG	Scaled Conjugate Gradient	5	25	SIGMOID	2	0.0415	93.0%	7.0%	88.8%	11.2%	89.9%	10.1%	91.9%	8.1%	1	86.9%	1	89.4%
Feed-Forward backpropagation	TRAINSCG	Scaled Conjugate Gradient	5	30	SIGMOID	1	0.0495	91.4%	8.6%	88.1%	11.9%	87.4%	12.6%	90.3%	9.7%	1	90.6%	1	90.5%
Feed-Forward backpropagation	TRAINSCG	Scaled Conjugate Gradient	5	30	SIGMOID	2	0.0441	91.6%	8.4%	90.6%	9.4%	87.4%	12.6%	90.8%	9.2%	1	90.3%	1	90.6%
Feed-Forward backpropagation	TRAINSCG	Scaled Conjugate Gradient	7	25	SIGMOID	1	0.0427	92.0%	8.0%	91.3%	8.7%	86.6%	13.4%	91.1%	8.9%	2	91.6%	2	91.4%
Feed-Forward backpropagation	TRAINSCG	Scaled Conjugate Gradient	7	30	SIGMOID	2	0.0385	93.4%	6.6%	86.3%	13.7%	90.3%	9.7%	91.9%	8.1%	1	89.5%	2	90.7%
Feed-Forward backpropagation	TRAINSCG	Scaled Conjugate Gradient	10	20	SIGMOID	1	0.0457	92.4%	7.6%	89.9%	10.1%	86.3%	13.7%	91.1%	8.9%	2	89.7%	2	90.4%
REPETICIÓN DE LOS EXPERIMENTOS CON MEJORES PORCENTAJES DE CLASIFICACIONES CORRECTAS																			
Feed-Forward backpropagation	TRAINSCG	Scaled Conjugate Gradient	3	15	SIGMOID	1	0.0455	91.7%	8.3%	88.4%	11.6%	85.9%	14.1%	90.4%	9.6%	1			
Feed-Forward backpropagation	TRAINSCG	Scaled Conjugate Gradient	3	20	SIGMOID	1	0.0421	92.5%	7.5%	88.4%	11.6%	86.3%	13.7%	91.0%	9.0%	1			
Feed-Forward backpropagation	TRAINSCG	Scaled Conjugate Gradient	3	25	SIGMOID	1	0.0394	91.9%	8.1%	92.8%	7.2%	91.7%	8.3%	92.0%	8.0%	1			
Feed-Forward backpropagation	TRAINSCG	Scaled Conjugate Gradient	3	30	SIGMOID	2	0.035	94.5%	5.5%	91.0%	9.0%	92.1%	7.9%	93.6%	6.4%	1			
Feed-Forward backpropagation	TRAINSCG	Scaled Conjugate Gradient	5	15	SIGMOID	2	0.0642	87.2%	12.8%	87.7%	12.3%	83.4%	16.6%	86.7%	13.3%	1			
Feed-Forward backpropagation	TRAINSCG	Scaled Conjugate Gradient	5	20	SIGMOID	1	0.0378	91.8%	8.2%	93.9%	6.1%	89.2%	10.8%	91.7%	8.3%	1			
Feed-Forward backpropagation	TRAINSCG	Scaled Conjugate Gradient	5	25	SIGMOID	1	0.0364	92.6%	7.4%	89.9%	10.1%	88.4%	11.6%	91.6%	8.4%	1			
Feed-Forward backpropagation	TRAINSCG	Scaled Conjugate Gradient	5	25	SIGMOID	2	0.0637	87.1%	12.9%	87.4%	12.6%	85.6%	14.4%	86.9%	13.1%	1			
Feed-Forward backpropagation	TRAINSCG	Scaled Conjugate Gradient	5	30	SIGMOID	1	0.0427	90.2%	9.8%	92.4%	7.6%	90.6%	9.4%	90.6%	9.4%	1			
Feed-Forward backpropagation	TRAINSCG	Scaled Conjugate Gradient	5	30	SIGMOID	2	0.0463	92.1%	7.9%	85.2%	14.8%	87.0%	13.0%	90.3%	9.7%	1			
Feed-Forward backpropagation	TRAINSCG	Scaled Conjugate Gradient	7	25	SIGMOID	1	0.0395	92.5%	7.5%	88.1%	11.9%	91.0%	9.0%	91.6%	8.4%	2			
Feed-Forward backpropagation	TRAINSCG	Scaled Conjugate Gradient	7	30	SIGMOID	2	0.0495	91.6%	8.4%	83.0%	17.0%	86.3%	13.7%	89.5%	10.5%	2			
Feed-Forward backpropagation	TRAINSCG	Scaled Conjugate Gradient	10	20	SIGMOID	1	0.05	90.6%	9.4%	86.3%	13.7%	88.4%	11.6%	89.7%	10.3%	2			
BFGS Quasi-Newton																			
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	3	15	SIGMOID	1	0.0369	92.7%	7.3%	87.0%	13.0%	91.7%	8.3%	91.7%	8.3%	5	88.4%	4	90.1%
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	3	25	SIGMOID	1	0.0434	92.5%	7.5%	88.8%	11.2%	88.1%	11.9%	91.3%	8.7%	22	92.0%	31	91.7%
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	3	30	SIGMOID	1	0.031	94.8%	5.2%	92.1%	7.9%	90.6%	9.4%	93.8%	6.2%	94	92.6%	106	93.2%
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	3	30	SIGMOID	2	0.0387	91.9%	8.1%	91.0%	9.0%	88.1%	11.9%	91.2%	8.8%	86	90.2%	78	90.7%
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	5	20	SIGMOID	1	0.044	92.5%	7.5%	86.6%	13.4%	89.2%	10.8%	91.1%	8.9%	47	91.5%	54	91.3%
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	5	20	SIGMOID	2	0.0319	94.7%	5.3%	91.3%	8.7%	91.3%	8.7%	93.7%	6.3%	60	90.8%	44	92.3%
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	5	25	SIGMOID	1	0.0286	95.2%	4.8%	92.1%	7.9%	90.6%	9.4%	94.0%	6.0%	155	90.6%	129	92.3%
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	5	25	SIGMOID	2	0.0327	94.5%	5.5%	91.0%	9.0%	90.6%	9.4%	93.4%	6.6%	121	94.7%	181	94.1%
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	5	30	SIGMOID	1	0.0226	94.0%	6.0%	93.9%	6.1%	85.9%	14.1%	92.7%	7.3%	228	94.1%	250	93.4%
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	5	30	SIGMOID	2	0.0324	94.5%	5.5%	90.6%	9.4%	88.4%	11.6%	93.0%	7.0%	261	92.8%	279	92.9%
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	7	20	SIGMOID	1	0.0321	94.5%	5.5%	92.4%	7.6%	91.3%	8.7%	93.7%	6.3%	130	90.4%	104	92.1%
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	7	20	SIGMOID	2	0.033	92.6%	7.4%	91.3%	8.7%	89.9%	10.1%	92.0%	8.0%	132	91.8%	120	91.9%

Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	7	25	SIGMOID	1	0.0422	92,5%	7,5%	91,3%	8,7%	88,4%	11,6%	91,7%	8,3%	359	91,5%	289	91,6%
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	7	25	SIGMOID	2	0.0272	93,7%	6,3%	89,2%	10,8%	90,3%	9,7%	92,5%	7,5%	279	93,1%	348	92,8%
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	7	30	SIGMOID	1	0.0401	91,5%	8,5%	91,7%	8,3%	85,9%	14,1%	90,7%	9,3%	483	93,5%	785	92,1%
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	7	30	SIGMOID	2	0.0395	93,5%	6,5%	89,2%	10,8%	88,8%	11,2%	92,1%	7,9%	546	90,7%	458	91,4%
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	10	25	SIGMOID	1	0.0347	94,9%	5,1%	90,3%	9,7%	90,3%	9,7%	93,5%	6,5%	671	88,8%	480	91,2%
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	10	30	SIGMOID	1	0.0334	95,1%	4,9%	91,3%	8,7%	89,2%	10,8%	93,7%	6,3%	1490	91,8%	1710	92,8%
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	10	30	SIGMOID	2	0.0311	95,4%	4,6%	91,7%	8,3%	91,0%	9,0%	94,2%	5,8%	2013	92,3%	2132	93,3%
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	15	25	SIGMOID	1	0.0435	92,4%	7,6%	87,0%	13,0%	88,4%	11,6%	91,0%	9,0%	3251	91,0%	2965	91,0%
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	15	30	SIGMOID	1	0.0353	94,1%	5,9%	90,6%	9,4%	88,8%	11,2%	92,8%	7,2%	4937	90,4%	4810	91,6%
REPETICIÓN DE LOS EXPERIMENTOS CON MEJORES PORCENTAJES DE CLASIFICACIONES CORRECTAS																			
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	3	15	SIGMOID	1	0.0536	89,1%	10,9%	85,6%	14,4%	88,1%	11,9%	88,4%	11,6%	4			
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	3	25	SIGMOID	1	0.0375	92,6%	7,4%	88,8%	11,2%	92,4%	7,6%	92,0%	8,0%	31			
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	3	30	SIGMOID	1	0.0341	93,5%	6,5%	91,3%	8,7%	89,5%	10,5%	92,6%	7,4%	106			
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	3	30	SIGMOID	2	0.0433	91,1%	8,9%	88,8%	11,2%	87,4%	12,6%	90,2%	71,0%	78			
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	5	20	SIGMOID	1	0.0386	92,6%	7,4%	89,2%	10,8%	89,2%	10,8%	91,5%	8,5%	54			
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	5	20	SIGMOID	2	0.0448	90,8%	9,2%	91,7%	8,3%	90,3%	9,7%	90,8%	9,2%	44			
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	5	25	SIGMOID	1	0.0468	92,1%	7,9%	90,6%	9,4%	83,4%	16,6%	90,6%	9,4%	129			
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	5	25	SIGMOID	2	0.0328	96,5%	3,5%	91,0%	9,0%	89,9%	10,1%	94,7%	5,3%	181			
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	5	30	SIGMOID	1	0.0299	95,3%	4,7%	94,2%	5,8%	88,8%	11,2%	94,1%	5,9%	250			
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	5	30	SIGMOID	2	0.0341	93,7%	6,3%	91,7%	8,3%	89,5%	10,5%	92,8%	7,2%	279			
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	7	20	SIGMOID	1	0.0443	91,6%	8,4%	85,9%	14,1%	89,5%	10,5%	90,4%	9,6%	104			
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	7	20	SIGMOID	2	0.0453	93,6%	6,4%	87,7%	12,3%	87,7%	12,3%	91,8%	8,2%	120			
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	7	25	SIGMOID	1	0.0406	91,6%	8,4%	92,1%	7,9%	90,3%	9,7%	91,5%	8,5%	289			
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	7	25	SIGMOID	2	0.0308	94,4%	5,6%	88,8%	11,2%	91,0%	9,0%	93,1%	6,9%	348			
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	7	30	SIGMOID	1	0.034	95,0%	5,0%	92,4%	7,6%	87,7%	12,3%	93,5%	6,5%	785			
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	7	30	SIGMOID	2	0.0458	92,3%	7,7%	87,4%	12,6%	86,6%	13,4%	90,7%	9,3%	458			
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	10	25	SIGMOID	1	0.0512	90,0%	10,0%	84,8%	15,2%	87,4%	12,6%	88,8%	11,2%	480			
Feed-Forward backpropagation	TRAINBFG	BFGS Quasi-Newton	10	30	SIGMOID	1	0.0384	92,3%	7,7%	89,5%	10,5%	91,7%	8,3%	91,8%	8,2%	1710			
Polak Ribiere conjugate gradients																			
Feed-Forward backpropagation	TRAINCGP	Polak Ribiere conjugate gradients	3	15	SIGMOID	1	0.0647	86,5%	13,5%	86,6%	13,4%	85,6%	14,4%	86,4%	13,6%	1	88,2%	1	87,3%
Feed-Forward backpropagation	TRAINCGP	Polak Ribiere conjugate gradients	3	15	SIGMOID	2	0.0413	91,6%	8,4%	88,4%	11,6%	87,7%	12,3%	90,6%	9,4%	1	88,2%	1	89,4%
Feed-Forward backpropagation	TRAINCGP	Polak Ribiere conjugate gradients	3	25	SIGMOID	1	0.0426	91,9%	8,1%	88,4%	11,6%	92,4%	7,6%	91,4%	8,6%	1	92,0%	1	91,7%
Feed-Forward backpropagation	TRAINCGP	Polak Ribiere conjugate gradients	3	25	SIGMOID	2	0.0472	90,6%	9,4%	86,6%	13,4%	90,6%	9,4%	90,0%	10,0%	1	88,6%	1	89,3%
Feed-Forward backpropagation	TRAINCGP	Polak Ribiere conjugate gradients	3	30	SIGMOID	1	0.0436	92,2%	7,8%	93,1%	6,9%	86,6%	13,4%	91,5%	8,5%	1	86,6%	0	89,1%
Feed-Forward backpropagation	TRAINCGP	Polak Ribiere conjugate gradients	3	30	SIGMOID	2	0.0437	91,3%	8,7%	88,4%	11,6%	86,6%	13,4%	90,2%	9,8%	2	90,0%	1	90,1%

Feed-Forward backpropagation	TRAINCGP	Polak Ribiere conjugate gradients	5	20	SIGMOID	1	0.0397	93.0%	7.0%	88.8%	11.2%	85.2%	14.8%	91.2%	8.8%	1	90.4%	2	90.8%
Feed-Forward backpropagation	TRAINCGP	Polak Ribiere conjugate gradients	5	20	SIGMOID	2	0.0473	91.5%	8.5%	89.9%	10.1%	85.6%	14.4%	90.4%	9.6%	1	85.6%	1	88.0%
Feed-Forward backpropagation	TRAINCGP	Polak Ribiere conjugate gradients	5	30	SIGMOID	1	0.032	95.3%	4.7%	92.8%	7.2%	86.6%	13.4%	93.6%	6.4%	3	90.5%	1	92.1%
Feed-Forward backpropagation	TRAINCGP	Polak Ribiere conjugate gradients	7	25	SIGMOID	1	0.0611	88.5%	11.5%	83.4%	16.6%	83.4%	16.6%	87.0%	13.0%	4	88.5%	1	87.8%
Feed-Forward backpropagation	TRAINCGP	Polak Ribiere conjugate gradients	7	25	SIGMOID	2	0.0428	92.1%	7.9%	89.9%	10.1%	92.1%	7.9%	91.8%	8.2%	4	85.7%	2	88.8%
Feed-Forward backpropagation	TRAINCGP	Polak Ribiere conjugate gradients	7	30	SIGMOID	1	0.0498	90.3%	9.7%	88.4%	11.6%	90.6%	9.4%	90.1%	9.9%	3	86.1%	1	88.1%
Feed-Forward backpropagation	TRAINCGP	Polak Ribiere conjugate gradients	7	30	SIGMOID	2	0.0592	88.4%	11.6%	86.6%	13.4%	86.6%	13.4%	87.9%	12.1%	3	88.7%	3	88.3%
REPETICIÓN DE LOS EXPERIMENTOS CON MEJORES PORCENTAJES DE CLASIFICACIONES CORRECTAS																			
Feed-Forward backpropagation	TRAINCGP	Polak Ribiere conjugate gradients	3	15	SIGMOID	1	0.0524	88.9%	11.1%	86.3%	13.7%	87.4%	12.6%	88.2%	11.8%	1			
Feed-Forward backpropagation	TRAINCGP	Polak Ribiere conjugate gradients	3	15	SIGMOID	2	0.0546	89.1%	10.9%	86.3%	13.7%	85.9%	14.1%	88.2%	11.8%	1			
Feed-Forward backpropagation	TRAINCGP	Polak Ribiere conjugate gradients	3	25	SIGMOID	1	0.035	92.6%	7.4%	91.3%	8.7%	90.3%	9.7%	92.0%	8.0%	1			
Feed-Forward backpropagation	TRAINCGP	Polak Ribiere conjugate gradients	3	25	SIGMOID	2	0.0501	89.5%	10.5%	84.1%	15.9%	88.8%	11.2%	88.6%	11.4%	1			
Feed-Forward backpropagation	TRAINCGP	Polak Ribiere conjugate gradients	3	30	SIGMOID	1	0.0627	86.5%	13.5%	88.1%	11.9%	85.2%	14.8%	86.6%	13.4%	0			
Feed-Forward backpropagation	TRAINCGP	Polak Ribiere conjugate gradients	3	30	SIGMOID	2	0.0463	90.7%	9.3%	89.5%	10.5%	87.0%	13.0%	90.0%	10.0%	1			
Feed-Forward backpropagation	TRAINCGP	Polak Ribiere conjugate gradients	5	20	SIGMOID	1	0.0426	90.9%	9.1%	91.0%	9.0%	87.4%	12.6%	90.4%	9.6%	2			
Feed-Forward backpropagation	TRAINCGP	Polak Ribiere conjugate gradients	5	20	SIGMOID	2	0.0655	85.8%	14.2%	85.2%	14.8%	85.2%	14.8%	85.6%	14.4%	1			
Feed-Forward backpropagation	TRAINCGP	Polak Ribiere conjugate gradients	5	30	SIGMOID	1	0.0454	91.3%	8.7%	91.3%	8.7%	86.3%	13.7%	90.5%	9.5%	1			
Feed-Forward backpropagation	TRAINCGP	Polak Ribiere conjugate gradients	7	25	SIGMOID	1	0.052	88.5%	11.5%	90.3%	9.7%	86.3%	13.7%	88.5%	11.5%	1			
Feed-Forward backpropagation	TRAINCGP	Polak Ribiere conjugate gradients	7	25	SIGMOID	2	0.0642	85.6%	14.4%	84.8%	15.2%	87.0%	13.0%	85.7%	14.3%	2			
Feed-Forward backpropagation	TRAINCGP	Polak Ribiere conjugate gradients	7	30	SIGMOID	1	0.0706	86.7%	13.3%	86.6%	13.4%	82.7%	17.3%	86.1%	13.9%	1			
Feed-Forward backpropagation	TRAINCGP	Polak Ribiere conjugate gradients	7	30	SIGMOID	2	0.0519	89.9%	10.1%	86.6%	13.4%	85.6%	14.4%	88.7%	11.3%	3			
Conjugate gradient with powell/beale restarts																			
Feed-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	3	15	SIGMOID	1	0.0402	93.0%	7.0%	90.3%	9.7%	88.4%	11.6%	91.9%	8.1%	1	88.8%	1	90.4%
Feed-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	3	20	SIGMOID	1	0.0353	92.9%	7.1%	91.0%	9.0%	93.9%	6.1%	92.7%	7.3%	1	91.1%	1	91.9%
Feed-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	3	20	SIGMOID	2	0.0375	93.1%	6.9%	89.5%	10.5%	85.9%	14.1%	91.5%	8.5%	2	91.0%	1	91.3%
Feed-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	3	25	SIGMOID	1	0.042	93.0%	7.0%	89.9%	10.1%	86.3%	13.7%	91.5%	8.5%	1	89.4%	1	90.5%
Feed-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	3	25	SIGMOID	2	0.0459	90.9%	9.1%	86.6%	13.4%	89.2%	10.8%	90.0%	10.0%	1	91.2%	1	90.6%
Feed-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	3	30	SIGMOID	2	0.0438	90.9%	9.1%	87.7%	12.3%	89.9%	10.1%	90.2%	9.8%	1	88.0%	1	89.1%
Feed-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	5	15	SIGMOID	1	0.0418	91.8%	8.2%	89.5%	10.5%	87.4%	12.6%	90.8%	9.2%	1	85.8%	1	88.3%
Feed-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	5	15	SIGMOID	2	0.0455	91.6%	8.4%	89.2%	10.8%	86.3%	13.7%	90.5%	9.5%	2	84.1%	1	87.3%
Feed-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	5	25	SIGMOID	2	0.0482	90.3%	9.7%	85.2%	14.8%	93.1%	6.9%	90.0%	10.0%	1	90.0%	1	90.0%

Feed-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	5	30	SIGMOID	1	0.0419	91,1%	8,9%	92,1%	7,9%	89,5%	10,5%	91,0%	9,0%	1	88,9%	1	90,0%
Feed-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	7	20	SIGMOID	1	0.0423	91,6%	8,4%	93,1%	6,9%	88,4%	11,6%	91,3%	8,7%	3	88,4%	2	89,9%
Feed-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	7	25	SIGMOID	1	0.0449	92,5%	7,5%	87,4%	12,6%	91,7%	8,3%	91,6%	8,4%	3	86,0%	3	88,8%
Feed-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	7	30	SIGMOID	2	0.0442	91,3%	8,7%	89,5%	10,5%	89,9%	10,1%	90,8%	9,2%	3	89,8%	4	90,3%
Feed-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	10	25	SIGMOID	1	0.0489	91,0%	9,0%	91,7%	8,3%	89,2%	10,8%	90,8%	9,2%	8	89,3%	8	90,1%
REPETICIÓN DE LOS EXPERIMENTOS CON MEJORES PORCENTAJES DE CLASIFICACIONES CORRECTAS																			
d-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	3	15	SIGMOID	1	0.053	90,3%	9,7%	85,2%	14,8%	85,2%	14,8%	88,8%	11,2%	1			
Feed-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	3	20	SIGMOID	1	0.0414	91,7%	8,3%	89,9%	10,1%	89,5%	10,5%	91,1%	8,9%	1			
Feed-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	3	20	SIGMOID	2	0.0415	92,5%	7,5%	88,8%	11,2%	86,3%	13,7%	91,0%	9,0%	1			
Feed-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	3	25	SIGMOID	1	0.0511	89,6%	10,4%	89,2%	10,8%	88,8%	11,2%	89,4%	10,6%	1			
Feed-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	3	25	SIGMOID	2	0.0412	91,3%	8,7%	91,3%	8,7%	90,6%	9,4%	91,2%	8,8%	1			
Feed-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	3	30	SIGMOID	2	0.0552	88,3%	11,7%	88,8%	11,2%	85,9%	14,1%	88,0%	12,0%	1			
Feed-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	5	15	SIGMOID	1	0.0645	86,1%	13,9%	84,5%	15,5%	85,9%	14,1%	85,8%	14,2%	1			
Feed-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	5	15	SIGMOID	2	0.0708	85,2%	14,8%	81,2%	18,8%	81,6%	18,4%	84,1%	15,9%	1			
Feed-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	5	25	SIGMOID	2	0.0501	90,3%	9,7%	88,4%	11,6%	90,3%	9,7%	90,0%	10,0%	1			
Feed-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	5	30	SIGMOID	1	0.0533	89,6%	10,4%	85,6%	14,4%	89,5%	10,5%	88,9%	11,1%	1			
Feed-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	7	20	SIGMOID	1	0.0557	89,3%	10,7%	87,4%	12,6%	85,2%	14,8%	88,4%	11,6%	2			
Feed-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	7	25	SIGMOID	1	0.0624	87,1%	12,9%	84,1%	15,9%	83,0%	17,0%	86,0%	14,0%	3			
Feed-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	7	30	SIGMOID	2	0.0456	91,6%	8,4%	87,4%	12,6%	83,8%	16,2%	89,8%	10,2%	4			
Feed-Forward backpropagation	TRAINCGB	Conjugate gradient with powell/beale restarts	10	25	SIGMOID	1	0.0495	90,0%	10,0%	87,0%	13,0%	88,4%	11,6%	89,3%	10,7%	8			